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Strengthening public-private partnerships to enhance resilience against rising losses from NatCat events

The insurance industry's opportunity to further elevate its role as a 'glocal' leader in societal resilience

Dr. Robin Huettemann
Junior Engagement Manager
McKinsey & Company[i]

[i] This report does not necessarily represent views of the company.

Executive Summary

Accelerating natural catastrophe (NatCat) losses are putting pressure on insurers' profitability, leading them to either withdraw (from high-risk areas) or raise premiums. These responses affect the affordability and availability of insurance coverage. Given the anticipated further acceleration in NatCat losses, the private sector alone may not be able to absorb the full extent of the risk exposure. Therefore, public-private partnerships (PPPs) are essential to provide adequate coverage while fostering risk prevention as the best protection and mitigation.

However, various challenges hinder the establishment and management of PPPs. In particular, fragmented, unclear, and changing stakeholders (e.g., due to political cycles and unclear accountabilities); a financial culture of post-event 'special-purpose' funding in the public sector as opposed to pre-event reserve building in the private sector; and the public sector acting as default guarantor for those who choose to remain unprotected (which can reduce the perceived need to buy coverage) are key challenges to initiating an effective collaboration. Additional challenges include lack of preparedness, underestimation and accumulation of risk exposure, as well as mistrust and inefficiencies in claims settlement.

These challenges can be addressed by clearly defined stakeholder mandates in both the public and private sectors – with the latter potentially being orchestrated through an insurance association – and governed by a dedicated entity to foster multi-decade resilient collaboration structures. This entity should be mandated to make binding decisions across all levels of public administration regarding the prevention and mitigation measures and review their implementation progress. An extreme example could resemble the governance structure of most central banks – independent, yet clearly mandated with specific objectives that guide decision-making. A standardized homeowners' policy with simplified wording and localized, risk-adjusted premiums could improve coverage transparency and incentivize risk prevention investments. Prevention efforts should include improved access to risk data, maps, and forward-looking risk models; updated resilient building codes; public investment incentives for retrofitting; and forward-looking urban, infrastructure, and defense planning and disaster warning. In addition to traditional reinsurance, risk transfer can be innovated through insurance-linked securities (ILS) to attract private capital and diversify underlying risk exposure. Claims management should become more resilient to peak volumes.

The insurance industry has the unique opportunity to further elevate its role as a 'glocal' (global and local) leader in providing societal resilience. While insurers remain core risk bearers, PPPs will play a pivotal role in providing coverage and managing NatCat risk through holistic prevention investments as best protection and mitigation. The urgency to act is now.

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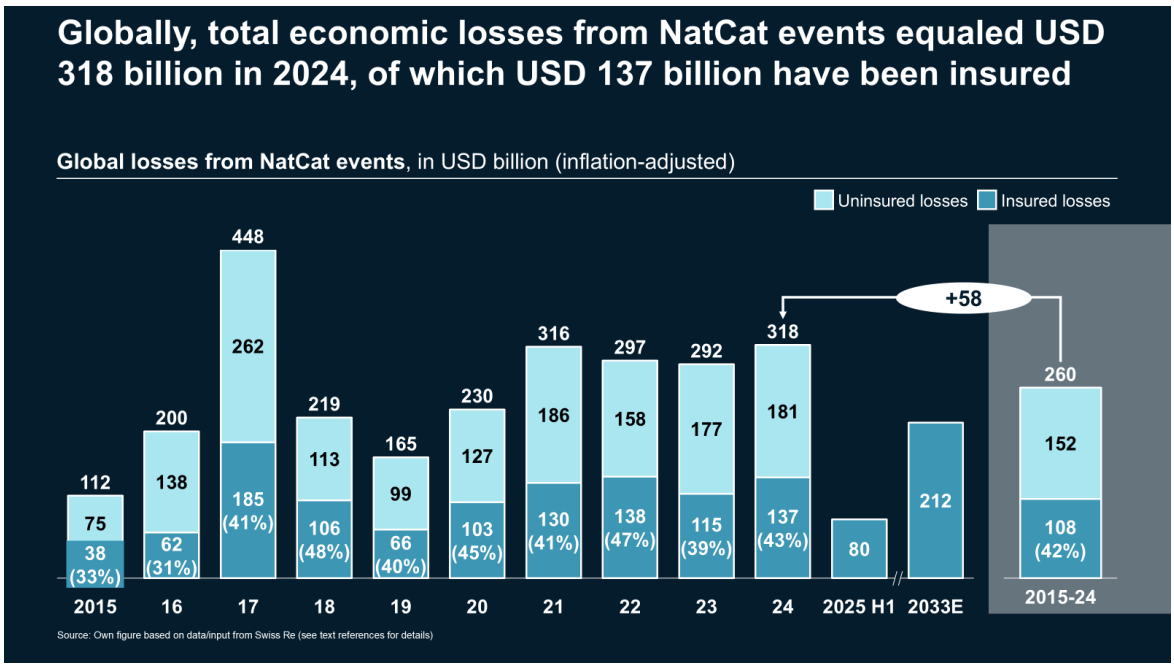
Growing NatCat-driven losses are challenging insurers' profitability and the availability and affordability of coverage.

Increasing economic losses from NatCat events, driven by a rise in severity and frequency, are pressuring insurers' profitability.

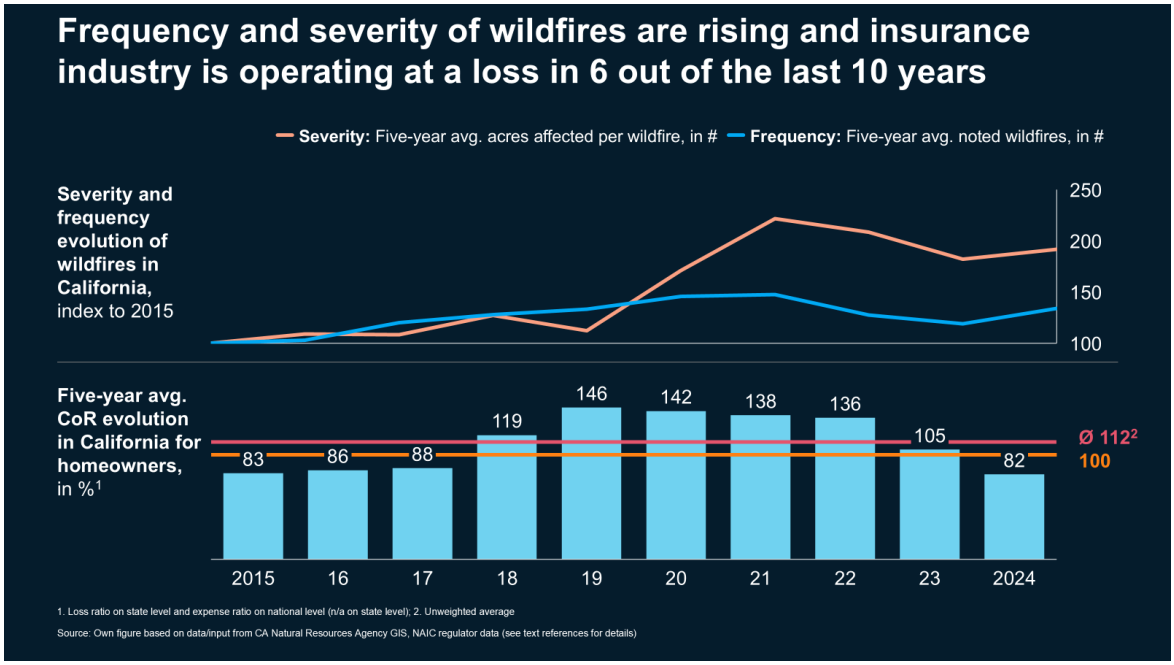
Total economic losses from Natural Catastrophes (NatCats) (natural forces from different perils including wildfires, floods, earthquakes, and cyclones, among others) equaled an estimated USD 318 billion globally in 2024, almost USD 60 billion above the ten-year average. Of these total losses, USD 135 billion (43 percent) have been insured. In 2033, insured losses could total USD 212 billion[1]. (Figure 1)

Figure 1



The trajectory of wildfires in California highlights the rise in severity and frequency of NatCats. In the past ten years, between 2015 and 2024, the five-year average number of wildfires increased by greater than 90 percent (frequency), while the acres affected per individual event increased by almost 35 percent (severity)[2]. Consequently, insurers in the California home insurance market struggle to be profitable, operating at an average five-year combined ratio of 112 percent over the past ten years[3]. (Figure 2)

Figure 2



NatCat coverage has become non-available and non-affordable, leading the public to act.

In response to the profitability challenges posed by NatCat events, insurers could adjust their regional portfolio footprint or technical pricing. The former would result in reduced private-market coverage, thereby accelerating the availability challenge[4]. Adjusting technical pricing (e.g., increasing NatCat budgets) could increase the affordability challenge (e.g., premiums surpassing a certain share of income). While insuring properties in any risk zone is not a challenge in itself, ensuring affordability at the true risk-adjusted price is – echoing Cuthbert Heath's quote: 'Any risk is insurable at the right price[5].'

These effects are real: in California, several insurers have reduced their exposure to property[6]. Remaining insurers increased premiums by more than 80 percent and deductibles by more than 30 percent for very-high-risk properties, respectively more than 20 percent for very-low risk properties between 2015-22[7], increasing the protection gap. In California, it is estimated that 80 percent of properties are in some form underinsured against wildfires[8].

Nevertheless, the NatCat exposure was the main driver of global insurer failures over the past five years[9]. Beyond that, it is even a systemic risk at the foundation of the financial sector. A house that cannot be insured cannot be mortgaged[10].

Thus, to ensure coverage availability and affordability alongside insurers' long-term profitability, public-private partnerships (PPPs) are essential. And the public is acting and partially holding the insurance industry accountable. For example, in Australia, in response to the 2022 floods, the public has provided recommendations to insurers in their 'Flood Failure to Future Fairness' report[11]. More recently, the new German parliament has agreed to establish mandatory 'Elementar' coverage against floods, rain, and landslides[12].

The activities of the public, combined with existing PPPs — most of which were established prior to 2000[13] — show that PPPs require strengthening globally in both risk transfer and prevention and mitigation to manage increasing NatCat-driven economic losses.

Scope of the paper.

This paper aims to structure the archetypes of today's PPPs as a foundation for exploring the key challenges in their implementation and effectiveness in protecting against NatCat events, and to propose recommendations to address each challenge.

To maintain focus, the paper excludes premium discount funding approaches and PPPs aimed at covering natural assets. Also, secondary market effects are not detailed, e.g., valuation of properties. Additionally, social questions, such as addressing affordability challenges driven by economic factors like low income or unemployment, are considered out of scope.

Challenges of today's PPPs.

State of today's PPPs to provide NatCat coverage.

Out of 12 global PPP examples[ii], three archetypes can be characterized[14]. (Figure 3)

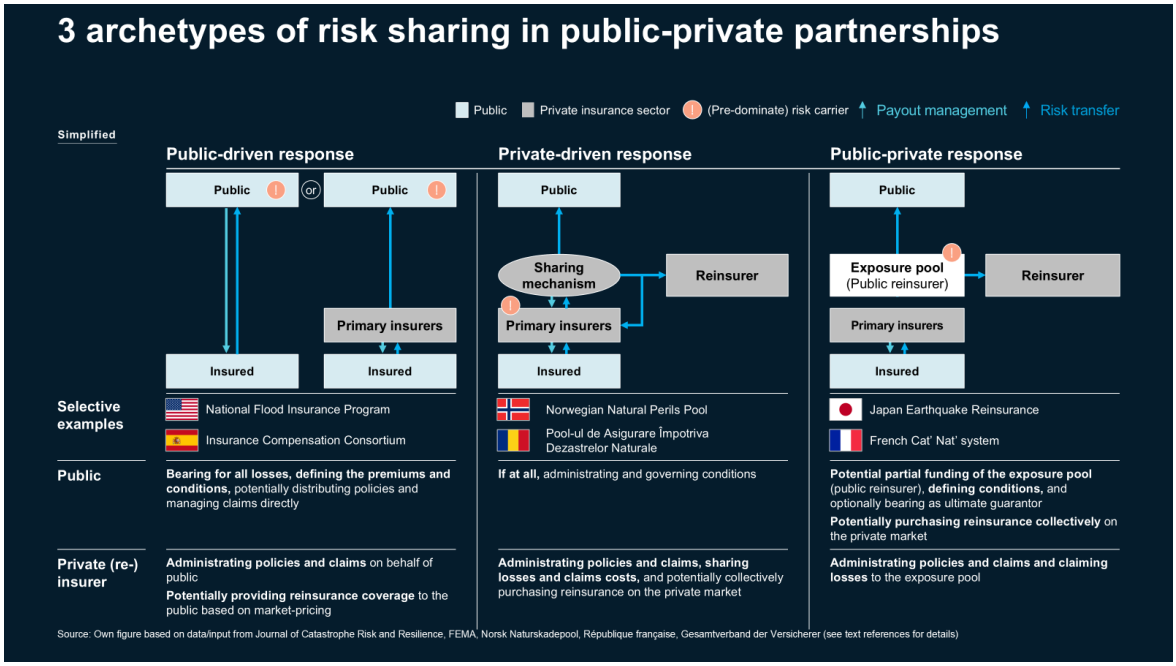
Public-driven response. Policies are underwritten by the public, which retains the risk. Policies are either distributed directly to policyholders or serviced and administered through private insurers. The advantage is the ease of implementation; however, this transfers risks away from the private insurance market. Therefore, such policies are often structured as a 'market of last resort' and are targeted at those unable to purchase insurance coverage in the private market[15, 16].

Private-driven response. In a private response, insurers retain the risk and share losses, along with associated costs, proportionally to their market share. Participating insurers may collectively purchase reinsurance coverage. This structure retains risks within the private market[17].

Public-private response. Risks are ceded to a joint exposure pool – often managed by a state-owned reinsurer. Typically, the risk capital is funded through a combination of public contributions and levies on insurance premiums. The exposure pool may transfer risk to the private reinsurance market. Optionally, the public can act as the ultimate guarantor. This limits the exposure for insures[18, 19].

[ii] CCS (ES) – Consorcio de Compensación de Seguros; CCR (FR) – Caisse Centrale de Réassurance; NNPP (NO) – Norwegian Natural Perils Pool; CANARA (BE) – Caisse Nationale Aux Risques d'Assurances Exceptionnelles; NCI (IS) – Natural Catastrophe Insurance of Iceland; SNHP (CH) – Système National d'Assurance contre les Hauts Risques; PAID (RO) – Pool-ul de Asigurare împotriva Dezastrelor Naturale; JER (JP) – Japan Earthquake Reinsurance; FloodRe (UK) – Flood Reinsurance Scheme; DSC (DK) – Danish Storm Council (Stormrådet); NFIP (US) – National Flood Insurance Program; ARPC (AU) – Australian Reinsurance Pool Corporation

Figure 3



Challenges in establishing and ensuring the effectiveness of PPPs.

Fragmented, unclear, and changing stakeholder responsibility. Due to the large number of stakeholders involved – across both the public and private sectors – with diverse responsibilities and frequent changes, ensuring continuity and rapid decision-making often proves challenging.

For the public, assigning responsibility may not always be straightforward – for example, in France, an inter-ministerial solution was created, including the Ministries of Interior, Finance, and Ecology[20]. Given the unique nature of the insurance business model, non-insurance-affiliated stakeholders may sometimes lack understanding and trust in the ability to model and forecast NatCat losses and, therefore, in the effectiveness of PPPs[21]. Moreover, fragmented responsibilities across different levels of administration can hinder the execution of decisions. For example, countries often operate across national, state/county, and community tiers – making it more difficult to directly enforce mitigation strategies developed at higher tiers – especially if political parties in office differ on the national and community levels. Furthermore, as elected politicians typically rotate every two to six years in alignment with electoral cycles, a renewed justification and revision of the issue's relevance and yet-to-be-developed solutions are regularly required [22]. Thus, it can be challenging for the private sector to anticipate the expectations of the public and their desired involvement.

In addition, a country's insurance sector needs to align, as individual insurers may have differing interests depending on their regional footprint, country of origin, capital strength, and legal structure – thereby facing different societal pressures to respond to the national NatCat challenge. However, coordinating an aligned position between insurers is challenging due to competition laws[23].

Financial culture of post-event 'special-purpose' funding versus pre-event reserve building. The public sector typically operates within the constraints of annual budgets, which are subject to political approval and financing and often run at a deficit, which puts pressure on additional spending. These budgets are often broadly defined at the beginning of a legislative term, with limited scope for annual adjustments. Introducing premium subsidies to enhance insurance penetration would entail additional public expenditure, while the associated benefits may only become apparent beyond the current party's term of office. Thus, it may be politically easier for governing parties to announce short-term 'special-purpose' funding in response to a NatCat event. This approach might be easier to socially and politically justify than allocating resources for proactive risk prevention. Consequently, PPPs as a long-term solution may gain political attention, driven by public pressure in the wake of a recent NatCat event, but this attention often fades over time as the sense of urgency and societal focus diminish. As a result, if a PPP structure has not been included in a party's election proposition, it becomes difficult to establish one during their time in office[24].

In contrast, insurers prefer a long-term solution by building reserves upfront to absorb NatCat events, as they are required to at least cover their cost of capital and deliver stable financial results. Therefore, offering NatCat coverage below the technical price to ensure affordability represents a societal contribution, but not a commercially viable business model – requiring buy-in from shareholders.

Public sector perceived as default guarantor. The public often provides financial aid in the aftermath of disasters, particularly when such events attract public attention (see 'special-purpose' funding above). As a result, remaining uninsured against NatCats does not necessarily equate to forgoing financial support, which in turn diminishes the incentive to purchase coverage[24].

Underestimation of risk exposure and lack of preparedness. Overall, property owners tend to underestimate their exposure to NatCat risks and therefore do not even intend to purchase coverage. For example, in the United States, 69% of individuals who have not purchased homeowners' insurance underestimate the level of risk they face[25].

Accumulation of risk exposure. NatCat events often occur in a localized and concentrated manner, affecting many properties in the same geographic area simultaneously. This risk accumulation makes it financially unviable for a single insurer to underwrite all properties within a high-risk region. Instead, it necessitates the involvement of multiple risk bearers to adequately diversify and absorb potential losses[26].

Mistrust and inefficiencies in claims settlement. Sometimes there may even be a lack of confidence in insurers' ability to deliver timely and adequate claims payments. For example, in the aftermath of severe NatCat events, insurers have, at times, been overwhelmed by the volume of claims, exceeding their operational capacity and leading to delays in payouts[27]. In addition, in some countries, disaster-related payouts have been diverted from their intended purpose. For example, in the Philippines, there were instances where fictitious individuals falsely claimed to have been affected, so-called 'ghost beneficiaries'[28]. In other cases,

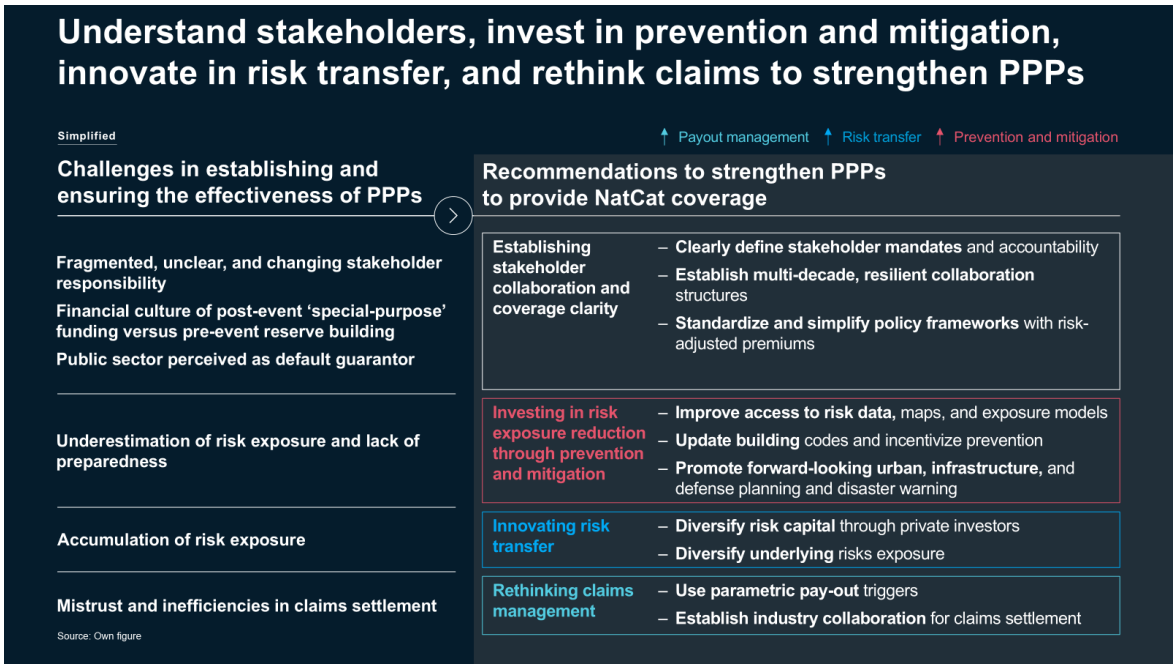
payouts from resilience coverage to the public were (partially) redirected toward community projects rather than being fully disbursed to the affected and eligible policyholders.

Recommendations to strengthen PPPs to provide NatCat coverage.

A strengthened approach to PPPs.

In summary, for every challenge in establishing and ensuring the effectiveness of PPPs, a recommendation to strengthen them is available. (Figure 4)

Figure 4



Establishing stakeholder collaboration and coverage clarity.

Clearly define stakeholder mandates and accountability. To enable an efficient dialogue, both the public and private sectors should designate and mandate accountable parties. To ensure continuity and reduce political volatility, this responsibility should be assigned to a technocratic role. Each party should be involved in either appointing the responsible or participating in discussions directly. Each of the two approaches is intended to foster cross-party ownership. Therefore, the insurance industry should proactively engage with the parties ahead of elections to ensure that PPPs are considered in their election propositions. The insurance industry itself, while fully adhering to competition laws, should develop a shared position, potentially orchestrated through an insurance association serving as a central interlocutor – such as the French Insurance Federation (FFA).[29].

Establish multi-decade, resilient collaboration structures. Establishing a public–private working group could serve as the forum to develop a technically sufficiently detailed proposal, with options for key choices. This could offer public decision-makers confidence that key issues have been thoughtfully addressed, while still preserving flexibility for political

leadership to shape the structure. To strengthen this approach, the working group should be institutionalized in a dedicated entity. Such an entity could be structured with three levels of governance: an executive team, a governing board, and an advisory panel. Members should be nominated by and include representatives from the public sector (e.g., relevant ministries or parliamentary bodies) and the private sector (e.g., insurance associations). Governance terms could be fixed and decoupled from political election cycles, enabling long-term decision-making that is resilient to short-term political changes. A comparable structure is the 'California Earthquake Authority'.[30]. An extreme example of such a structure could resemble the governance structure of most central banks — independent, yet clearly mandated with specific objectives that guide decision-making. This entity should be mandated to make binding decisions across all levels of public administration, particularly in defining prevention and mitigation investments. It should also review progress and, together with the private sector, hold the public sector accountable for their implementation. In addition, the entity should clearly communicate expectations to the insurance industry. In cases of limited capabilities, other institutions can be involved. For example, the World Bank has supported the establishment of risk pools in less developed countries.[31].

Standardize and simplify policy frameworks with risk-adjusted premiums. To enhance clarity and transparency of coverage, a standardized policy with simplified wording should be introduced. The policy wording should differentiate what is covered and what is not – such as property versus land versus contents, and in the case of corporate insurance, create clarity around business interruption coverage. Therefore, coverage must be distinct from other types of insurance and perils to make potential protection gaps straightforward to understand, even for non-insurance-affiliated stakeholders. To minimize administrative complexity and to allow for cross-subsidization, this policy could be automatically added to each property policy.[32]. This would enable sufficient penetration, financing, and risk diversification, and support mandatory participation for property owners and insurers. However, the public faces an ethical dilemma regarding whether to support compensation for individuals without coverage in the event of a NatCat loss.

Premiums should reflect the underlying risk to achieve risk-adjusted behavioral steering through premium discounts for demonstrable resilience measures undertaken by policyholders. Therefore, insurers should adopt a more granular pricing model — potentially including micro-level zoning. This method would allow for more precise pricing and reward policyholders with lower premiums if they are in less exposed areas or invest in prevention measures. Premiums should also incorporate anticipated building code upgrades, which may increase rebuilding costs due to the use of more resilient materials.[33]. An alternative approach that balances pricing simplification for insurers with risk-adjusted behavioral steering is the implementation of a flat-rate premium differentiated by categories for location and undertaken risk prevention measures.

Investing in risk exposure reduction through prevention and mitigation.

Improve access to risk data, maps, and exposure models. The (re-)insurance industry has access to risk maps, data, and forward-looking risk models. These must be made accessible to the stakeholders involved to raise awareness and inform decision-making. This includes property owners who may invest in risk prevention, property buyers, banks (e.g., to link mortgages to appropriate prevention measures), and public authorities (e.g., to inform urban and infrastructure planning and smarter building code updates).

Update building codes and incentivize prevention. Prevention is highly effective for reducing losses. In California, every USD 1 invested in wildfire-resistant rebuilding is estimated to save USD 210 in avoided future losses[33]. Property-linked mitigation can occur either pre-event (e.g., retrofitting) or post-event (e.g., 'build back stronger'). In the case of wildfires, such measures may include non-combustible roofing, fire-rated siding, and ember-resistant vents, among others[8].

Public authorities could facilitate access to and incentivize resilient retrofitting and rebuilding – through measures such as subsidies, grants, low-interest loans, or tax benefits for prevention investments[34].

Promote forward-looking urban, infrastructure, and defense planning and disaster warning. The public must take greater responsibility in prevention and mitigation. For example, a forward-looking approach to urban planning should designate new development areas based on future risk exposure – helping to prevent construction in zones that are expected to become high-risk. In addition, for the wildfire peril, this could include infrastructure measures such as widening roads for evacuation, improving water systems for high-capacity hydrants, brush clearing, or creating defensible space around structures[8]. Other options include defense plans and technologies, such as satellite images, drones, and modern communication channels – such as social media, text messaging, and similar tools – to alert the public and coordinate evacuations.

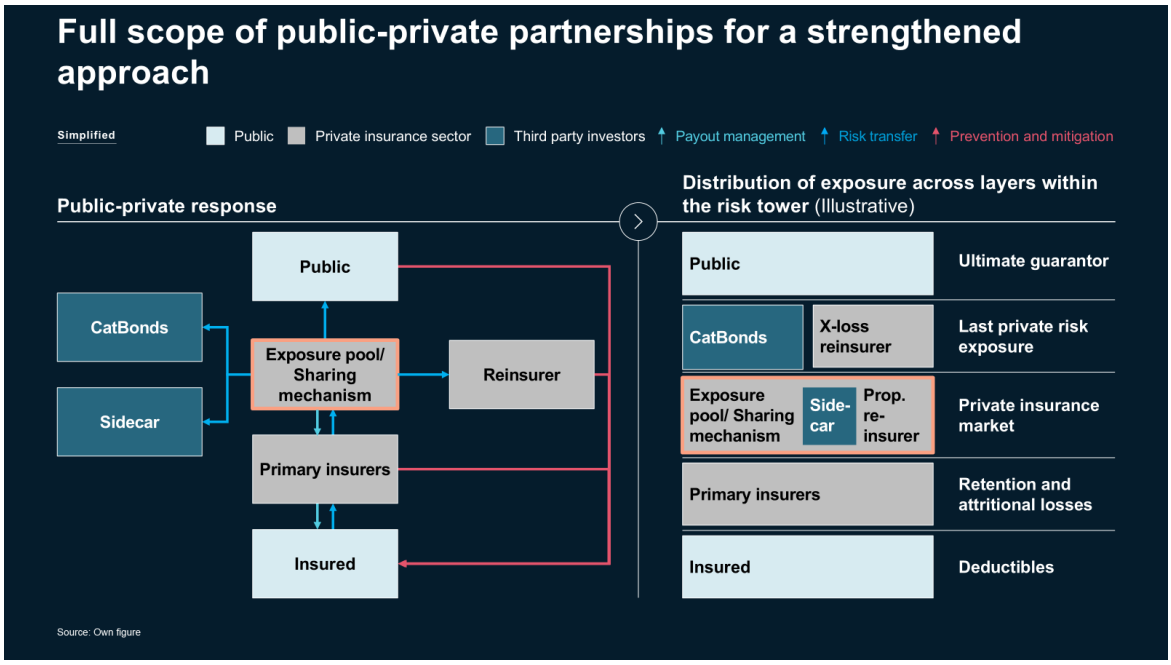
Fostering these investments by local communities could be achieved by granting discounted NatCat coverage of a PPP only to inhabitants of communities that (plan to) make these mitigation investments, similar to the NFIP program in Florida[16].

Innovating risk transfer.

Diversify risk capital through private investors. The insurance industry should retain as much exposure as possible within the private market, in line with its fundamental role as a risk bearer. However, additional private capital should be used to distribute and manage the exposure accumulation risk. In addition to traditional reinsurance, the centralization of risks can facilitate the mobilization of third-party capital through insurance-linked securities (ILS), thereby expanding and diversifying the risk-bearing capital base to address the exposure accumulation challenge. ILSs may be particularly compelling to institutional investors, as they can represent an ESG-compliant asset class with a low correlation to equity markets and are self-liquidating at the end of the duration. ILSs allow matching varying investor risk-

return (e.g., in terms of locations and perils)[35, 36]. Potential solutions include sidecars (more frequent exposure to lower risks) and catastrophe bonds (CatBonds) (exposure linked to pre-defined loss events). Currently, CatBonds are primarily accessible to institutional investors due to large tranche sizes (typically exceeding USD 100 k). Making them available to private investors – through smaller tranches and adapted distribution channels – could help mobilize additional private capital[37]. However, the exposure must remain within manageable limits for the private sector. To ensure financial stability, the public sector may serve as the ultimate guarantor. These risk-retention structures can reduce and cap insurers' tail-risk exposure, helping to lower the technical price and consequently the premium loadings charged to policyholders. (Figure 5)

Figure 5



Diversify underlying risk exposure. Expanding the scope of PPPs can further diversify the risk exposure, reducing the technical price. For example, in regions exposed to multiple NatCat perils, coverage could include several perils under a single program. Geographically, PPPs can be extended beyond national borders. For the European Union, this approach could reduce the required risk capital by 40 percent[14].

Rethinking claims management.

Use parametric pay-out triggers. Parametric insurance offers an alternative solution to traditional indemnity-based coverage. This enables rapid payouts immediately following a disaster, thereby providing essential liquidity for recovery. Its structural simplicity reduces administrative expenses, legislation costs, and claims settlement uncertainty[38]. These advantages are especially relevant for NatCat events, when a significant number of policyholders are affected, as claims management teams and processes of insurers may be overwhelmed[27]. However, parametric triggers also pose some limitations in effectiveness, such as acceptance of policyholders and the available data to link losses to an index[39].

Establish industry collaboration for claims settlement. Insurers should – in addition to claims specialists – train non-claims staff in claims settling to support in case of NatCat events. In addition, insurers could collaborate on claims management. For instance, policyholders could be allowed to file claims covered under the PPP at any PPP-participating insurer, regardless of the original policy provider. Insurers would first settle the claims to support policyholders and in the aftermath subsequently reconcile and settle the associated payouts among themselves.

To avoid 'ghost beneficiaries', a two-fold approach could be applied. First, utility companies could cooperate with the insurance industry to identify affected policyholders, based on deviations in household energy or water consumption. Second, to minimize misuse, claims payout should be made available through predefined channels with upfront registration, such as verified digital bank accounts.

Conclusions and outlook.

It is common sense that 'secondary perils are not secondary anymore'[40, 41]. Thus, challenges and economic losses associated with NatCats are expected to accelerate. The insurance sector is uniquely positioned and needs to elevate its role in 'glocal' (global and local) leadership to strengthen societal resilience. While insurers remain the primary bearer of risks, PPPs have significant importance in managing NatCat events. Insurers must innovate risk transfer and rethink payout and claims management. But the most critical aspect is establishing multi-decade resilient and effective collaboration governance between public and private stakeholders to drive risk exposure reduction through prevention as the best protection and mitigation. The urgency to act is now.

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