Environmental Defense Fund

Insurers' Resilience Toolkit

A PRACTICAL TAXONOMY OF CLIMATE ADAPTATION AND RESILIENCE MEASURES

for and by the insurance sector

Start

Foreword

July 2026

We live in a world where societal-scale hazards abound. Geopolitical conflict. Cyberattacks. Pandemics, and, of course, climate change.

These are not the hazards our hunter-gatherer ancestors faced. Today's hazards are globalized, interconnected, and self-reinforcing. They are products of human systems, shaped by interdependent economic, technological, social, and political decisions made in pursuit of progress. Responsibility and vulnerability are unevenly distributed, and no single tool or actor can address them alone. This is especially visible at the intersection of climate change and insurance.

Insurance does not prevent climate change. It operates downstream, within the constraints of pricing, capital, regulation, and market expectations. Yet even within these limits, it plays a decisive role in determining who bears climate-related losses, and how severe their consequences are. By absorbing and redistributing financial shocks, insurance moves risk from people and businesses to balance sheets better equipped to bear it, underpinning recovery and resilience.

At the same time, the insurance industry influences how climate risks evolve. Through underwriting, investment, and client engagement, it steers capital flows toward or away from adaptation, and toward or away from greenhouse gas emissions. Insurance therefore determines not only how losses are distributed, but how risk accumulates over time.

This toolkit focuses on the adaptation side of the equation. It offers a typology of measures through which insurers, reinsurers, and brokers support adaptation and resilience outcomes for individuals, businesses, communities, and governments. It is grounded in a simple premise: to catalyze change, we must highlight emerging practices where societal impact and business value coincide.

Whether you're an industry expert or simply insurance-curious, we hope this work informs, inspires, and invites further dialogue.

How to Use This Resource

This slide deck is designed for flexible, non-linear navigation. Use the navigation bar at the top of each slide to jump directly to any section that interests you most, rather than following a fixed sequence. Simply click on a section title to move to its content and explore the material in the order that best suits your needs.

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Executive Summary

Physical climate risks are already exceeding insurable limits in many regions, threatening coverage availability and affordability. Over the last 20 years, insured losses have increased by an average of 5-7 percent per year. Based on current trends, insured losses could reach $148 billion in 2026 and as much as $186 billion by 2030[1].

In response to expanding exposures and recognizing the increasingly material impacts of climate change on their businesses, insurers and reinsurers are increasingly moving beyond their historical role as risk carriers to become climate resilience partners, actively supporting businesses, governments, and communities.

This toolkit maps, categorizes, and analyzes insurance sector-led adaptation and resilience (A&R) measures, offering a practical taxonomy to recognize the varied resilience-building practices or actions the sector has to offer. Throughout this research, over 200 A&R measures were identified across underwriting, pricing, advisory, investment, and partnerships. These have been categorized as follows:

Risk Transfer Products
e.g., parametric insurance

Incentive-based Mechanisms
e.g., reduced premiums or favorable pricing

Risk Assessment, Advisory & Tools
e.g., risk quantification and engineering

Research & Education
e.g., physical vulnerability testing

Corporate Commitments
e.g., industry coalitions

Funding & Investment Activities
e.g., financial vehicle deployment

The analysis, strengthened by 30+ industry interviews and 25 case studies, reveals the various measures the insurance sector is already implementing to support A&R outcomes while also delivering business value. This work also provides deeper insights into the structural barriers and enabling conditions that influence the replicability and scalability of these measures across the sector.

What structural barriers impede scale?

- Organizational capabilities are constrained by misaligned A&R strategies and internal silos.
- The economics of climate resilience remain unresolved, with the question “who will pay?” inhibiting scale.
- Limited awareness and understanding of climate risk and insurers’ capabilities undermines trust and uptake.
- Regulation can act as both an enabler and a constraint.

What conditions enable scale?

- Coordinated action and strategic partnerships are essential to delivering resilience outcomes across sectors and regions.
- Climate intelligence and analytics are foundational to resilience decision-making across the ecosystem.
- Long-term engagement is critical to aligning behavioral and financial incentives.

[1] Swiss Re Institute, 2026.

Context

The world is rapidly exceeding safe climate thresholds.

Floods

PAKISTAN, 2022

1739 dead, USD40b in damage

Wildfires

CALIFORNIA, 2025

Over 200,000ha burnt

Tropical Cyclone

HURRICANE MELISSA JAMAICA, 2025

Strongest-ever landfalling hurricane to hit Jamaica

Floods

VALENCIA, SPAIN, 2024

One year's worth of rain in just 8 hours

Wildfires

CANADA, 2023 WILDFIRE SEASON

Produced carbon emissions comparable to the annual carbon emissions of large nations

Drought

HORN OF AFRICA DROUGHT 2020-2023

Over 30m people affected by drought-related food insecurity

Climate change is driving more frequent and severe hazards, with an ever-growing number of geographies facing:

- Record-breaking temperatures;
- Severe floods, storms and wildfires;
- Cascades of multiple, overlapping hazards;
- Social and environmental damages.

These impacts are also translating to significant economic losses:

$1.2 trillion

is the estimated **annual cost of physical climate risks** to the world's largest companies by the 2050s[2]

$267 billion

in average **uninsured annual losses** over the past decade, with a global protection gap of 58%[3]

[2] S&P Global, 2025; [3] Swiss Re Institute, 2026.

Context

Insurance has long been a pillar of financial resilience...

The insurance sector helps societies withstand and recover from climate-related disasters. As such, it provides a stable foundation for all other economic sectors. By pooling risks and spreading costs over time and geographies, the insurance sector provides financial protection and supports faster recovery for people, businesses, communities and nature[4]. Its importance is fourfold:

- **Financial shock absorption:** Converts natural catastrophe losses into predictable, manageable costs
- **Recovery:** Enables households, businesses, and governments to rebuild after disasters
- **Economic continuity:** Reduces fiscal stress and limits cascading impacts of physical climate risks
- **Risk signaling:** The pricing of insurance policies acts as a signal to inform consumer and corporate behavior

...but rising climate-related losses are jeopardizing the sector's ability to be a safety net.

The insurance sector is experiencing significant impacts from growing physical climate risk[5]:

- More frequent and severe extreme weather events increase losses and volatility
- Rising exposures and compounding risks challenge insurance coverage affordability
- The global protection gaps is widening, especially in high-risk and vulnerable regions

In the face of increasing climate pressures, the industry has responded with:

- Raising premiums or deductibles
- Stricter terms and conditions
- Reducing coverage or market exits

This preserves short-term solvency but weakens the long-term resilience of socio-economic systems, creating gaps in affordability and availability of insurance coverage, especially in frontline communities.

[4] See EDF report "Nature for Insurance and Insurance for Nature" for additional insights on how insurance can help protect and restore nature, and how nature can reduce insurable risk.

[5] Climate risk is the interaction of hazard, exposure, and vulnerability. See **Appendix I** for definitions.

Context

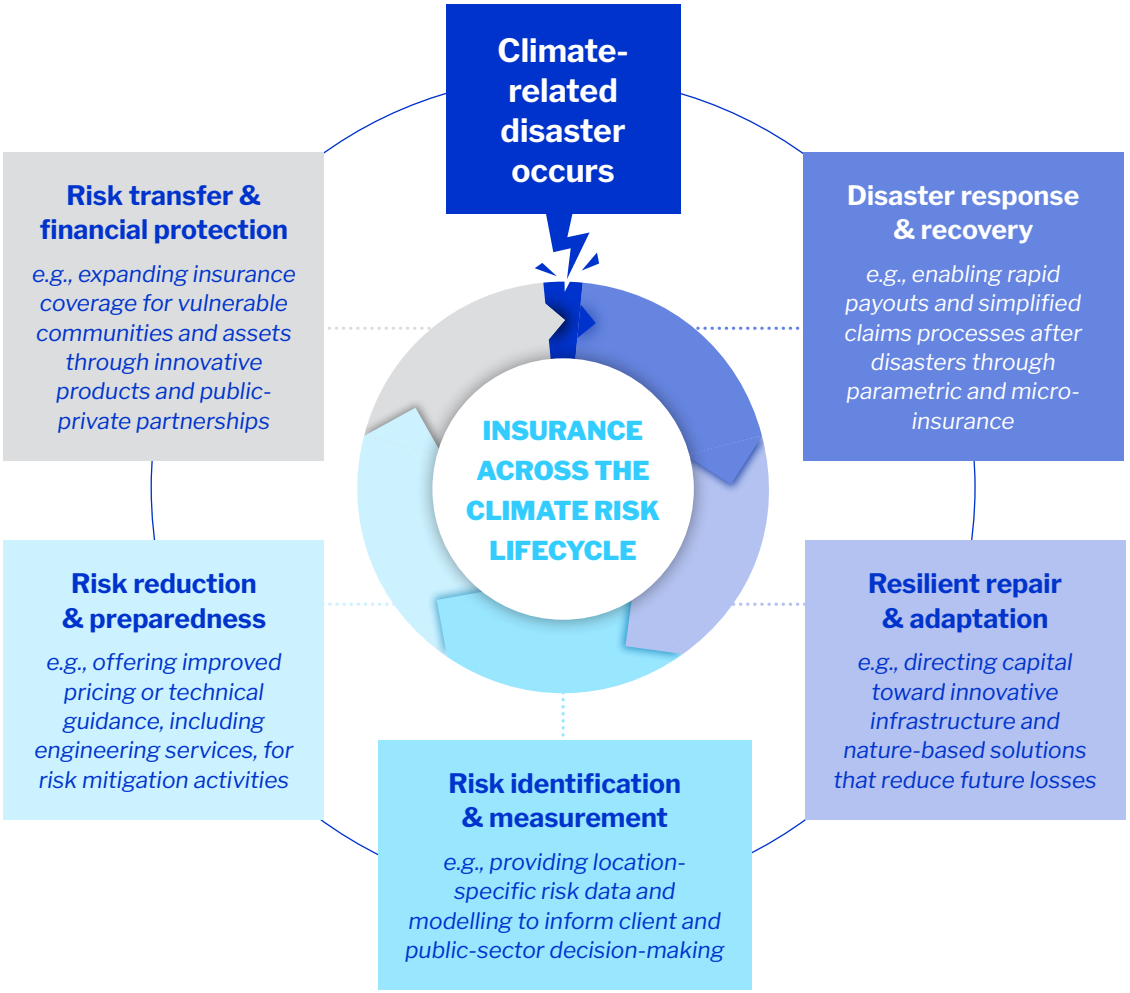
The insurance sector is already advancing climate adaptation and resilience

Against the backdrop of climate-related loss and damage, much is being said about what insurers can do to advance climate adaptation. Yet, a great deal is **already happening**.

As both risk carriers and major institutional investors, the insurance sector is uniquely positioned to support and incentivize climate adaptation and resilience (A&R) across households, businesses, and entire communities.

Insurance is evolving from paying for losses to reducing risk and enabling adaptation. Around the world, insurance players are developing new products, refining risk assessments, and providing tools that help customers better understand and manage their vulnerabilities.

This toolkit highlights these efforts, showcasing the wide range of approaches that already exist and can be used by the sector to encourage A&R in a variety of industries and geographies. It demonstrates the sector's growing role not only as a financial safety net, but also as a catalyst for proactive risk management and behavioral change across the climate risk lifecycle.



Methodology

We mapped and analyzed existing insurance-led A&R measures to deliver systemic insights.

IDENTIFY

Desk research mapping
Comprehensive review of existing literature, reports, initiatives and case studies

ANALYZE

200+ A&R measures identified
Across regions, sectors, hazard types and beneficiary groups

30+ interviews
With insurers, reinsurers, brokers, development actors, researchers, civil society organisations[6]

Analysis + Categorization
Thematic analysis and taxonomy development[7]

CATALYZE

Taxonomy of A&R insurance measures
Structured classification of measures across key dimensions

25 case studies of varied A&R measures
Including a focus on resilient oceans and coastal communities

Cross-cutting themes and patterns
Structural barriers and enabling conditions for replicability and scalability

[6] See **Appendix II** for an overview of the practitioners interviewed;

[7] See **Appendix III** for the research guiding questions.

Methodology

We examined how insurance can – and already does – support A&R

This research develops a **taxonomy of insurance sector-led measures that contribute to climate adaptation and resilience (A&R)**. It organizes these measures according to the primary mechanism through which they deliver A&R outcomes across the climate risk lifecycle.

What the taxonomy does:

- **Maps** the emerging landscape of insurer-led A&R initiatives
- **Organizes** the different tools, mechanisms and initiatives into a structured analytical framework
- **Demonstrates** how insurers can contribute to A&R beyond traditional risk transfer products
- **Inspires** scaling and replication of impactful approaches

What do we mean by A&R insurance measures?

"A&R insurance measures" is our term for actions or practices employed by insurers, reinsurers, and brokers—often in collaboration with public or philanthropic agencies, data specialists, or investment partners—that enhance the ability of societies, assets, and systems to anticipate, withstand, and recover from climate and disaster risks.

These measures may:

- Be led by the private sector, public sector, or a private-public partnership (PPP)
- Target specific or multiple climate hazards;
- Have identifiable beneficiaries;
- Deliver co-benefits;
- Be associated with a primary resilience theme[8].

NOTES:

- *This categorization is an analytical construct designed to organize insurance-led A&R measures. In practice, certain initiatives may cut across categories.*
- *This research is not exhaustive and does not provide a comprehensive mapping of all existing A&R measures in the insurance sector, nor of all possible categories and types of such measures. Rather, it seeks to highlight illustrative examples that shed light on key mechanisms, opportunities, and barriers to scaling these approaches.*
- *"(Re)insurers" is our shorthand for "insurers and reinsurers." Reinsurers essentially provide insurance for insurance companies; they serve as a financial backstop in case an insurer experiences especially large and/or widespread losses.*

[8] See **Appendix IV** for a list of the eight resilience themes used to classify the A&R insurance measures.

A&R (Re)insurer Taxonomy

Click on one to jump to the category

A&R (Re)insurer Taxonomy

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Risk Transfer Products

Insurance and capital market instruments that transfer the financial impacts of climate-related hazards to insurers or investors, providing financial protection or liquidity before and/or after climate shocks.

Key insight: Risk transfer products remain essential for absorbing losses. But their contribution to long-term adaptation depends on affordability, data quality, public support, and integration with risk reduction measures.

View the types of Risk Transfer Product measures

"Insurance can be positioned as a mechanism for improving access to timely liquidity during periods of financial volatility, particularly in emerging and developing contexts. In this framing, insurance is not only a tool for post-event loss compensation, but also part of a broader financial resilience strategy."

A senior executive
at a global reinsurer

Risk Transfer Products

Type of measure	Definition	Contribution to A&R	Maturity	Commercial viability	Key constraints & limits	Existing example
Parametric Insurance	Insurance policies that trigger at predefined physical thresholds (e.g. total rainfall, maximum wind speed, etc.). Payouts are based on whether the threshold is crossed, rather than the amount of damage. This typically eliminates the need for loss adjustment and shortens the claims process	• Faster liquidity after disasters • Reduces recovery delays • Enables early action and anticipatory response • Can support adaptation when linked to risk reduction or nature-based solutions	• Widely piloted • Increasing uptake in particular in sovereign, humanitarian and SME contexts	• Commercially viable in some markets but often requires subsidies, donor support or public partnership in high-risk contexts	• Regulatory unfamiliarity in some jurisdictions • Basis risk—the risk that a payout is less than (or greater than) the amount of financial loss and damage—can undermine trust • Requires availability of high-quality data	• AXA Mangrove Protection • Oxfam Pilipinas B-Ready • Practical Action IBFI • WTW & Rare's livelihood insurance • Swiss Re, CRA & SEWA's heat index coverage
Capital Market Instrument	Instruments that enable insurers and other risk-bearing organizations (e.g., governments) to transfer risk to investors and capital markets. Examples include insurance-linked securities such as catastrophe bonds	• Greater systemic risk absorption • Stabilization and increased resilience of public and insurance finances • Supports continuity of coverage under rising climate losses	• Fast growing market • Mainly used by large insurers in developed markets, as well as sovereigns and risk pools	• Increasingly attractive to investors as a way of diversifying portfolios • Scalable when transaction costs are justified	• High transaction and structuring costs • Limited suitability for small or frequent events • Requires availability of high-quality data	• NCIUA Resilience Cat Bond • Generali Lion Re DAC • IBRD, Aon, & Swiss Re Jamaica Cat Bond • Danish Red Cross & Howden parametric volcano Cat Bond • MS Amlin Phoenix Re
Specialty & Emerging Products	Tailored insurance products for novel asset classes, risks or contexts (e.g. infrastructure performance guarantees)	• Reduces protection gap/ improves insurance access • Enables coverage for assets or risks previously uninsurable	• Innovative but fragmented: mostly pilots or bespoke deals	• Often relies on anchor clients, blended finance or public backing	• Gaps in product knowledge • Underwriting uncertainty due to climate risk unpredictability • Requires the availability of high-quality data	• WTW parametric 'cat wrapper' for blue bond • CCRIF Caribbean Oceans and Aquaculture Sustainability Facility (COAST) • Swiss Re insurance for forest carbon credits with goodcarbon
Coverage Extension Products	Insurance products or endorsements extending coverage to uninsured or underinsured populations, perils or geographies (e.g. microinsurance, add-on covers)	• Reduces protection gap • Improves access to financial protection • Support inclusive resilience	• Fragmented	• Often weak if no scalability potential • May require philanthropic partnerships or subsidies	• Affordability constraints • Consumer awareness and trust • Regulatory barriers	• Munich Re US Inland Flood Endorsement • Kettle Excess Wildfire Product with PartnerRe & Amwins • Howden MiCRO products

A&R (Re)insurer Taxonomy

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Incentive-based Mechanisms

Mechanisms that use pricing, coverage design, or claims structures to incentivize risk-reducing behavior and support policyholder investment in climate resilience, including prevention, retrofitting, and rebuilding.

Key insight: Incentive-based mechanisms can effectively drive risk reduction and resilience investments by aligning financial signals with behavioral change. But their impact depends on robust data, clear customer value, regulatory flexibility, and the ability to overcome upfront cost and implementation barriers.

View the types of Incentive-based mechanism measures

Incentive-based Mechanisms

Type of measure	Definition	Contribution to A&R	Maturity	Commercial viability	Key constraints & limits	Existing example
Risk-based premium or pricing	Premium adjustments (including discounts, rebates or differentiated pricing) based on policyholder exposure and actions take to reduce risk, e.g., investments in resilience measures or prevention services	• Encourages A&R investments • Enhances risk awareness through price signals • Supports behavioral change by reflecting the cost of climate vulnerability	• Widely applied in traditional insurance pricing • Still developing for forward-looking climate risks and adaptation measures	• Aligns with core underwriting practices • Commercially attractive if transparent and meaningful to customers • Effective where resilience benefits can be quantified and integrated into pricing models	• Requires robust, standardized and verifiable data on risk reduction effectiveness • Challenges in modelling future climate risks • Potential affordability challenges for high-risk policyholders	• WTW & TNC Tahoe Donner wildfire policy • FM Resilience Credit • CSAA Wildfire Protection Discounts • Interpolis green roof initiative • AXA & Marsh Sustainability-Linked Insurance
Resilient rebuilding	Policy features or add-ons that enable claim settlements to incorporate resilience-enhancing improvements rather than strictly restoring assets to their pre-loss condition	• Enables “Build Back Better” approaches and breaks the cycle of rebuilding risk • Reduces future vulnerability and losses • Strengthens long-term portfolio resilience	• Emerging practice	• Potentially strong in the long term through lower future claims and improved portfolio resilience • Benefits depend on the time horizon and the enactment of loss reduction measures	• Higher upfront claims costs for the insurer and/or investment cost for the policyholder • Uncertain return for insurers if policyholders switch insurance provider post-repair • Requires policyholder acceptance • Limited number of common resilience standards and benchmarks • Regulatory and legal constraints: must avoid potential for policyholders to profit from their insurance	• Flood Re Build Back Better • Allianz Rebuild Better More information on residential rebuilding in the US from EDF research: Climate-ready Rebuilding Endorsements

A&R (Re)insurer Taxonomy

Click on one to jump to the category

Risk Assessment Advisory & Tools

Tools, platforms, and advisory services that improve clients' or policyholders' understanding of physical climate risks and enable them to make decisions to mitigate or manage risks.

Key insight: Risk assessment advisory and tools play a critical enabling role by improving visibility and understanding of climate risks and supporting informed decision-making by public and private actors. But their impact depends on data quality, usability, and the ability and willingness of clients to translate insights into effective adaptation actions.

View the types of Risk Assessment Advisory & Tool measures

"Modelling of natural catastrophe risk and its impact on asset portfolios is core to the risk-based pricing employed by insurers in setting premiums. Insurers actively make risk reduction recommendations, and any resilience actions taken by asset owners form part of the overall modelling and pricing process."

Claire Wilkinson, Managing Director, Alternative Risk Transfer Solutions, UK, WTW

Risk Assessment Advisory & Tools

Type of measure	Definition	Contribution to A&R	Maturity	Commercial viability	Key constraints & limits	Existing example
Risk Quantification & Analytics	Software-as-a-service platforms or analytics services provided by insurers to quantify current and future physical climate risks, aiding corporate or retail customers in decision-making	• Improves visibility and understanding of current and future climate risks • Enables risk-informed investment and adaptation decisions • Supports integration of climate risk into business planning	• Rapidly evolving • Increasing integration of forward-looking scenarios	• Growing commercial offering, especially for corporate clients • Growing demand, also driven by regulation and disclosure needs (e.g., ISSB and CSRD)	• Data gaps, especially at most granular level (asset level) • Uncertainty in forward-looking models • Balance between accessibility and ease of use and interpretability vs. granular information and detailed data	• AXA Altitude • Allianz CAReS • Zurich Climate Spotlight • WTW Risk IQ • Munich Re Location Risk Intelligence • Covéa Covisiomap • Marsh Sentrisk • FM Climate Resilience Tracker
Early Warning & Monitoring Systems	Systems that provide (near-) real-time hazard alerts and monitoring to policyholders, enabling timely protective actions before or during an event	• Reduces exposure by enabling early protective action • Lowers loss frequency and severity • Strengthens preparedness and crisis response capacity	• Well-established technologies • Increasingly integrated with digital platform or mobile services	• Can be embedded in insurance products rather than standalone revenue streams, and delivered in partnerships with public agencies or tech firms	• Effectiveness depends on user behavioral response • Potential coverage gaps (data, connectivity, infrastructure) in some regions	• Covéa SMS alerts • PICC WeChat alerts • ARC Africa RiskView
Open Access Information Tools	Publicly available risk information platforms or indices (co-)developed by insurers providing broad access to climate risk data and insights	• Raises general awareness of climate risks • Supports public and private decision-making • Promotes transparency and risk literacy	• Increasingly used but still evolving in sophistication • Growing integration of and interoperability with public data sources	• Reputational and strategic value but limited direct revenue generation if not co-developed with public institutions	• Limited granularity for asset-level decision-making • Risk of misinterpretation by non-expert users and unclear accountability for decisions based on open data	• Allianz GloRiA • AXA XL Coastal Risk Index • Chubb Agriculture Resource Hub • FM Resilience Index & NatHaz Toolkit
Risk Engineering & Consulting	Expert advisory services provided by insurers to assess physical risks and recommend tailored prevention, mitigation and resilience measures at asset or portfolio level	• Translates risk insights into actionable adaptation measures • Supports design and implementation of adaptation strategies • Reduces exposure and expected losses through preventive design and behavior change	• Well established in commercial lines, now expanding to climate resilience applications	• High value-add service for corporate clients and strengthening client relationships and retention	• Dependence on client willingness to implement recommendations • Limited scalability to small businesses and retail customers because resource-intensive	• AXA Climate • Zurich Resilience Solutions • WTW Risk Engineering • HDI Risk Consulting

A&R (Re)insurer Taxonomy

Click on one to jump to the category

Research & Education

Activities that generate knowledge and innovation on climate risks and resilience solutions, building awareness or technical capacity among industry actors, policyholders, and regulators.

Key insight: Research and education activities are critical for advancing understanding of climate risks, as well as unlocking innovative solutions and partnerships for insurers. But their impact on real-world adaptation depends on effective translation of knowledge into actionable tools, cross-sector collaboration, and sustained engagement beyond awareness-raising.

View the types of Research & Education measures

Research & Education

Type of measure	Definition	Contribution to A&R	Maturity	Commercial viability	Key constraints & limits	Existing example
Risk Science & Hazard Modeling	Empirical research and modeling activities, often conducted in partnership with academic or scientific bodies, to advance understanding of climate hazards and risk dynamics in a given context	• Advances understanding of evolving climate risks • Supports evidence-based adaptation planning and policy • Improves risk modeling and underwriting capacities	• Continuously evolving with climate science	• High strategic value as it is core to risk assessment and pricing • Indirect revenue generation via improved underwriting and product design	• Technical complexity and uncertainty, especially for forward-looking risks • Data limitations and modeling gaps • Long time horizon for tangible outputs	• Swiss Re Institute Nature-based Solutions for reduced losses in Florida • AXA wildfire study in Chile
Physical Vulnerability Assessment	Testing and screening studies to assess how assets or infrastructure respond to climate hazards and identify and test resilience opportunities	• Informs resilient design, building standards and retrofitting strategies • Identifies structural weaknesses and adaptation priorities • Supports development of certification schemes and resilience benchmarks • Enables more accurate risk modelling and underwriting, and links scientific evidence to pricing incentives and loss reduction	• Expanding in scope with climate-focused applications	• Strategic value for underwriting, pricing and product design • Enables differentiation through evidence-based standards and incentives • Claims reduction in the long term	• High cost and resource intensity of testing infrastructure • Results may be context-specific and not easily generalizable • Requires translation into standards or incentives to create impact • Limited scalability beyond large insurers	• IBHS Aging Roof Farm • Allianz test centers • AXA telecom assets in West Africa • National Trust (UK) adaptation pathways
Insurance Solutions Research & Development	Collaborative research to design and test innovative insurance solutions that support risk reduction and climate resilience	• Enables development of new products integrating adaptation objectives • Bridges gap between risk transfer and risk reduction • Supports innovation	• Growing area of focus	• Strategic importance for product innovation and market differentiation • Uncertain short-term financial returns	• No guarantee of direct or immediate return on investment • Regulatory and market acceptance challenges • Requires cross-sector collaboration	• ClimateWise & Howden Nature-Related Financial Opportunites • AXA Climate forest insurances
Capacity-building and training programs	Training, workshops and knowledge-sharing initiatives targeting clients, public authorities or communities to build technical capacity on climate risk, resilience and the importance of insurance	• Enhances ability of stakeholders to understand and manage risks, incl. by taking up insurance and thereby reducing the protection gap • Facilitates implementation of adaptation measures	• Uneven across regions and stakeholders	• Limited direct revenue generation • Strong reputational and relationship-building value • Support long-term market development	• Impact depends on participant engagement and follow-through • Requires sustained effort and coordination	• Howden Global Risk & Resilience Fellowship • Generali, ModeFinance & University of Trieste curriculum

A&R (Re)insurer Taxonomy

Click on one to jump to the category

Corporate Commitments

Voluntary initiatives and practices through which insurers dedicate financial, human, data, or institutional resources to advance climate resilience beyond their core products and services.

Key insight: Corporate commitments enable insurers to shape markets, unlock partnerships, and build competitive advantage in climate resilience. But their impact depends on translating high-level commitments into core business operations and concrete actions, while navigating coordination and governance challenges internally and across the sector.

View the types of Corporate Commitment measures

Corporate Commitments

Type of measure	Definition	Contribution to A&R	Maturity	Commercial viability	Key constraints & limits	Existing example
Industry Coalitions & Initiatives	Multi-stakeholder platforms where insurers collaborate with peers, governments, NGOs, and/ or international organisations to share best practices and advance climate resilience objectives	• Facilitates knowledge sharing and standard-setting • Enables collective action on systemic risks • Supports development of common frameworks, tools and best practices	• Well-established	• High strategic, reputational and networking values • Enables influence on policy and standards • Limited direct revenue generation	• Impact depends on coordination and commitments of members • Risk of lowest-common-denominator outcomes • Heightened scrutiny in some jurisdictions regarding the compatibility of alliances with competition law	• DUC NatureForce • PSI-WWF UNESCO World Heritage Sites • Humanity Insured • ClimateWise network • Insurance Development Forum
Strategic Bilateral Partnerships	Targeted collaborations between insurers and public institutions, development agencies or private actors to jointly develop and implement resilience solutions	• Enables tailored, context-specific solutions • Supports innovation and implementation of adaptation measures	• Growing practice, especially in emerging markets and development contexts	• Unlocks new markets and capabilities • Strengthens client and institutional relationship • Value depends on partnership structure and outcomes	• Requires potentially complex governance and coordination • Dependency on partner alignment and funding	• Generali & UNDP MSME protection • Generali & ECMWF quality-assured climate information • AXA & SCOR consortium for ecological restoration
Innovation Programs & Challenges	Initiatives (e.g. incubators, accelerators, competitions) designed to source, test, encourage and scale innovative solutions for climate risk and resilience	• Unlocks new solutions and business models • Engages and showcases startups and external innovators developing resilience-oriented tools or activities	• Increasingly common across the industry	• Supports long-term innovation pipeline • Enhances brand and ecosystem positioning • Creates new partnerships • Indirect and uncertain financial returns	• Requires sustained investment and follow-up • Solutions may not scale or reach market	• CSAA Frontline Resilience • Generali-UNDP MSME Innovation Challenges • Allianz Climate Risk Award
Internal Governance & Structures	Internal strategies, targets and organizational structures that integrate climate resilience into corporate decision-making and operations	• Embeds resilience into business strategy • Aligns incentives and decision-making internally • Enables development of dedicated capabilities, services, and new business lines focused on resilience	• Advanced among leading insurers	• Strategic relevance for risk management and market positioning • Enables product innovation and service diversification • Creates competitive advantage through organizational differentiation	• Requires organizational change and cross-department coordination • Benefits often indirect and realized over long term horizon • Implementation gaps between high-level strategy and operational practices	• AXA Climate • AXA XL new business unit for prevention services • Zurich Resilience Solutions

A&R (Re)insurer Taxonomy

Click on one to jump to the category

Funding & Investment Activities

The allocation or management of philanthropic funding, investment portfolios, and venture capital to finance technologies, infrastructure, and enterprises that strengthen climate adaptation and resilience.

Key insight: Funding and investment activities of insurance actors can play a catalytic role in scaling climate resilience by directly financing adaptation projects, assets, and businesses. But implementation and impact depend on the availability of bankable opportunities, funding capacity, effective collaboration, and the alignment of financial returns with resilience outcomes.

View the types of Funding & Investment Activity measures

"While knowledge-sharing is extremely important, insurance alone is rarely the full solution. The critical questions become: how can insurance help unlock finance; how can finance then support investment in adaptation measures; and how can those measures be designed so they are genuinely fit for purpose."

Henrietta Southby, Director of Climate Risk and Resilience, Howden

Wadeisor Rukato, Resilience Partnership and Project Lead, Howden

Funding & Investment Activities

Type of measure	Definition	Contribution to A&R	Maturity	Commercial viability	Key constraints & limits	Existing example
Portfolio Alignment	Integration of climate risk and resilience considerations into investment portfolios, including screening, tilting, and divestment decisions based on exposure to physical climate risks	• Encourages capital flows towards more resilient sectors, infrastructure and communities • Signals market preference for resilience	• Established for climate mitigation, in development for climate adaptation • Increasingly considered in investment decisions, also driven by ESG voluntary and regulatory frameworks and targets	• Supports long-term portfolio resilience • Alignment with fiduciary duty and risk management	• Measurement and methodology challenges - may rely on exclusion rather than proactive investment • Limited availability of comparable climate risk and resilience data • Risk of amplifying existing inequalities as high-resilience assets attract more capital than vulnerable ones	• PSI-WWF World Heritage Sites underwriting and investment exclusion
Venture Support	Venture capital (VC) investments (through budget allocation or dedicated VC teams) in startups and innovative companies developing technologies or services for climate adaptation and resilience	• Accelerates innovation in resilience solutions • Supports scaling of new technologies and business models • Fills funding gaps in early-stage adaptation solutions	• Growing but still small relative to VC focusing on emissions mitigation	• High potential returns but high risk • Supports strategic positioning in emerging markets • Enables access to innovation pipelines	• Challenges in measurement of impact • Involves high failure rates and long time horizons	• American Family Institute for Corporate and Social Impact • MS&AD Ventures • Generali Ventures • QBE Ventures
Financial Vehicle Development	Creation of dedicated investment funds, blended finance vehicles or risk-sharing structures to channel capital into projects with a primary or secondary focus on adaptation and resilience	• Mobilizes large-scale funding for A&R • De-risks investments through partnerships and blended finance • Enables financing of infrastructure and systemic resilience projects or reconstruction after disasters	• Emerging but expanding, especially in development contexts	• Unlocks new investment opportunities and partnerships • Potential for stable, long-term returns (e.g. in the case of infrastructure)	• Potentially complex structuring and governance • Often requires public or concessional capital	• Blue Marble Reinsurance Impact Facility • CSAA & Blue Forest California Wildfire Innovation Fund • Global Parametrics Natural Disaster Fund • Disaster risk facilities: CCRIF, SEADRIF, ARC, PCRIC
Strategic Philanthropy	Grant-making and philanthropic initiatives supporting resilience projects, capacity building or vulnerable communities	• Supports high-risk or underserved areas not reached by markets • Builds local resilience and capacity • Catalyzes innovation and pilot projects	• Established, especially in development contexts	• Strong reputational and social impact value • No direct financial return • Enables experimentation and early-stage support	• Scale limited to voluntary funding capacity	• Howden Foundation • Z Foundation • Liberty Mutual Foundation

Insights

STRUCTURAL BARRIERS

What structural barriers are impeding the scale of A&R measures?

1 **Organizational capabilities are constrained by misaligned A&R strategies and internal silos.**

More about this

2 **The economics of climate resilience remain unresolved, with the question "who will pay?" inhibiting scale.**

More about this

3 **Limited awareness and understanding of climate risk and insurers' capabilities undermines trust and uptake.**

More about this

4 **Regulation can act as both an enabler and a constraint.**

More about this

ENABLING CONDITIONS

What enables A&R measures to scale across the insurance ecosystem?

WHO? **Coordinated action and strategic partnerships are essential to delivering resilience outcomes across sectors and regions.**

More about this

WHAT? **Climate intelligence and analytics are foundational to resilience decision-making across the ecosystem.**

More about this

HOW? **Long-term engagement is critical to aligning behavioral and financial incentives.**

More about this

STRUCTURAL BARRIERS

1 Organizational capabilities are constrained by misaligned A&R strategies and internal silos.

Missed opportunities from internal silos

Traditional governance structures within insurance companies remain a key constraint for scaling A&R. Organizational silos–particularly between underwriters, sustainability and risk teams, and asset managers–limit the ability to identify and capture climate resilience-related opportunities, ultimately leaving potential revenue streams untapped.

Signals of strategic intent

Across the industry, emerging leaders demonstrate common building blocks for A&R integration: internally shared risk analytics and engineering capabilities, cross-functional collaboration in product design, dedicated innovation or venture units, forward-looking climate risk research teams or initiatives, employee training on climate resilience, as well as the creation of philanthropic arms aimed at societal impact.

Transformation as an iterative process

Proactive insurers do not aspire to be a "jack-of-all-trades"; rather, they view **the ability to support adaptation as an ongoing alignment of mission, capabilities, and business development.** Achieving this requires strong internal buy-in. For some, this is driven top-down through executives developing a vision of insurance as a "force for good". For others, it emerges bottom-up with internal champions building pricing models for new insurance products, demonstrating it to underwriters and ensuring alignment with legal and operational teams.

Overcoming resistance through reframing

While resistance to change is not unique to insurance, waiting for external shocks to force adaptation is neither sustainable nor commercially sound. Internal champions can secure stronger buy-in across leadership, operational divisions and geographies by **reframing A&R from a CSR initiative to commercially relevant** and capable of reducing average annual losses, strengthening portfolio resilience, supporting client retention, and generating new revenue streams through forward-looking products and advisory services. Such differentiated offerings, along with the strategic agility for implementation, can enhance market competitiveness.

Reflecting on the need for insurers to support proactive risk reduction alongside risk pricing, **Kyra Peyton at CSAA** notes that:

"Risk profiles are changing rapidly. The traditional insurance model, 'you tell us about you; we tell you a price', is becoming unsustainable."

Creating urgency and scaling impact.

Insurers already possess sophisticated risk insights and capabilities. Effectively communicating these can help counter recency bias and create urgency. With stronger internal alignment, extending this approach across the industry will be essential to ensure long-term market viability.

STRUCTURAL BARRIERS

2 The economics of climate resilience remain unresolved, with the question "who will pay?" inhibiting scale.

Value creation vs. value capture

Climate resilience generates significant **social and economic value** through avoided losses, improved preparedness, and lower recovery costs. Yet, existing insurance and investment markets struggle to capture, monetize, and reward those benefits within existing commercial models.

Structural time horizon mismatch

A core challenge lies in the misalignment between the long-term investment horizons and high upfront capital required for resilience-building, and the short-term structure of insurance markets, which operate through annual pricing cycles. **Alvaro Linares at WTW** comments that:

"Although corporates are taking proactive steps to manage risk, the year-on-year volatility in insurance pricing reduces visibility on long-term benefits, limiting their willingness to commit significant upfront capital to adaptation measures."

Incentive gaps and public good dynamics

Weak incentives are further compounded by uncertainty over who captures the benefits. Insurers may support resilience improvements yet not realize reduced losses if clients switch providers. Evidence of this phenomenon is limited, but this perception contributes to the under-provision of A&R measures. At the same time, many adaptation interventions generate shared or public benefits, making it difficult to allocate costs and returns across stakeholders.

Affordability constraints and fragile market formation

In regions facing affordability challenges, the imbalance between costs and benefits becomes more acute. Communities most in need of coverage are often unable to pay premiums, requiring public or philanthropic subsidies. However, these arrangements are often not durable, highlighting the need for sustained engagement to build market capacity and attract investment in order to maintain affordable coverage.

Collective action and shared responsibility

Effective A&R action cannot be delivered by insurers in isolation. It requires sustained collaboration across insurers, reinsurers, and brokers (who help communicate clients' insurable needs to the industry), alongside governments, non-profits, businesses, public and private investors, and local communities. Resilience cannot be imposed externally through insurance mechanisms alone. It is a shared responsibility across the wider ecosystem. **Claire Wilkinson at WTW** affirms that:

"Insurers can dictate, advise, guide, and provide information, but cannot act on behalf of the insured."

From "who pays" to "how value is shared"

The challenge is not only financing adaptation, but **structuring mechanisms to distribute its benefits** across actors with different time horizons and risk-return expectations. This presents an opportunity for insurers to play a stronger role in designing risk-sharing arrangements that align incentives and enable more equitable value capture of resilience investments.

STRUCTURAL BARRIERS

3 Limited awareness and understanding of climate risk and insurers' capabilities undermines trust and uptake.

Knowledge gap and untapped expertise

Meeting resilience needs is not only a technical or financial challenge. It is also a behavioral one. Many communities and businesses remain unfamiliar with the capabilities of the insurance industry beyond traditional post-disaster compensation, while innovative tools such as parametric insurance, resilience incentives, anticipatory action, and catastrophe modeling are often poorly understood by regulators and even among the many different types of specialists within the sector itself. At the same time, misaligned understanding between insurers and investors further limits collaboration, with each side lacking clarity on the other's resilience needs and capabilities. This lack of awareness limits trust, reinforces resistance, and weakens behavioral adoption and demand. **Toby Behrmann at AXA Climate** comments that:

"Investors need to be aware of the capabilities that insurers have to act and advise on risk, while insurers need a clear understanding of the insurable need from the investor."

Persistent behavioral frictions across both developed and emerging markets

In higher-income regions, many homeowners remain skeptical about whether resilience investments will deliver long-term financial benefits. In parallel, fatalism, low risk awareness and the limited number of widely accepted resilience standards continue to constrain adaptation action. In lower-income regions, resource constraints limit the implementation of risk-reducing activities. Even when national or international public or philanthropic resources are provided, ensuring the long-term execution of preventive measures is not guaranteed, which has contributed to local distrust of such solutions. Across all regions, these challenges are compounded by low familiarity with innovative risk and financial mechanisms as well as difficulties in communicating technical concepts (e.g., basis risk in parametric products) and related potential benefits.

The importance of timing and framing

Adoption is influenced by awareness but also by how and when resilience measures are presented and communicated. For example, post-disaster rebuilding incentives must account for the cognitive and emotional pressures policyholders face immediately after a loss. **Jonathan Kassian at Flood Re** reflects on this in relation to Flood Re's Build Back Better (BBB) program:

"Households want the Build Back Better program, but how the offer is made matters. After a loss event, giving enough time to process before deciding on the BBB offer, without waiting too long, looks like it makes a difference."

The role of trusted intermediaries

Client-facing actors such as brokers and agents play a critical role in building trust, using inclusive language, and translating complex risk insights into actionable steps. Embedding resilience communication at key touchpoints, such as onboarding and claims processes, can significantly improve understanding, adoption, and long-term resilience outcomes.

STRUCTURAL BARRIERS

4 Regulation can act as both an enabler and a constraint.

Innovation outpacing regulation

Regulation is a core determinant of whether A&R measures scale or stall. Across jurisdictions, **regulatory systems remain largely anchored in traditional indemnity insurance models**, focused on historical loss assessment and post-event compensation. This creates friction with emerging approaches such as microinsurance, parametric triggers, anticipatory action, risk reduction incentives, embedded models, and resilient rebuilding programs. Regulators often struggle with models that challenge assumptions around loss occurrence, payout timing, and pricing structures. However, such resistance frequently stems from unfamiliarity rather than fundamental flaws, underscoring the need for ongoing dialogue and learning between regulators and industry actors.

From constraint to enabler

Despite these limitations, **regulation holds strong potential to shape and accelerate A&R**. Practitioners consistently emphasize the importance of stronger building codes, standardized risk reduction solutions, mandated resilience labelling in policies and claims, and supportive legislation. Such interventions can help establish a level playing field and greater industry consistency, both critical for scaling resilience solutions and embedding long-term adaptation outcomes.

Pilots as catalysts for regulatory change

Innovation on the ground is already helping inform regulatory evolution. Pilot initiatives and real-world applications are critical in **demonstrating feasibility and building regulatory confidence**. For example, the **B-Ready program** lead at Oxfam Pilipinas noted that forecast-based pre-emptive payment models challenged regulators' understanding of insurance, though recent legislative changes are beginning to create opportunities for more innovative product design and financial literacy efforts. Similarly, following successful applications of capital-market solutions and coastal parametric structures, Bo Jiang at Swiss Re observed growing interest among Chinese regulators in framing insurance and risk-transfer mechanisms as tools for strengthening financial resilience, rather than primarily as matters of fiscal cost and budget allocation.

Fragmentation and uneven readiness

Regulatory environments remain fragmented across jurisdictions, reflecting **varying levels of climate readiness, institutional capacity and perceptions of insurance**. Strengthening regulatory alignment and building on successes such as the FORTIFIED standards in the US and the deployment of regional disaster risk facilities like **CCRIF**, **SEADRIF**, ARC and PCRIC will be essential to ensure that regulators embed climate adaptation systematically. Thus, improving coherence across regulatory bodies and unlocking the full potential of A&R insurance innovation.

ENABLING CONDITIONS

WHO? Coordinated action and strategic partnerships are essential to delivering resilience outcomes across sectors and regions.

Ecosystem-based delivery of resilience

Scaling A&R measures increasingly depends on the ability of insurers to operate within broader resilience "ecosystems" rather than through standalone product offerings. Across initiatives, successful implementation relied on coordinated action among insurers, reinsurers, brokers, governments, NGOs, academia, local communities, development institutions, and investors. These partnerships help **bridge gaps in technical expertise, financing, community trust, and implementation capacity that no single actor can address independently.** As several practitioners noted, climate resilience innovation is often too costly, uncertain, or operationally complex for firms to pursue independently.

Partnerships as implementation enablers

In practice, collaborative models are already demonstrating impact. Initiatives such as Humanity Insured address protection gaps through premium subsidy and local capacity building, while DUC's Nature Force coalition mobilizes expertise, capital, and institutional alignment around resilience outcomes to create a pipeline of nature-based solutions.

Embedding resilience in existing systems

Beyond implementation, partnerships allow A&R measures to be integrated into broader social and financial structures. Insurance consortia such as Blue Marble design and deliver impact insurance solutions aligned with local implementation capacity. A representative noted that distribution through existing structures and delivery mechanisms, such as trade unions, cooperatives, financial institutions and social protection programs, can improve operational efficiency and reach to local communities. This approach is also reflected in partnerships like the Generali-UNDP partnership which integrate insurance and risk management into the operational strategies and value chains of small and medium-sized businesses.

Mobilizing capital and scaling impact

Finally, many initiatives rely on philanthropic or concessional capital to absorb early-stage risk and crowd in private investment, underscoring how complementary contributions across the ecosystem are essential to scaling and sustaining resilience outcomes.

ENABLING CONDITIONS

WHAT? Climate intelligence and analytics are foundational to resilience decision-making across the ecosystem.

Climate intelligence is only as valuable as its use

Driven by growing demand from retail, business, and public sector clients alike, the insurance sector has been rapidly expanding climate intelligence, resilience analytics, and advisory functions. However, the value derived from these capabilities depends not only on technical sophistication, but also on how effectively information is shared and translated into action across the wider resilience ecosystem. At its core, the sector's value proposition lies in helping stakeholders identify, quantify, and manage current and future climate risk.

From insight to decision-making

Insurers and brokers are increasingly equipping clients with exposure dashboards, climate analytics, and risk-based recommendations to inform and incentivize adaptation investments and strengthen resilience planning. In the case of AXA Climate's Altitude, this platform is framed as a means to **create urgency around preventive action and support investor and executive decision-making** through financial impact assessments.

Toward more operational and forward-looking intelligence

Resilience analytics are becoming more practical, forward-looking, and integrated across the insurance ecosystem. For example, the Insurance Institute for Business & Home Safety in the US is increasingly interested in the economic dimension of resilience measures, looking at the return on investment associated with stronger roofing products and mitigation technologies. Meanwhile, Allianz in Europe has invested in flood and wildfire testing facilities to strengthen resilience standards and vulnerability assessment capabilities.

The role of technology and Artificial Intelligence (AI)

Emerging technologies, particularly AI, are also expected to further transform how climate intelligence is delivered. While climate risk advisory services remain highly consulting-intensive today, Alvaro Linares at WTW noted that improved data availability and AI-driven workflows are likely to accelerate risk diagnostics, product development, and adaptation planning. Scaling these capabilities will depend on greater automation, digital connectivity, and standardisation across datasets, actuarial models, and organisational silos, as AI increasingly reshapes the insurance and brokerage landscape.

Beyond underwriting

Climate intelligence is no longer only a support function for underwriting. It is becoming a critical enabler of behavioral change, resilience investment, and long-term adaptation decision-making across the ecosystem.

ENABLING CONDITIONS

HOW? Long-term engagement is critical to aligning behavioral and financial incentives.

Short-term models vs. long-term resilience

Many practitioners emphasized that resilience outcomes materialize over long time horizons, while conventional insurance markets continue to operate largely through annual renewals and short-term pricing cycles. This misalignment weakens incentives for policyholders to invest in preventive measures and limits insurers' willingness to support adaptation investments, particularly when benefits may only emerge years later, or may not be realized if clients switch to another provider.

Aligning incentives through long-term engagement

To address this gap, several interviewees highlighted the importance of **longer-term engagement models** that better align financial and behavioral incentives across insurers, investors, businesses, and communities. For example, Toby Behrmann at AXA Climate stressed that multi-year commitments between insurers and clients can help stabilize pricing, support progressively tailored resilience measures, and encourage sustained investment in risk reduction. Similarly, a CEO of an association of insurance companies noted that:

"Private insurers should provide multi-year policies, with a guarantee of staying for a longer time."

Building trust and behavioral change over time

Longer-term engagement also plays a critical role in strengthening trust, adoption, and continuity, particularly in regions with low insurance penetration. Community-based financial literacy programs, such as those led by Practical Action, demonstrated how local education and sustained engagement can improve preparedness, insurance uptake, and behavioral change over time. Evidence from Rare further highlights the multiplier effect of investing in peer engagement, where for each fisher trained on the benefits of insurance, additional community members voluntarily enrolled. Such behavioral approaches are also of interest to insurers, with CSAA testing targeted outreach for wildfire mitigation communications, explaining available inspection, certification, and support options for homeowners.

Reinforcing resilience through continuity

Overall, these findings suggest that **durable relationships and sustained engagement** are essential for scaling A&R. By aligning incentives over time, the insurance industry, often with public and private partners, can build relationships that reinforce trust, continuity, and shared incentives needed to support long-term resilience outcomes.

FOCUS

Resilient Oceans & Coastal Communities

Why the ocean focus?

Insights

Case studies

Healthy oceans and resilient coastal communities are essential for:

Economic prosperity

- Support 100m jobs worldwide.[1]

A major pillar of the global economy.

$3 trillion

Annual value generated by the global blue economy.[2]

[1] UNCTAD, 2025 [2] UN DESA, 2026

Climate stability

- Absorb 90% of excess heat generated by climate change.[3]
- Hold 50x more carbon than the atmosphere.[4]

The planet's largest active carbon sink.

30% of CO_2

Anthropogenic CO_2 absorbed by oceans since the 1980s.[5]

[3] UN, 2026 [4] NCEI NOOA, 2026 [5] IPCC, 2022

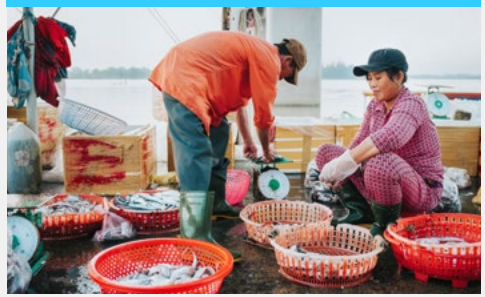
Human wellbeing

- Hundreds of millions depend on oceans for livelihoods.
- Ocean and seacoasts are home to 2.4 billion people.[6]

A crucial foundation for global food security and livelihoods

3 billion people

Rely on seafood as a primary protein source.



[6] OECD, 2021

FOCUS

Resilient Oceans & Coastal Communities

Why the ocean focus?

Insights

Case studies

Insurance that incentivizes risk reduction for oceans and coastal communities is not just smart conservation; it's also smart business.

A growing number of innovations show how insurers are supporting ocean health and the people who depend on it. Tailored products are reaching traditionally marginalized geographies, fostering long-term client relationships while deepening understanding of the insurance sector and its role in climate resilience. At the same time, however, important gaps remain.

The following insights and recommendations highlight opportunities for insurers, non-profits, and governments to deepen collaboration and scale impact:

- **Move beyond disasters to cover chronic and livelihood risks**. Insurance for climate-related disasters is essential, but coverage must also address persistent extremes. For many coastal communities, dangerous sea conditions and changing ecosystems pose greater day-to-day risks than extreme events such as hurricanes. Innovative solutions, such as parametric insurance for income replacement of fisherfolk, show how coverage can better reflect lived realities. Expanding coverage to chronic risks improves resilience and financial stability at the community and household levels.
- **Close the ocean data gap to unlock risk modelling and insurance innovation**. Insurance relies on robust data to assess risk. Yet, the oceans remain significantly under-observed compared to terrestrial systems. Limited data constrains risk pricing, product development and investment. Initiatives like the Fishing Vessel Ocean Observation Network and the UN Ocean Decade of Ocean Science are helping to improve data availability. Investing in ocean data infrastructure is foundational for scaling insurance solutions.
- **Leverage public-private partnerships to scale solutions**. Public-private collaboration is essential to overcome affordability, data and coordination barriers, unlocking new possibilities such as Mesoamerican reef insurance and mangrove forest protection. Partnerships are key to scaling innovative insurance models and delivering system-wide resilience.

EDF blog post

Read more about how insurance can support resilient oceans in the EDF blog post.

FOCUS

Resilient Oceans & Coastal Communities

Why the ocean focus?

Insights

Case studies

As part of our mapping exercise, we identified several initiatives led or supported by insurers that contribute to resilience in ocean and coastal communities.

We examined four case studies in greater depth, showcasing how innovative solutions are being implemented to address key risks and strengthen outcomes for both ecosystems and livelihoods. Together, these examples demonstrate practical approaches to building resilience and highlight the potential to scale impact across diverse contexts.

- Reducing overfishing and exposure to dangerous seas
- Coverage driving rapid response for reefs after hurricanes
- Parametric insurance for mangrove forest protection
- Livelihood and tropical cyclone protection for fishing communities

Case Library

Collection of 25 A&R measures informed by interviews.

Taxonomy Category & Sub-Type, *e.g., Risk Transfer Product – Parametric Insurance*

Initiator(s): name(s) of insurer, reinsurer, broker, and public or philanthropic partners

Region: name of region, country, or geography

Financing type: private, public, or private-public partnership (PPP)

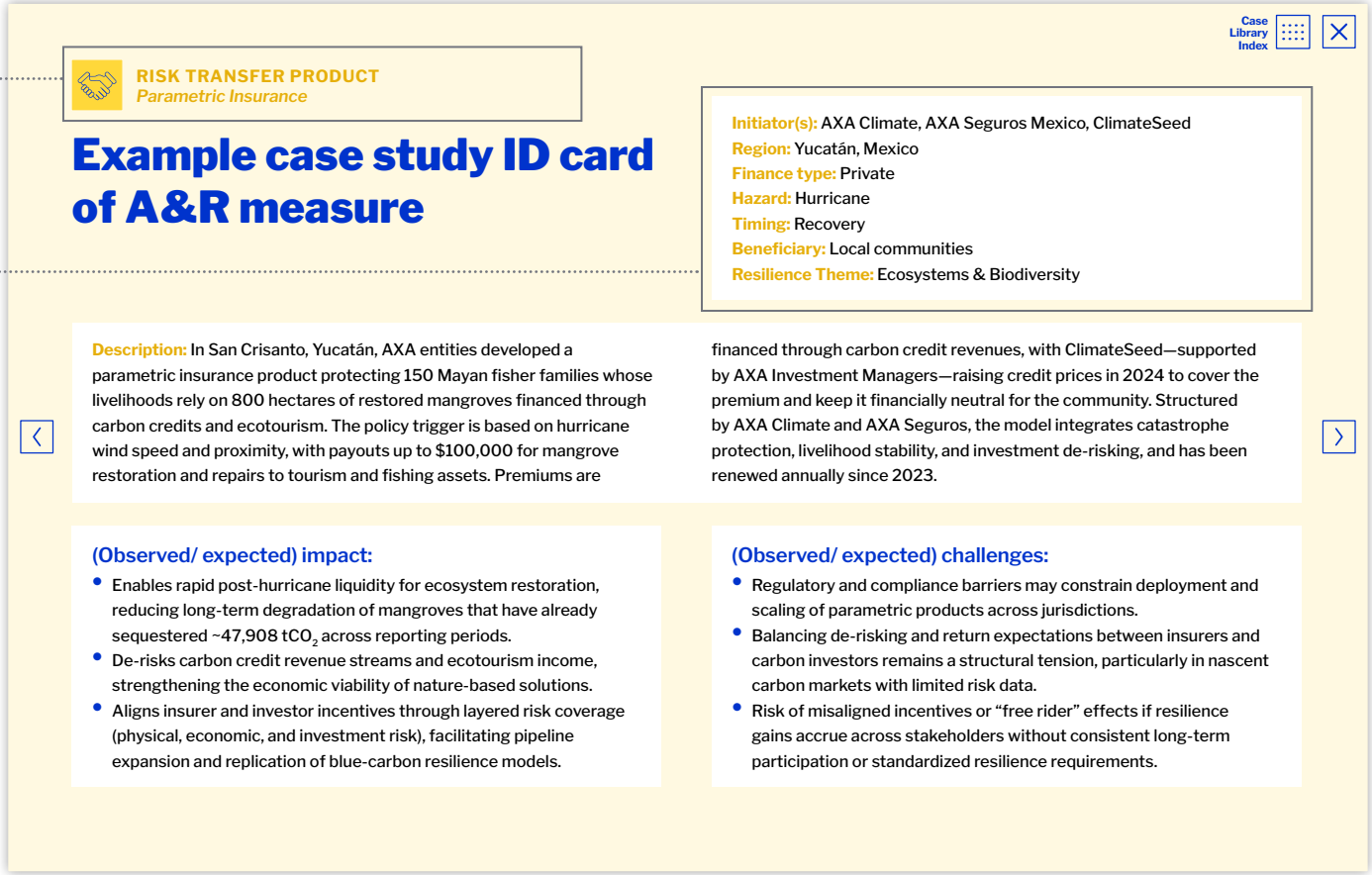
Hazard: multi-hazard or specific hazard type

Timing: recovery, preventive, or both

Beneficiary: *e.g., homeowners, corporates, local communities, etc.*

Resilience Theme: *e.g. Infrastructure.*

Options are listed in Appendix II



Case Library

Index of 25 A&R measures informed by interviews with industry practitioners

RISK TRANSFER PRODUCTS

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Parametric through meso-level aggregators with mobile alerts and payouts Read full case

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RESEARCH & EDUCATION

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Long-term climate risk management approaches to protect heritage landmarks Read full case

Urban resilience initiative building city capacity through insurance and risk expertise Read full case

CORPORATE COMMITMENTS

Industry coalition to build a pipeline of nature-based solutions projects Read full case

Expanding disaster risk protection through premium subsidy and funding support Read full case

Voluntary restriction of underwriting and investment to protect critical ecosystems Read full case

Innovation challenge to catalyze solutions for frontline resilience Read full case

FUNDING & INVEST-MENT ACTIVITIES

Catalytic philanthropy to advance resilience with insurance capabilities Read full case

Market-enabling microinsurance consortium with reinsurance capacity Read full case

Regional risk-sharing vehicle for climate and disaster resilience Read full case

RISK TRANSFER PRODUCT
Parametric Insurance

Parametric insurance for mangrove forest protection

Initiator(s): AXA Climate, AXA Seguros Mexico, ClimateSeed
Region: Yucatán, Mexico
Financing Type: Private
Hazard: Hurricane
Timing: Recovery
Beneficiary: Local communities
Resilience Theme: Ecosystems & Biodiversity

Description: In San Crisanto, Yucatán, AXA entities developed a parametric insurance product protecting 150 Mayan fisher families whose livelihoods rely on 800 hectares of restored mangroves financed through carbon credits and ecotourism. The policy trigger is based on hurricane wind speed and proximity, with payouts up to $100,000 for mangrove restoration and repairs to tourism and fishing assets. Premiums are financed through carbon credit revenues, with ClimateSeed—supported by AXA Investment Managers—raising credit prices in 2024 to cover the premium and keep it financially neutral for the community. Structured by AXA Climate and AXA Seguros, the model integrates catastrophe protection, livelihood stability, and investment de-risking, and has been renewed annually since 2023.

(Observed/ expected) impact:

- Enables rapid post-hurricane liquidity for ecosystem restoration, reducing long-term degradation of mangroves that have already sequestered ~47,908 tCO_2 across reporting periods.
- De-risks carbon credit revenue streams and ecotourism income, strengthening the economic viability of nature-based solutions.
- Aligns insurer and investor incentives through layered risk coverage (physical, economic, and investment risk), facilitating pipeline expansion and replication of blue-carbon resilience models.

(Observed/ expected) challenges:

- Regulatory and compliance barriers may constrain deployment and scaling of parametric products across jurisdictions.
- Balancing de-risking and return expectations between insurers and carbon investors remains a structural tension, particularly in nascent carbon markets with limited risk data.
- Risk of misaligned incentives or “free rider” effects if resilience gains accrue across stakeholders without consistent long-term participation or standardized resilience requirements.

RISK TRANSFER PRODUCT
Parametric Insurance

Parametric-based anticipatory payments for community resilience

Initiator(s): Oxfam Pilipinas, Global Parametrics, Plan International
Region: Salcedo, Philippines
Financing Type: Public
Hazard: Typhoon
Timing: Preventive
Beneficiary: Local communities
Resilience Theme: Social Systems

Description: B-READY is an anticipatory finance programme combining parametric triggers with community-led climate risk assessments to fund pre-emptive disaster preparedness rather than post-loss compensation. Launched in nine villages in Salcedo, Philippines, it initially operated as a traditional parametric insurance product, issuing nearly 2,000 payouts within three days of Typhoon Ursula before evolving toward forecast-based pre-event payments. In February 2021, 1,981 families received cash transfers the day before Typhoon Dujuan, enabling evacuation, asset protection, and business continuity measures. The model is delivered through a multi-actor partnership including Oxfam Philippines, Global Parametrics, and Plan International, and has since expanded across the Philippines and into other regions.

(Observed/ expected) impact:

- Shifts insurance from ex post compensation to ex ante risk mitigation, reducing asset losses, evacuation barriers, and long-term livelihood disruption.
- Strengthens financial inclusion and community savings retention, improving long-term participation in insurance and microfinance systems.
- Reduces reliance on public recovery spending and enhances the effectiveness of early warning systems through forecast-linked cash disbursement.

(Observed/ expected) challenges:

- Regulatory frameworks are often not designed for anticipatory or pre-loss insurance payments, slowing approval and scaling.
- Financial sustainability depends on aligning donor funding, insurer incentives, and community affordability within a viable premium structure.
- Requires sustained investment in community engagement, financial literacy, and post-distribution monitoring to ensure preparedness outcomes materialize.

RISK TRANSFER PRODUCT
Parametric Insurance

Parametric through meso-level aggregators with mobile alerts and payouts

Initiator(s): Practical Action, Global Parametrics, Stonestep, Shikhar Insurance
Region: Nepal
Financing Type: PPP
Hazard: Flood
Timing: Recovery
Beneficiary: Smallholder farmers
Resilience Theme: Social systems

Description: Led by Practical Action and co-funded by the InsuResilience Solutions Fund (ISF), the Index-Based Flood Insurance (IBFI) project provides parametric flood coverage to paddy rice farmers in Nepal through local cooperatives and microfinance institutions. These organizations act as meso-level aggregators, receiving payouts from Shikhar Insurance before rapidly distributing funds to farmers. Since launching in 2021–2022 with 935 farmers across 10 cooperatives, and with the enrolment of 4,672 farmers in 2023; the program has expanded to 46 cooperatives and ~6,000 farmers, with plans to scale further across Nepal. Mobile-enabled alerts and payout systems are integrated into existing flood early warning infrastructure, allowing payments to reach cooperatives within days and farmers within minutes.

(Observed/ expected) impact:

- Provides rapid post-disaster liquidity that reduces reliance on distress coping mechanisms such as asset sales or high-interest borrowing.
- Strengthens community resilience through coverage, early warning systems, preparedness planning, livelihood diversification, and financial inclusion measures such as savings accounts.
- Demonstrates how meso-level distribution through trusted aggregators can improve uptake, accelerate payouts, and build trust in insurance products among underserved rural populations.

(Observed/ expected) challenges:

- Limited hydrological data and insufficient monitoring infrastructure for smaller river systems constrain the ability to model parametric indices, particularly for flash flooding.
- Low familiarity with parametric insurance among rural communities requires sustained investment in education, trust-building, and community engagement to support uptake and transparency.
- Long-term scaling depends on supportive regulatory frameworks,continued insurer participation, and affordable premium structures, particularly in the absence of public subsidies.

RISK TRANSFER PRODUCT
Parametric Insurance

Parametric income replacement of fishers to avoid overfishing and risk exposure

Initiator(s): BFAR, Rare and WTW
Region: Philippines
Financing Type: PPP
Hazard: Wind and dangerous seas
Timing: Recovery
Beneficiary: Fisherfolk
Resilience Theme: Social Systems; Ecosystems & Biodiversity

Description: The Philippines' Bureau of Fisheries and Aquatic Resources (BFAR) and the Philippine Crop Insurance Corporation, partnered with Rare and WTW to launch a parametric insurance program that protects small-scale fishers from income losses caused by adverse weather. It automatically triggers payouts of up to $100 per cycle if unsafe conditions prevent fishing for an aggregate number of days in a 5-day period. BFAR is the policyholder for the initial pilot and the coverage provided to small-scale fishers is an incentive for fishers to formally register, helping to improve data collection, governance, and compliance with fishing regulations.

(Observed/ expected) impact:

- Reduces exposure of fisherfolk to dangerous seas
- Increases resilience of fisherfolk to financial shocks from consistent bad weather days, which are becoming more frequent with climate change
- Reduces likelihood of overfishing after losing fishing days to dangerous weather
- First launched across 24 coastal municipalities, covering 14,200 registered fishers

(Observed/ expected) challenges:

- The payout has not triggered yet. Regular assessments and discussions with policyholder can help refine the product.
- Parametric insurance for fisherfolk is a newer product for a newer audience so extensive education is needed at the government and community level
- Scaling the solution would benefit from global and regional efforts to finance premiums like those under Global Shield against Climate Risks

RISK TRANSFER PRODUCT
Parametric Insurance

Parametric coverage driving rapid restoration to coral reefs

Initiator(s): MAR Fund, WTW, AXA Climate
Region: Mesoamerican Reef Region (Mexico, Belize, Honduras and Guatemala)
Financing Type: PPP
Hazard: Hurricane
Timing: Recovery
Beneficiary: Local reef response teams
Resilience Theme: Ecosystem & Biodiversity

Description: The Mesoamerican Reef Fund (MAR Fund) and WTW developed a regional parametric insurance mechanism, with underwriting provided by AXA Climate, under MAR Fund's Reef Rescue Initiative. Launched in 2021, the program provides rapid financing for coral reef response and restoration when pre-agreed hurricane wind speed thresholds are met. Payouts are determined by WTW's "cat-in-nested-circles" trigger model, where an innermost circle covers the reef area, and three other progressively larger circles sit around the area. This links compensation to hurricane intensity and proximity to the insured reef. These payouts are disbursed to local reef brigades for restoration activities, including removing debris and replanting broken corals at the impacted site.

(Observed/ expected) impact:

- Delivered its first payout following Hurricane Lisa in Belize in November 2022, delivering a payout of $175,000 for reef response and restoration across the Turneffe Atoll National.
- MAR Fund received funds within two weeks and transferred resources within 48 hours, enabling 18 response members to rapidly assess 400 sites within the first month.
- Expanded coverage from 4 reef sites in 2021 to 11 protected reef sites by 2023, demonstrating the scalability of nature-based risk financing across multiple countries and conservation partners.

(Observed/ expected) challenges:

- Depends on securing reliable premium financing, with the program having benefitted from several donors, but developing durable funding mechanisms remains critical for continued expansion.
- Other threats that may hinder the coral survival after reef response actions are deployed (e.g., sargassum, bleaching, pollution).
- Constant need to train teams and update equipment to strengthen the capacity of the response teams.

RISK TRANSFER PRODUCT
Capital Market Instrument

Catastrophe bonds with a resiliency feature for fortified roof grants

Initiator(s): North Carolina Insurance, Underwriting Association (NCIUA)
Region: North Carolina, US
Financing Type: PPP
Hazard: Hurricane
Timing: Preventive & Recovery
Beneficiary: Homeowners
Resilience Theme: Infrastructure

Description: In 2025, NCIUA issued the first resilience-linked catastrophe bond, Cape Lookout Re 2025-1, a $600 million three-year CAT bond that embeds a resilience funding mechanism tied to loss performance. If annual losses remain below 60% of the attachment threshold, the structure releases approximately $2.1 million annually into a dedicated resilience account (equivalent to 0.35% of limit premium) to fund IBHS FORTIFIED Roof grants of up to of up to $10,000 for homeowners across North Carolina's 18 coastal counties. Following the initial issuance, NCIUA launched Cape Lookout Re 2026-1 (Series A & B) in 2026 with the same resilience-linked feature. NCIUA also incorporated a resilience claims bonus into its annual reinsurance contracts, enabling a 5% deposit premium return if no qualifying claims occur. Collectively, these mechanisms are expected to generate $8.425 million in resilience financing in 2027.

(Observed/ expected) impact:

- Increased adoption of IBHS FORTIFIED roofs, contributing to reduced wind-related claims severity and improved portfolio resilience.
- Establishes a mechanism to recycle capital market (and reinsurance gains) into preventive measures that reduce long-term wind-related losses and strengthen portfolio resilience over time.
- Potential downward repricing of catastrophe risk over time if risk reduction measurably shifts modelled loss curves, aligning investor returns with resilience outcomes.

(Observed/ expected) challenges:

- Requires robust modelling and empirical evidence that mitigation materially reduces losses; absent this, pricing feedback may be limited.
- Operational bottlenecks (e.g., trained contractors, quality control) can constrain uptake of FORTIFIED standards.
- Political, regulatory, and market constraints—including investor concerns about long-term catastrophe capacity—may limit replication by private insurers.

RISK TRANSFER PRODUCT
Specialty & Emerging Products

Livelihood and tropical cyclone protection for fishing communities

Initiator(s): CCRIF SPC
Region: Caribbean and Central America
Financing Type: PPP
Hazard: Tropical cyclone, high waves, heavy rainfall
Timing: Recovery
Beneficiary: Fisherfolk and the full fisheries value chain
Resilience Theme: Social Systems

Description: The Caribbean Oceans and Aquaculture Sustainability Facility (COAST) is the first parametric insurance product designed for the fisheries sector. Developed with financial support from the U.S. State Department and technical leadership from CCRIF SPC and the World Bank, COAST provides pre-arranged, rules-based liquidity to governments when tropical cyclones and excess rainfall disrupt livelihoods or damage fisheries assets (e.g., boats, landing sites, and docks). COAST includes two independent components: 1) the adverse weather component covers lost fishing days due to high waves or heavy rainfall lasting 3+ consecutive days; 2) the tropical cyclone component is an event-based model using wind, storm surge, and wave action. When triggered, governments receive payouts within 14 days and distribute funds according to pre-established operational procedures.

(Observed/ expected) impact:

- Following Hurricane Beryl in 2024, the government of Grenada received a US$1.066 million payout, helping more than 600 fisherfolk rehabilitate vessels and resume operations rapidly.
- Provides predictable, pre-arranged liquidity
- Protects fisherfolk from income shocks
- Supports climate-smart rebuilding
- Strengthens the blue economy
- Reduces the disaster-induced poverty cycle

(Observed/ expected) challenges:

- COAST uses modelled losses, not on-site assessments. Some fishers may experience losses without a payout being triggered.
- Requires continuous education with government and fisherfolk to understand that COAST is a disaster risk financing instrument that provides quick liquidity, rather than an all-encompassing tool to address bad weather or all losses following a disaster.
- Accurate, updated fisheries databases, beneficiary lists, and asset inventories are essential for model accuracy, fair and rapid payout distribution, gender and inclusive reporting.

RISK TRANSFER PRODUCT
Coverage Extension Products

Coverage extension to underinsured homeowners through reinsurer endorsement

Initiator(s): Munich Reinsurance America, Inc. ("Munich Re US")
Region: United States
Financing Type: Private
Hazard: Flood
Timing: Recovery
Beneficiary: Homeowners
Resilience Theme: Infrastructure

Description: Munich Re US' Inland Flood Coverage Endorsement is a white-label add-on enabling primary insurers to integrate flood protection directly into standard homeowners' insurance policies. It targets properties located outside federally designated high-risk flood zones, where coverage gaps persist due to limited uptake of the National Flood Insurance Program (NFIP) and low perceived risk among homeowners. The product offers single-limit coverage (typically USD 5,000–50,000) and leverages high-resolution (~10-meter) flood modelling and digital rating tools to assess location-specific risk. Delivered primarily through regional and mutual insurers, the structure is typically a 100% quota share arrangement, allowing carriers to offer flood coverage without requiring in-house technical expertise.

(Observed/ expected) impact:

- Embedding coverage within existing homeowners' policies simplifies purchase and improves accessibility.
- Enables premium growth without additional balance sheet risk (via quota share), making it attractive—particularly for smaller and regional insurers.
- Use of advanced catastrophe models and tools enables granular risk selection and portfolio management.

(Observed/ expected) challenges:

- Risk misperception among homeowners continues to suppress uptake, particularly in lower-risk areas.
- Reliance on proprietary flood models can slow approval and adoption, particularly where regulators are less familiar with non-traditional pricing approaches.
- State-level approval processes vary significantly, with scrutiny focused on the fairness of the catastrophe model.

INCENTIVE-BASED MECHANISMS
Risk-based Premium or Pricing

Pricing to account for homeowners' risk reduction in parametric policy

Initiator(s): Willis Towers Watson (WTW), The Nature Conservancy (TNC), University of California, Berkeley
Region: California, US
Financing Type: PPP
Hazard: Wildfire
Timing: Recovery
Beneficiary: Homeowners
Resilience Theme: Infrastructure

Description: TNC developed this first-of-its-kind parametric wildfire insurance product in partnership with WTW, with technical input from UC Berkeley. It provides ~$2.5 million in coverage for the Tahoe Donner Association, a private homeowners association in Truckee, California, covering ~1,345 acres of managed forest. The initiative was designed to demonstrate how ecological forest management (e.g., fuel reduction) can be explicitly incorporated into insurance underwriting. By recalculating risk using adjusted average annual loss (AAL) models, the policy achieved materially improved terms—39% lower premiums and 80–90% lower deductibles compared to a counterfactual without risk mitigation. Capacity was provided via a Lloyd's of London syndicate, with TNC funding the premium for the first year.

(Observed/ expected) impact:

- Provides a proof point that nature-based risk reduction (forest management) can translate into quantifiable insurance cost savings.
- Supports continued access to coverage in wildfire-exposed regions where traditional insurance markets are retreating.
- Validates the role of brokers and specialist underwriters in integrating mitigation into underwriting decisions.
- Reinforces empirical links between fuel reduction and reduced expected loss (20–40% AAL reduction in modelled scenarios).

(Observed/ expected) challenges:

- Even with improved pricing, premiums remain unaffordable for many communities; the Tahoe policy itself may not renew without continued subsidy.
- Scaling requires granular, site-specific risk and mitigation data, as well as standardized methods to incorporate resilience into underwriting.
- Wider adoption depends on simplifying underwriting (e.g., "tick-box" recognition of risk reduction measures) and building internal insurer capabilities.

INCENTIVE-BASED MECHANISMS
Resilient Rebuilding

Reinsurance scheme with claims program for resilient repair

Initiator(s): UK government and insurance companies
Region: UK
Financing Type: PPP
Hazard: Flood
Timing: Recovery
Beneficiary: Homeowners
Resilience Theme: Infrastructure

Description: Flood Re is a public–private reinsurance pool established in 2016 to maintain the affordability and availability of flood insurance for high-risk UK households. All UK home insurers contribute to the scheme through an industry levy, allowing insurers to transfer the flood-risk component of eligible policies to Flood Re for a fixed premium. Flood Re is preparing for a transition toward a fully risk-reflective market by 2039 through measures that reduce flood exposure and repair costs. Their Build Back Better (BBB) programme is central to this mission, launched in 2022 in partnership with major insurers. BBB allows insurers to provide up to £10,000 above standard claims costs to install property flood resilience measures during post-flood repairs, such as flood doors, non-return valves, and resilient materials.

(Observed/ expected) impact:

- Significantly improved availability and affordability of flood insurance for high-risk households, increasing insurer participation and market competition across the UK.
- Supports long-term reduction in flood losses and repeat claims (~10% of claims) by integrating resilient repair and property flood resilience measures into post-event recovery processes.
- Strengthens market preparedness for a post-subsidy insurance environment by improving flood risk information, resilience standards, and household awareness of climate exposure.

(Observed/ expected) challenges:

- Adoption of Build Back Better measures remains lower than expected, partly due to inconsistent information, limited consumer awareness, and fragmented claims delivery processes.
- Insurers face weak short-term incentives to invest in resilience due to high competition, and policies are renewed annually.
- Scaling resilient repair requires greater technical expertise, standardized resilience assessments, simplified government funding processes, and stronger public understanding of household flood risk and adaptation options.

INCENTIVE-BASED MECHANISMS
Resilient Rebuilding

Conditional claims rebuilding upgrades across business lines

Initiator(s): Allianz
Region: Global
Financing Type: Private
Hazard: Multi-hazard
Timing: Recovery
Beneficiary: Corporates
Resilience Theme: Industry & Commerce

Description: Allianz has developed a series of "Build Back Better" (BBB) and "Rebuild Better" endorsements across business lines to encourage clients to rebuild damaged assets for resilience and sustainability. Originally inspired by retail BBB schemes, the approach has been applied to marine, commercial property, construction, and emerging resilience cases. Rather than simply restoring damaged assets on a like-for-like basis, the endorsements provide additional post-loss funding to support upgrades that improve future insurability, efficiency, or resilience. The model operates through conditional claims uplifts embedded within existing insurance policies. The latest marine version is offered on a premium-charged basis and provides a sublimit of up to $/€ 3 million, with Allianz retaining 100% of its share (50%) of the incremental cost.

(Observed/ expected) impact:

- Encourages policyholders to rebuild damaged assets to higher resilience and sustainability standards rather than restoring pre-loss vulnerabilities.
- Supports integration of climate risk analytics and adaptation considerations into underwriting, claims management, and asset replacement decisions.
- Market demand across sectors, including hull & machinery, green steel, retail and commercial property, oil & gas transition, and resilient rebuild; with consideration for existing policies.

(Observed/ expected) challenges:

- Scaling Build Back Better approaches is operationally complex, requiring coordination across underwriting, claims, engineering, legal, and pricing teams.
- Commercial insurance structures and short-term pricing dynamics can weaken incentives for insurers and clients to invest in long-term resilience improvements.
- Viability depends on maintaining reinsurance capacity, developing clearer resilience metrics, and aligning adaptation benefits with insurer solvency and portfolio risk considerations.

RISK ASSESSMENT, ADVISORY & TOOLS
Risk Quantification & Analytics

Climate and nature risk intelligence for adaptation planning and decision-making

Initiator(s): AXA Climate
Region: Global
Financing Type: Private
Hazard: Multi-hazard
Timing: Preventive
Beneficiary: Corporates and investors
Resilience Theme: Industry & Commerce

Description: AXA Altitude is a SaaS-based climate and nature risk intelligence platform designed for financial institutions, large corporates, and agri-businesses. Launched in 2022, it originated from climate due diligence work conducted for investors. The platform enables users to assess multi-hazard climate risks across portfolios and value chains, using multiple timeframes and forward-looking scenarios. It quantifies financial exposure through metrics such as average annual loss (AAL), business interruption, and value-at-risk, while also providing ~100 adaptation measures and a built-in "pathway" tool for implementation and tracking. Altitude clients have multi-site operations, offering a scalable alternative to asset-level consulting by prioritizing speed, portfolio-wide visibility, and decision-relevant insights.

(Observed/ expected) impact:

- Enables large organizations and investment funds to rapidly assess climate and nature-related risks across extensive portfolios and value chains, with resolution from 30m to 25km.
- Improves internal decision-making by translating climate risks into financially material indicators such as average annual loss, business interruption, and value at risk.
- Supports the development and monitoring of adaptation pathways by linking climate diagnostics with actionable resilience measures and implementation tracking

(Observed/ expected) challenges:

- Converting climate risk assessments into implemented adaptation is difficult when sustainability priorities compete with short-term financial pressures and declining ESG momentum.
- Linking resilience actions to measurable reductions in losses, operational disruption, or insurance outcomes remains an evolving challenge.

RISK ASSESSMENT, ADVISORY & TOOLS
Risk Quantification & Analytics

Physical and transition climate risk analytics tools with specialist expertise

Initiator(s): WTW
Region: Global
Financing Type: Private
Hazard: Multi-hazard
Timing: Preventive
Beneficiary: Corporates and investors
Resilience Theme: Industry & Commerce

Description: WTW's Climate Risk suite provides climate analytics tools with combined advisory support to corporates and investors on physical and transition climate risks across assets, operations, and supply chains. Built on high-resolution climate data, catastrophe models, and actuarial analytics, the suite responds to growing client demand for climate disclosure, resilience planning, and regulatory compliance. It follows a three-step approach: identify, quantify, and manage. First, client business model and real asset exposure is defined in order to identify physical and transition risks across scenarios and time horizons. Second, estimates on financial losses and "technical premiums" are delivered. Third, adaptation measures, insurance optimisation, alternative risk transfer solutions, and disclosure guidance can be explored to manage climate risks.

(Observed/ expected) impact:

- Enables corporates and investors to quantify the financial impacts of climate risk, supporting climate disclosure, strategic planning, and long-term resilience investment decisions.
- Helps organisations identify high-risk assets and evaluate how adaptation measures may reduce operational disruption and future insurance exposure over time.
- Bridges climate analytics with insurance and risk financing, improving dialogue between sustainability teams, risk managers, brokers, and insurers around climate resilience strategies.

(Observed/ expected) challenges:

- To achieve results that are useful for investment decisions, current workflows remain bespoke and labour-intensive, limiting scalability and creating dependence on specialist expertise.
- Commercial insurance pricing reflects broader market dynamics beyond technical risk, making it difficult to directly link adaptation investments to lower premiums or immediate financial returns.

RISK ASSESSMENT, ADVISORY & TOOLS
Open Access Information Tool

Open-access risk exposure tool delivering practical guidance

Initiator(s): Allianz
Region: Global
Financing Type: Private
Hazard: Multi-hazard
Timing: Preventive
Beneficiary: Homeowners
Resilience Theme: Infrastructure

Description: GloRiA is Allianz's retail-facing climate risk assessment tool designed to help households better understand and manage their exposure to natural hazards. Developed based on customer research, the free-to-use platform allows users to input an address and receive risk scores for several hazards. The tool is built on Allianz's in-house climate modelling capabilities, which are also used internally for underwriting, investment, and risk assessment purposes. GloRiA aims to translate complex hazard analytics into practical guidance. Users receive preventive recommendations and downloadable checklists outlining actions to reduce vulnerability and protect assets. Hazard coverage varies by country to maintain local relevance.

(Observed/ expected) impact:

- Raises public awareness of physical climate risks by translating complex climate analytics into accessible, location-specific guidance for households.
- Encourages behavioral change and household-level resilience investments by providing practical preventive measures and risk reduction recommendations.
- Supports primary business lead generation, serving as an entry point for insurance uptake and resilience-focused customer engagement.

(Observed/ expected) challenges:

- Measuring real-world resilience outcomes remains difficult, as the tool is freely accessible and currently lacks clear resilience-related KPIs to assess behavioral or adaptation impacts.
- Translating increased risk awareness into sustained preventive action or investment by households remains an ongoing challenge, particularly where adaptation costs are high.

RISK ASSESSMENT, ADVISORY & TOOLS
Risk Engineering & Consulting

Climate hazard services for portfolio and on-site assessments

Initiator(s): Zurich
Region: Global
Financing Type: Private
Hazard: Multi-hazard
Timing: Preventive
Beneficiary: Corporates, investors, municipalities
Resilience Theme: Industry & Commerce; Cities & Settlements

Description: W Zurich's Resilience Solutions provide data-driven climate risk analytics and engineering advisory services that help clients with physical climate risks across portfolios, infrastructure assets, and municipalities. Core tools include Climate Spotlight, which maps exposure across 15+ hazards and future climate scenarios up to 2100, alongside site-specific risk assessments, engineering evaluations, and financial quantification of climate impacts. Zurich's approach is structured as a "resilience journey": clients first identify exposures, then quantify potential financial losses, before progressing toward adaptation planning and implementation. Their risk engineers conduct on-site assessments and develop practical recommendations, offering architectural and engineering firms for retrofits or upgrades.

(Observed/ expected) impact:

- Improved visibility of long-term physical climate risks through granular, portfolio-level financial quantification across multiple hazards and scenarios.
- Enabled corporate and public-sector clients to integrate climate risk data into investment, infrastructure, and operational decision-making.
- The advisory process feeds into underwriting discussions, where demonstrated adaptation measures may support improved coverage terms, expanded insurability, or more favourable pricing.

(Observed/ expected) challenges:

- Translating climate analytics into implemented adaptation measures requires coordination across insurers, engineers, financiers, and asset owners.
- While resilience engineering can reduce physical vulnerability and improve insurability, quantifying avoided losses, translating adaptation into underwriting advantages, and embedding resilience into financing decisions are still evolving market practices.
- Asset owners' execution capacity is uneven due to institutional coordination, capital, or technical expertise.

RESEARCH AND EDUCATION
Physical Vulnerability Assessment

Resiliency of aging roofing materials against climate hazards

Initiator(s): Insurance Institute for Business & Home Safety (IBHS)
Region: United States
Financing Type: PPP
Hazard: Multi-hazard
Timing: Preventive
Beneficiary: Homeowners and insurers
Resilience Theme: Infrastructure

Description: The IBHS Roof Aging Farm program is a long-term field research initiative launched in 2013 to study how roofing materials degrade under real-world environmental conditions. Developed in response to insurer-identified gaps in understanding long-term material performance, the program evaluates how roofs perform at various age increments when exposed to multi-hazard stressors (e.g., hail, wind, and fire). The research infrastructure consists of 100+ roof test structures ("roof huts") deployed across multiple US climates (including South Carolina, Alabama, Kansas, Ohio, and Wisconsin), with testing intervals extending up to 20 years. The IBHS's research, including the aging farm program, is funded through a pre-competitive model by insurance industry members. Findings are shared across IBHS's industry members.

(Observed/ expected) impact:

- Improved actuarial understanding of roof aging dynamics, particularly how cumulative weathering materially degrades loss resistance over time.
- Enhanced catastrophe model calibration for hail and wind losses through empirically derived degradation curves rather than "new material bias" assumptions.
- Uptake of resilience-informed building standards (e.g., FORTIFIED Roof systems) and incremental shifts in underwriting sensitivity to roof age and material type.

(Observed/ expected) challenges:

- Regulatory constraints and decentralized insurer decision-making (IBHS provides research findings but cannot mandate adoption).
- Time horizon mismatch: material degradation occurs at shorter time horizons than homeowner expectations.
- Integrating engineering evidence into catastrophe models, particularly where vendor models lag behind empirical field data on post-installation material deterioration.

RESEARCH AND EDUCATION
Physical Vulnerability Assessment

Long-term climate risk management approaches to protect heritage landmarks

Initiator(s): National Trust, University College London (UCL)
Region: UK
Financing Type: Public
Hazard: Multi-hazard
Timing: Preventive
Beneficiary: Local communities
Resilience Theme: Infrastructure; Social Systems

Description: The National Trust is developing long-term climate adaptation pathways to manage escalating climate risks across its portfolio of more than 28,500 historic buildings, landscapes, and heritage sites. Using climate hazard mapping, GIS-enabled monitoring, and place-based assessments, the initiative supports forward-looking adaptation planning. With UCL's Climate Action Unit, the Trust is testing adaptation workshops and decision-making frameworks to respond to the 70% of sites projected to face medium or high climate risk by 2060. Their adaptive management strategies include retrofitting, landscape adaptation, selective protection, and, in some cases, accepting partial transformation or loss. The Trust is also actively exploring how the insurance industry can support heritage assets' resilience.

(Observed/ expected) impact:

- Shifts heritage conservation from static preservation toward dynamic adaptation pathways that support long-term resilience under changing climate conditions.
- Strengthens institutional capacity for adaptation decision-making through participatory workshops, risk monitoring, and staff training.
- Strengthens dialogue between heritage organisations, insurers, and researchers around forward-looking risk management and resilience-focused repair and asset protection approaches.

(Observed/ expected) challenges:

- Traditional insurance models are designed for discrete, recoverable losses and struggle to address gradual deterioration and the non-market cultural value of heritage assets.
- Regulatory fragmentation and inconsistent approaches to climate adaptation create barriers to coordinated action across insurers, asset owners, and public institutions.
- Although "betterment" approaches are increasingly recognised, financial incentives and insurance structures often still favour like-for-like repairs rather than resilience-enhancing upgrades.

RESEARCH AND EDUCATION
Capacity Building & Training Program

Urban resilience initiative building city capacity through insurance and risk expertise

Initiator(s): Howden, Resilient Cities Network, Sustainable Markets Initiative (SMI)
Region: Global
Financing Type: PPP
Hazard: Multi-hazard (determined by cities' expressed needs)
Timing: Preventive
Beneficiary: Local municipalities and urban communities
Resilience Theme: Cities & Settlements

Description: The Global Risk & Resilience Fellowship is a first-of-its-kind program that connects the risk expertise of the global insurance industry and the wider private sector with city leaders on the climate frontline by embedding insurance professionals within city leadership teams. The objective of the Fellowship is to help municipal governments better understand and use insurance, finance, and risk analytics as tools to strengthen climate resilience. The program was established in response to the historically limited strategic engagement between cities and the insurance sector to enable cities to unlock the full strategic value of insurance, moving beyond its traditional use as a compliance or mandated requirement toward a more proactive tool for risk management and resilience-building. In practice, the Fellowship matches cities facing specific climate resilience challenges with insurance and risk expertise tailored to local needs. Learnings from projects delivered in participating cities are amplified through peer-learning facilitated across Resilient Cities Network's wider city membership.

(Observed/ expected) impact:

- Builds institutional understanding within cities of how insurance, finance, and risk analytics can support long-term climate resilience and adaptation planning.
- Strengthens relationships between public authorities, financial institutions, and technical experts.
- Incubates a pipeline of urban resilience initiatives and climate finance strategies, including parametric insurance pilots, and improves integration of risk data into city-level decision-making.

(Observed/ expected) challenges:

- Insurance alone is rarely sufficient to address urban climate risks, requiring complex but necessary coordination across finance, engineering, governance, and resilience stakeholders.
- Cities vary significantly in institutional capacity and climate risk management maturity, affecting their ability to absorb technical expertise and translate newly acquired knowledge into action.
- Long-term scaling depends on sustained city engagement, flexible programme design, and pathways linking adaptation planning with ready finance and implementation capacity.

CORPORATE COMMITMENTS
Industry Coalitions & Initiatives

Industry coalition to build a pipeline of nature-based solutions projects

Initiator(s): Ducks Unlimited Canada and 15 P&C insurers and brokers
Region: Canada
Financing Type: PPP
Hazard: Flood
Timing: Preventive
Beneficiary: Urban communities
Resilience Theme: Ecosystems & Biodiversity

Description: Nature Force is a collaborative initiative led by Ducks Unlimited Canada and a coalition of 15 Canadian P&C insurers and brokers that invests in natural infrastructure projects that reduce physical climate risks with a focus on coastal and inland flooding. The initiative focuses primarily on wetland restoration, enhancement, and watershed management projects. These are implemented in climate-vulnerable regions, including southern Ontario, Quebec City, and the Fraser Delta in British Columbia. Ducks works with local actors and insurance companies to identify priority areas using flood risk and ecological modelling tools. The coalition increasingly aims to build a stronger business case for nature-based solutions by quantifying avoided losses, portfolio resilience benefits, and opportunities for future insurance products and pricing mechanisms.

(Observed/ expected) impact:

- Strengthens community resilience to flooding through wetland restoration and watershed enhancement that reduce peak water flows and improve natural water retention capacity.
- Creates collaboration between insurers, conservation organisations, municipalities, and local communities around long-term climate risk reduction and ecosystem-based adaptation.
- Recognizes the industry's desire for nature-based solutions and seeks to create a shared understanding of how these solutions align with commercial priorities.

(Observed/ expected) challenges:

- Though partners acknowledge projects' potential financial value and have expressed interest in market-based funding mechanisms, reliable methods to measure of the impact of natural infrastructure on insured losses are not available. Therefore, the current model relies primarily on philanthropic funding, with a few insurers supporting the program through sustainability budgets.
- Scaling requires improved risk modelling, stronger evidence of ROI, and integration of ecosystem resilience benefits into insurance pricing, products, and regulatory frameworks.

CORPORATE COMMITMENTS
Industry Coalitions & Initiatives

Expanding disaster risk protection through premium subsidy and funding support

Initiator(s): Howden and founding insurance partners
Region: Global South
Financing Type: PPP
Hazard: Multi-hazard
Timing: Recovery
Beneficiary: Vulnerable communities
Resilience Theme: Social systems

Description: Humanity Insured is an independent charity launched in 2024 by Howden and nine other founding partners to expand access to climate risk protection. Inspired by the growing protection gap, the initiative provides premium subsidies, resilience funding, and technical support to help underserved groups access insurance and risk financing solutions. The organisation works with private and public capital providers to pay for tailored protection mechanisms that aim to prevent climate shocks from pushing people further into poverty. Their ambition is to make £2B in insurance coverage accessible to 30 million people by 2030. Humanity Insured has provided £1.67M in grant funding, making £33.5M of insurance protection available to 1.69M people. Portfolio projects are spread across countries and benefit farmers, displaced people, urban workers, and coastal communities.

(Observed/ expected) impact:

- Expands access to climate risk protection for underserved populations who would otherwise be excluded from insurance markets due to affordability and structural barriers.
- Supports faster recovery and capacity building through premium subsidies, contingency planning, and locally embedded risk financing mechanisms.
- Strengthens local resilience ecosystems by combining insurance with community engagement, savings structures, governance support, and capacity building for local insurers and institutions.

(Observed/ expected) challenges:

- Many climate risks affecting vulnerable communities are frequent, slow-onset, or difficult to insure sustainably through traditional insurance structures without concessional support.
- Long-term viability depends on balancing donor funding, premium affordability, local institutional capacity, and insurer participation within scalable market structures.
- Low insurance literacy, limited financial inclusion, and weak local delivery systems can constrain understanding, uptake, and effective distribution of payouts and resilience support.

CORPORATE COMMITMENTS
Industry Coalitions & Initiatives

Voluntary restriction of underwriting and investment to protect critical ecosystems

Initiator(s): UN Principles for Sustainable Insurance, WWF, UNESCO, 17 (re)insurers
Region: Global
Financing Type: PPP
Hazard: Multi-hazard
Timing: Preventive
Beneficiary: Local communities and future generations
Resilience Theme: Ecosystems & Biodiversity

Description: The World Heritage Sites (WHS) initiative is a voluntary insurance industry commitment launched by the PSI and WWF to protect UNESCO WHS from environmentally harmful industrial activities. Developed following the 2014 campaign against oil exploration in Virunga National Park, the initiative encourages insurers to avoid underwriting, investing in, or supporting activities that threaten the universal value of natural WHS. The initiative combines a high-level pledge with implementation guidance focused on policy development, data integration, awareness raising, and engagement with clients operating in high-risk sectors. The underlying resilience rationale is that restricting insurance for damaging projects helps reduce threats to unique ecosystems that provide natural protective functions, including climate resilience benefits for surrounding communities and for future generations.

(Observed/ expected) impact:

- Strengthens the protection of critical ecosystems and biodiversity hotspots with universal value to humankind, supporting natural hazard mitigation and long-term climate resilience.
- Demonstrates how insurance can inhibit environmentally harmful activities by limiting access to financial and operational risk transfer mechanisms.
- Raises awareness within the insurance sector of nature-related risks, World Heritage Site exposure, and the role of insurers in ecosystem protection and resilience governance.

(Observed/ expected) challenges:

- Implementation and enforcement remain difficult to monitor, as the initiative lacks mechanisms to track whether signatories have operationalised or applied exclusion policies in practice.
- Many insurers still lack integrated World Heritage Site datasets and screening processes within underwriting systems, limiting consistent application of exclusions.
- Even where private insurers refuse coverage, public insurers or alternative financing sources may still enable projects to proceed.

CORPORATE COMMITMENTS
Innovation Programs & Challenges

Innovation challenge to catalyze solutions for frontline resilience

Initiator(s): CSAA Insurance Group, Aon, IDEO
Region: United States
Financing Type: Private
Hazard: Multi-hazard
Timing: Preventive & Recovery
Beneficiary: Frontline communities
Resilience Theme: Social Systems

Description: The Climate Resiliency Challenge, launched in 2023 by CSAA in partnership with Aon and IDEO, represents an open innovation approach to sourcing climate adaptation and resilience solutions for frontline communities. The initiative mobilized a global ecosystem of insurers, reinsurers, NGOs, and innovators, attracting 418 submissions evaluated by ~50 judges. Of the total submissions, 13 were selected as the winners across different maturity stages (emerging, mid-stage, and advanced). With $1 million pooled funding for prize money and additional support from partners, the challenge aimed to identify, fund, and accelerate scalable solutions addressing multi-hazard risks such as wildfire, flood, and extreme weather. The program was initiated as part of CSAA's internal innovation strategy.

(Observed/ expected) impact:

- Enables insurers to access a diverse portfolio of external solutions (nature-based, technological, social) beyond internal R&D capabilities.
- Aligns with evolving insurer strategy to move upstream; supporting prevention, preparedness, and recovery rather than solely risk transfer.
- Selected solutions created opportunities for ongoing engagement, partnership exploration, and potential implementation pathways.

(Observed/ expected) challenges:

- Repeating the challenge requires significant time and financial investment, and internal buy-in would depend on demonstrated outcomes.
- Even when solutions are promising, it can be difficult to move from pilot to sustained adoption because insurers need clear evidence of risk-reduction value to integrate the solution into underwriting.
- Structural misalignment between innovation timelines and insurance cycles (annual underwriting vs multi-year climate adaptation development and deployment).

FUNDING & INVESTMENT ACTIVITIES
Strategic Philanthropy

Catalytic philanthropy to advance resilience with insurance capabilities

Initiator(s): Howden Foundation
Region: Global South
Finance type: Private
Hazard: Extreme heat & drought
Timing: Preventive & Recovery
Beneficiary: Vulnerable communities
Resilience Theme: Social Systems

Description: The Howden Foundation is the corporate foundation of Howden Group, established to support locally led social impact solutions for vulnerable communities. The Foundation combines catalytic grant capital with insurance expertise, risk analytics, and industry partnerships to support early-stage resilience initiatives that are often too nascent or high-risk for commercial markets. Its approach is grounded in a "people-first" philosophy that views communities as active agents of resilience. They focus on three stages: preparedness, adaptation, and recovery. Supported initiatives include early warning systems, climate risk assessments, nature-based solutions, resilient infrastructure, and insurance-linked financial protection mechanisms. ~50% of their A&R portfolio is linked to insurance-related approaches.

(Observed/ expected) impact:

- Provides catalytic funding and technical support for locally led resilience initiatives that are often underserved by traditional insurance and financial markets.
- Helps bridge philanthropy and insurance by testing early-stage resilience models with potential to evolve into scalable financial protection or blended finance mechanisms.
- Strengthens local capacity and gets access to philanthropic network, through participation in initiatives like the $50M A&R Fund let by ClimateWorks Foundation.

(Observed/ expected) challenges:

- Many locally led adaptation initiatives remain difficult to scale due to limited catalytic capital, fragmented governance structures, and weak market incentives for resilience investment.
- Developing pathways from philanthropic pilots to commercially viable structures requires sustained technical support, institutional coordination, and long implementation horizons.
- Measuring resilience outcomes and identifying which interventions can realistically transition into scalable financial mechanisms remains complex and highly context dependent.

FUNDING & INVESTMENT ACTIVITIES
Financial Vehicle Deployment

Market-enabling microinsurance consortium with reinsurance capacity

Initiator(s): consortium of insurance organizations, including Zurich, Mapfre, Sompo and Marsh
Region: Global South
Financing Type: PPP
Hazard: Multi-hazard
Timing: Both
Beneficiary: Vulnerable communities
Resilience Theme: Food Systems, Social Systems

Description: Blue Marble was launched in 2015 as a collaborative venture among international insurance organization to close the climate protection gap in underserved markets. This enables jointly developed products, sharing risk and learning, piloting in new markets, and providing reinsurance capacity for climate insurance programs. Governance combines shareholder and non-shareholder participation, with partners contributing expertise and reinsurance support through a flexible panel structure. Blue Marble's Impact Reinsurance Facility provides reinsurance capacity that helps local insurers expand coverage by reducing downside risk, improving portfolio diversification and building local capacity. Products are co-designed with local stakeholders and then embedded into existing local systems. The facility portfolio is diversified and monitored to manage loss ratios.

(Observed/ expected) impact:

- Expanded access to climate risk protection for underserved communities through locally distributed (cooperatives, agribusiness, loans, etc.) parametric insurance solutions.
- Enables local insurers to take on greater climate risk exposure through access to reinsurance capacity and standardized underwriting support.
- Demonstrated pathways for integrating insurance into broader resilience systems, including agricultural finance, social protection, and anticipatory action mechanism

(Observed/ expected) challenges:

- Achieving affordability while maintaining commercially sustainable products often still requires initial subsidies or concessional capital to launch new programs.
- Limited local climate and exposure data complicates modelling, trigger calibration, and pricing accuracy.
- While the model is proving to scale, it remains dependent on strong local distribution systems, trusted aggregators, and institutional capacity within local insurers and governments.

FUNDING & INVESTMENT ACTIVITIES
Financial Vehicle Deployment

Regional risk-sharing vehicle for climate and disaster resilience

Initiator(s): ASEAN+3, Governments of Japan and Singapore, World Bank
Region: Southeast Asia (ASEAN)
Financing Type: Public
Hazard: Multi-hazard
Timing: Preventive & Recovery
Beneficiary: Sovereigns, public assets, and vulnerable communities
Resilience Theme: Cities & Settlements; Food Systems

Description: The Southeast Asia Disaster Risk Insurance Facility (SEADRIF) is a regional disaster risk financing platform established by ASEAN+3 countries to strengthen financial resilience to climate and disaster risks. The SEADRIF Insurance Company, incorporated in Singapore in 2019 and owned by member countries through the SEADRIF Trust, operates as a not-for-profit insurer that combines public capitalization with private reinsurance to provide sovereign disaster risk coverage. Rather than funding individual resilience projects directly, SEADRIF deploys a regional risk-sharing vehicle that pools risk, lowers insurance costs, and channels capital toward financial protection mechanisms that support adaptation, resilience, and recovery. It has expanded beyond sovereign flood insurance into critical public asset protection through SEADRIF-SAFE, as well as agricultural resilience programmes with FAO on drought preparedness and incentivizing climate-smart farming practices.

(Observed/ expected) impact:

- Provides rapid post-disaster financing that aids government planning, e.g., US$3 million payout to the Lao PDR within six days following Typhoon Yagi for over 350,000 people.
- Governments can access technical expertise, risk analytics, insurance solutions, and private reinsurance capacity, reducing reliance on short-term donor-funded pilots.
- Novel initiatives on public asset insurance, agricultural risk financing, and anticipatory action, creating pathways for development through resilience financing.

(Observed/ expected) challenges:

- Continues to rely on grant support from Japan and Singapore and aims to become self-sustaining over time through premium and investment income.
- Governments often compare insurance premiums against alternative financing sources such as borrowing or budget reallocations, making it difficult to scale coverage without concessional capital or blended finance support.

Conclusion

Climate pressures are driving a transformation in insurance

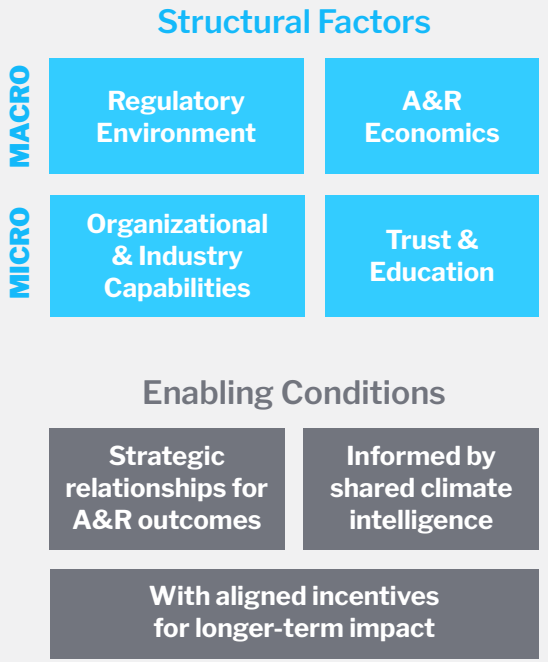
Insurance is becoming embedded in broader resilience systems

A call to action: scaling climate resilience through coordinated effort.

The need for climate adaptation and resilience is reshaping the insurance sector. Escalating physical risks, widening protection gaps, affordability pressures, and the limits of traditional risk transfer are **pushing insurers beyond post-disaster compensation toward more proactive forms of resilience support**.

This transition remains uneven and constrained by unresolved resilience economics, fragmented regulation, silos both within firms and across the broader ecosystem, and persistent gaps in trust and education that limit adoption. At the same time, these **barriers are catalyzing experimentation** with new partnerships, business models, financial structures, and resilience capabilities.

The research shows that **scaling adaptation and resilience depends not on any single product or actor, but on enabling conditions that align incentives, distribute risk, and sustain resilience over time**. Strategic coordination across actors, supported by climate intelligence and risk analytics, is critical to guide preventative action. Longer-term engagement models are also emerging to build trust and support continuity beyond annual insurance cycles.



Conclusion

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Taken together, these trends point to a broader evolution in the role of insurance: **from a standalone compensation mechanism to an integrated component of wider resilience systems.**

As a senior executive at an international insurer observed,

"There is nothing fundamentally new about climate risk from an insurance standpoint: the industry has always insured against weather-related events. What is relatively new is the effort to systematically connect risk underwriting with broader initiatives that support customers and strengthen societal resilience."

Insurance is increasingly being viewed beyond being a tool for post-disaster recovery. Insurance can stabilize financial systems, support access to capital, and strengthen long-term adaptive capacity—particularly in vulnerable and underserved markets. This reflects a growing recognition that resilience must be built before disasters occur. As **Caroline Birch, Head of Impact at Humanity Insured**, noted,

"Anticipatory action is crucial to prevent the worst of the humanitarian impact and strengthen resilience."

Across the industry, this evolution is driving experimentation with forecast-based models, innovative insurance products, and nature-based resilience solutions. While many of these approaches remain at an early stage and face economic and operational challenges, they signal a clear direction of travel.

Ultimately, the future relevance of insurance may be defined by its capacity to help communities, businesses, and financial systems anticipate, absorb, adapt to, and recover from increasing climate volatility.

Conclusion

Climate pressures are driving a transformation in insurance

Insurance is becoming embedded in broader resilience systems

A call to action: scaling climate resilience through coordinated effort.

No single actor can close the resilience gap alone. Scaling adaptation requires coordinated action across insurers, regulators, finance, businesses, and communities.

While the insurance sector is a key enabler, resilience outcomes ultimately depend on aligning incentives, mobilizing capital, and enabling informed action at household and community level.

- **Insurers, (re)insurers, brokers**
- Regulators
- Philanthropies/ development finance
- Asset owners/ managers
- Corporates
- Households

Each stakeholder has a role to play; progress depends on all.

Insurers, (re)insurers, brokers

- Embed resilience analytics, advisory services, and risk reduction incentives into products and claims processes.
- Collaborate with peers, public, nonprofit, and community actors to expand affordable coverage and A&R solutions and advocate for enabling regulatory frameworks.
- Support households, communities and businesses with clear, actionable risk information and guidance on risk-reduction measures

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- Philanthropies/ development finance
- Asset owners/ managers
- Corporates
- Households

Each stakeholder has a role to play; progress depends on all.

Regulators

- Evolve regulatory frameworks to support long-term resilience outcomes alongside financial protection.
- Enable innovation, risk-reduction incentives, and inclusive coverage models.
- Work with industry to strengthen building codes, resilience standards, and consistent risk measurement approaches and metrics across markets.

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- Asset owners/ managers
- Corporates
- Households

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Philanthropies/ development finance

- Reduce affordability barriers for underserved households and communities through targeted premium subsidies, blended finance and risk-sharing instruments.
- Invest in local capacity, community-led approaches, and nature-based resilience infrastructure.
- De-risk early-stage resilience solutions through pilots, concessional capital and technical support to build a pipeline and crowd in private investment.

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- Insurers, (re)insurers, brokers
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- Philanthropies/ development finance
- **Asset owners/ managers**
- Corporates
- Households

Each stakeholder has a role to play; progress depends on all.

Asset owners/ managers

- Integrate physical climate risk and resilience considerations into investment strategies and stewardship activities.
- Channel capital toward long-term adaptation projects that protect assets, communities, and economic stability.
- Partner with insurers and public entities to mobilize capital for resilience outcomes.

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- Insurers, (re)insurers, brokers
- Regulators
- Philanthropies/ development finance
- Asset owners/ managers
- **Corporates**
- Households

Each stakeholder has a role to play; progress depends on all.

Corporates

- Treat resilience as a priority for business continuity and value protection beyond compliance.
- Invest in adaptation measures, resilient supply chains, and workforce preparedness.
- Improve risk transparency and climate risk management to strengthen insurability and reduce volatility.

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› Insurers, (re)insurers, brokers
› Regulators
› Philanthropies/ development finance
› Asset owners/ managers
› Corporates
› **Households**

Each stakeholder has a role to play; progress depends on all.

Households

- Engage with insurers, municipalities, and local experts to understand local climate risks, preparedness measures, and available financial and technical support.
- Take practical risk-reduction actions supported by available incentives and trusted guidance.
- Support and participate in community resilience efforts to strengthen collective preparedness and recovery, and advocate for local resilience initiatives.

Thank You

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Finally, we would like to acknowledge the various internal teams, whose dedication and collaboration made this work possible. This includes colleagues who supported research design, conducted and analyzed interviews, contributed to case study development, refined analytical frameworks, and provided ongoing strategic guidance throughout the project. Their collective effort ensured the coherence, quality and practical relevance of the final output.

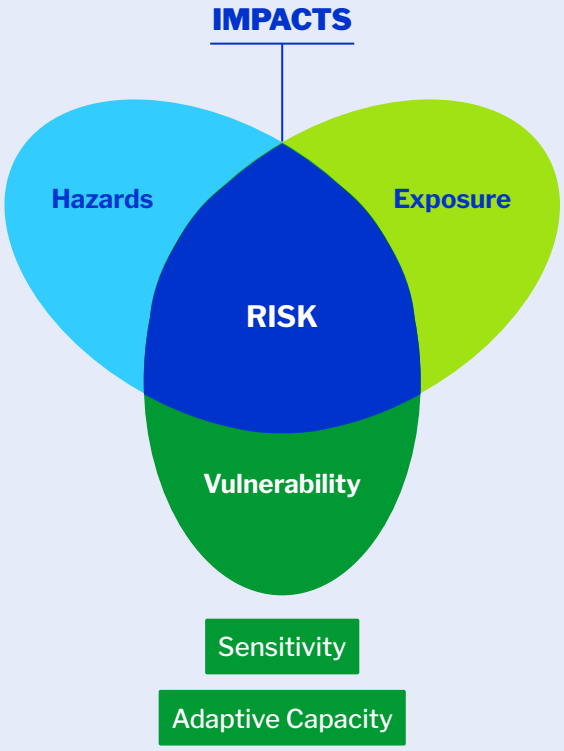
APPENDIX I

Climate risk is the interaction of hazard, exposure, and vulnerability

Climate risk is the potential for adverse impacts on human or natural systems.

It arises from the interaction of:

- **Hazards** (climate stresses and shocks), which are getting more severe and frequent
- The degree of **exposure** of people, assets, and systems at risk, and
- Their level of **vulnerability** (sensitivity to harm and adaptive capacity)



Adaptation is the means:

Targeted, context-specific actions help systems anticipate, prepare for, respond to, and recover from climate risks.

Resilience is the outcome:

Capacity of systems to absorb, adapt and transform in response to climate shocks while continuing to deliver core functions.

APPENDIX II

Overview of the varied profiles of the interviewed practitioners

Findings are informed by 32 interviews with practitioners and experts across the insurance value chain. Interviews comprised both discussions with practitioners implementing specific measures and broader conversations on regional and thematic trends shaping the role of (re)insurance in climate adaptation and resilience.

Figure A: *Interviews by Organization Type*

Organization Type	Count
Insurers & Reinsurers	13
Brokers & Intermediaries	6
Public & Industry Entities	6
Development Actors & NGOs	7

Figure B: *Interviews by Practitioner Expertise*

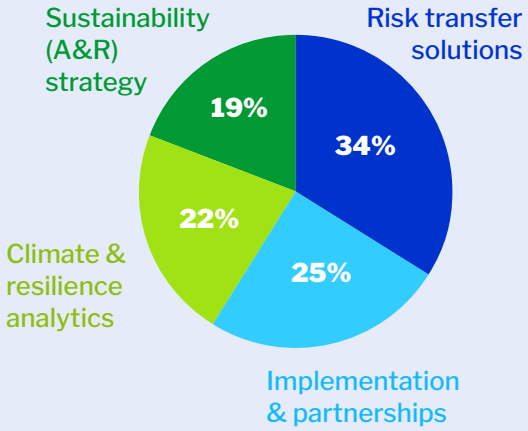
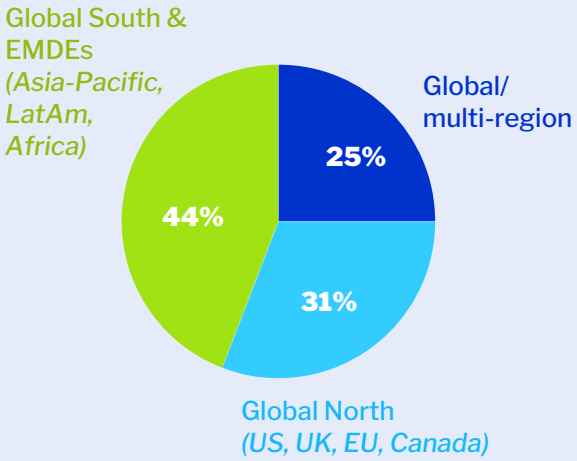


Figure C: *Interviews by Practitioner Geographic Focus*



APPENDIX III

Five questions guided our analysis of A&R measures

1 Why has this measure emerged?

Innovative measures often stem from clear triggers: major loss events, shifting risk landscape, regulatory changes, institutional leadership, or evolving demand. Understanding how a measure emerged helps reveal whether it is addressing a structural gap or adapting an existing approach.

2 What does the measure do in practice?

Examining how the measure helps people and systems manage risk – whether by improving understanding, strengthening preparedness, transferring risk, or supporting recovery – and who it involves across the insurance value chain helps identify how it operates in practice and where its impact is most strongly felt.

3 Does it align resilience outcomes with commercial value?

A measure will gain traction from both insurance organizations and policyholders if it can deliver A&R impact and make business sense, recognizing the importance of insurer profitability, solvency, and portfolio stability.

4 What conditions have enabled success?

Implementation depends on enabling factors such as data and modeling capacity, regulatory frameworks, and public-private collaboration. These determine feasibility across different market contexts.

5 What constraints are hindering replicability and scale?

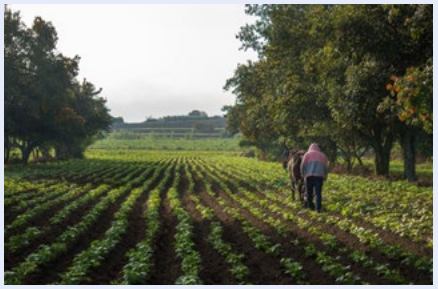
Across markets, insurance sector actors are already testing a wide range of A&R measures beyond traditional risk transfer. The constraint is not a lack of innovation, but limited traction. Many measures remain fragmented, context-dependent, and often constrained by the very market structures they seek to transform.

APPENDIX IV

Rising climate risks require building system-wide resilience across eight themes

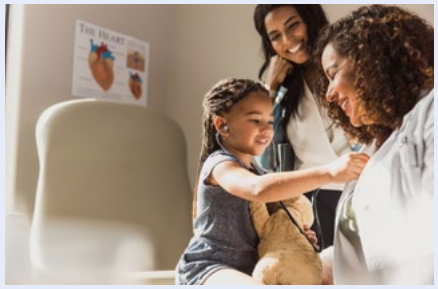
Climate resilience is often associated with infrastructure, but it spans all major systems:

Infrastructure & housing



Food Systems

Cities & Settlements



Healthcare

Ecosystems & Biodiversity

Industry & Commerce

Social Systems

Water & Sanitation