



Linking anticipatory action with climate risk insurance for resilient disaster management





This publication is brought to you by the Pacific Insurance and Climate Adaptation Programme (PICAP), which is jointly implemented by the United Nations Capital Development Fund (UNCDF), the United Nations Development Programme (UNDP) and United Nations University Institute for Environment and Human Security (UNU-EHS). The programme receives financial support from the Governments of Australia and New Zealand.

PICAP aims to improve the financial preparedness and resilience of Pacific Islanders towards climate change and natural hazards through the development and implementation of market-based meso- and microinsurance schemes. The programme offers an option for national and subnational governments to consider subscribing to a “macro-to-micro” scheme, which allows government-level insurance policies to pay out to individuals to support the most vulnerable segments. Fiji, Kiribati, Papua New Guinea, Samoa, Solomon Islands, Tonga, Vanuatu and other Pacific Small Island Developing States are covered under the multi-year programme.

Disclaimer

The views expressed in this publication are those of the author and do not necessarily represent those of the United Nations (including UNCDF, UNDP and UNU-EHS), Member States or the Governments of Australia and New Zealand.

Suggested citation

Shumba, S. (2026). *Linking anticipatory action with climate risk insurance for resilient disaster management*. Bonn, Germany: United Nations University Institute for Environment and Human Security.

DOI

<https://doi.org/10.53324/YCIW6496>

Published in September 2026



With support from



Contents

Abbreviations	4
1. Policy aim	5
2. Why link anticipatory action and climate risk insurance?	6
3. Benefits and enabling conditions for integrating climate risk insurance and anticipatory action	10
3.1. Timeliness: acting before the crisis peaks	10
3.2. Risk reduction and cost efficiency: protecting development gains	10
3.3. Technical expertise: making triggers work for people	11
4. Innovations and opportunities: moving from pilots to scale	12
5. Key considerations for scaling anticipatory insurance	16
Acknowledgements	18
References	19

Abbreviations

AA	anticipatory action
ADRFi	Africa Disaster Risk Financing Programme
AfDB	African Development Bank
ARC	African Risk Capacity
CAT bonds	catastrophe bonds
CERF	Central Emergency Response Fund
CRI	climate risk insurance
DREF	Disaster Response Emergency Fund
ENSO	El Niño–Southern Oscillation
FJD	Fijian Dollar
IFRC	International Federation of Red Cross and Red Crescent Societies
IRI	International Research Institute for Climate and Society
INSIVUMEH	Instituto Nacional de Sismología, Vulcanología, Meteorología e Hidrología
KfW	KfW Development Bank
MICRO	Microinsurance Catastrophe Risk Organisation
OCHA	United Nations Office for the Coordination of Humanitarian Affairs
PCRIC	Pacific Catastrophe Risk Insurance Company
PICAP	Pacific Insurance and Climate Adaptation Programme
UNCDF	United Nations Capital Development Fund
UNDP	United Nations Development Programme
UNDRR	United Nations Office for Disaster Risk Reduction
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children’s Fund
UNU-EHS	United Nations University Institute for Environment and Human Security
WASH	water, sanitation and hygiene
WFP	World Food Programme
WRMS	Weather Risk Management Services
WRSI	Water Requirement Satisfaction Index

1. Policy aim

As climate-related disasters increase in frequency and severity, the gap between early warnings and timely response remains a persistent challenge, particularly for the world's most vulnerable. This report explores the potential for climate risk insurance (CRI) and anticipatory action (AA) to be strategically linked, to enhance the speed, precision and cost-effectiveness of climate and disaster risk financing. Drawing on insights from insurance experts and humanitarian actors, the report highlights how forecast-triggered, pre-arranged finance can enable faster, pre-impact support, protecting lives and livelihoods while reducing the humanitarian burden.

Importantly, integration between CRI and AA has gained momentum since the early 2020s, with pilots emerging across Africa, Latin America, Asia and the Pacific. Early pilots demonstrate how this combined approach can help shift disaster management from reactive response towards proactive risk management. However, scaling these innovations will require sustained investment in data infrastructure, inclusive product design, alignment with national policy and regulatory frameworks, and long-term financing mechanisms that extend beyond short-term donor cycles.

TABLE 1. WHAT WORKS: INTEGRATING ANTICIPATORY ACTION AND CLIMATE RISK INSURANCE AT A GLANCE

	Smart triggers	The effectiveness of AA-linked insurance depends on careful trigger calibration. If thresholds are set too low, payouts may become frequent and financially unsustainable; if set too high, early action windows may be missed. Poor calibration weakens reliability, trust and timely response.
	Data infrastructure	High-quality climate and impact data improve trigger calibration, strengthen forecast accuracy and support timely, evidence-based decision-making.
	Dual Triggers	Combining forecast-based triggers for AA with post-event data for insurance payouts aligns early action with actual needs, reducing basis risk and enhancing reliability.
	Sustainable financing	Scaling anticipatory insurance requires financing strategies that extend beyond donor funding. Pooled and layered models, backed by public, private and concessional sources, can improve cost-effectiveness and expand coverage.
	Institutional readiness	Financial literacy and institutional capacity are essential. Even when triggers are met, bureaucratic bottlenecks or unclear protocols can delay action. Strengthening institutional systems ensures early finance translates into a timely response.
	Flexible mechanisms	Second-envelope strategies (flexible contingency funding mechanisms) or forecast-informed contingency windows allow AA even if formal triggers are not met. This flexibility is crucial for addressing slow-onset or complex risks.



2. Why link anticipatory action and climate risk insurance?

AA and CRI serve distinct but complementary purposes in disaster risk management. While AA enables forecast-based, pre-planned interventions before disasters occur, CRI (particularly parametric insurance) typically provides pre-arranged financing once predefined hazard thresholds are met. However, when insurance triggers are calibrated earlier in the hazard timeline, payouts can occur before the full impacts materialize, enabling AA. In dual-trigger products, this anticipatory payout may be followed by a post-event payout if the hazard materializes and predefined impact thresholds are met. As a result, CRI can serve not only as a post-disaster financing tool, but also as a mechanism for supporting timely anticipatory responses. When combined, these tools help shift disaster response from reactive to proactive, improving timing and efficiency while reducing the humanitarian burden.

AA and CRI are increasingly being integrated in practice across different contexts.

- **Early planting season trigger (March)** – based on rainfall projections for the June–August growing season, enabling early support for planting decisions
- **Dry spell trigger (June)** – based on rainfall forecasts for the July–October period, targeting mid-season drought risks

The scheme is designed to channel payouts initially to the WFP and, over time, to national or local disaster risk entities. Forecasts are underpinned by NextGen seasonal prediction systems and the Python Climate Predictability Tool, which generates probabilistic seasonal climate forecasts by combining historical climate data with global climate model outputs, ensuring scientific accuracy and contextual relevance. If triggered, the insurance policy would supplement WFP's available funding and be allocated to pre-agreed AA outlined in municipal response plans. These may include distributing drought-resistant seeds, providing food assistance and covering household needs for one month via cash transfers or in-kind support.

A. Guatemala

The World Food Programme (WFP) – in collaboration with the Microinsurance Catastrophe Risk Organisation (MiCRO), Guatemala's national climate agency the Instituto Nacional de Sismología, Vulcanología, Meteorología e Hidrología (INSIVUMEH) and the International Research Institute for Climate and Society (IRI) – is developing a meso-level forecast index insurance scheme in the Dry Corridor. The product features two separate forecast-based triggers:

B. Fiji

The United Nations Capital Development Fund (UNCDF) – in collaboration with Weather Risk Management Services (WRMS) and with support from the United Nations Office for Disaster Risk Reduction (UNDRR) – launched a meso-level dual-trigger cyclone insurance product in Fiji during the 2023–2024 policy cycle. Following its initial implementation, the product was renewed and expanded for the 2024–2025 season, with participation increasing to 12 demand

aggregators. While the anticipatory trigger has not yet been activated, the post-event payout component has already been triggered in practice, demonstrating the operational viability of the dual-trigger approach.

The product is implemented through an aggregator model, where cooperatives act as policyholders on behalf of their members. In Fiji, cooperatives such as the Cane Farmers' Co-operative Savings & Loans Association Limited and the Sugar Cane Growers Council serve as the insured entities and financial intermediaries. Use of aggregators is particularly important in small and fragmented markets, as it allows risk to be pooled across multiple members, streamlines policy administration and improves affordability. Aggregators also serve as trusted local institutions, as they already maintain financial and non-financial relationships with farmers and community members, thereby strengthening delivery mechanisms and institutional readiness for insurance uptake.

The product features two distinct triggers:

- **Anticipatory trigger** – activated 24–48 hours before cyclone landfall, based on Global Forecast System forecasts (specifically, peak gust wind speeds and minimum atmospheric pressure)
- **Post-event trigger** – determined using cyclone impact data from the Joint Typhoon Warning Centre, which calculates payout size based on wind speed severity and proximity to insured areas

Each aggregator is insured for up to FJD 50,000. The anticipatory payout can reach up to 20% of the insured sum (FJD 10,000), to be used to support early actions such as stockpiling supplies and safeguarding livelihoods. The post-event payout is determined by impact severity and proximity and can release up to 100% of the insured amount, minus any anticipatory payout.

The product was subsidized by the UNDRR during the 2023–2024 pilot phase to ensure affordability.

In Samoa, a similar AA insurance product has recently been launched, with three aggregators already onboarded: the disability advocacy organization Nuanua O Le Alofa, the Samoa Farmers Association, and Women in Business Development Inc. In this case, the post-event trigger also incorporates rainfall and excess rainfall, reflecting the country's cyclone-related flood and heavy rainfall risks.

C. Malawi and Zambia

The African Risk Capacity (ARC), in collaboration with the United Nations Office for the Coordination of Humanitarian Affairs (OCHA), has piloted a sovereign-level anticipatory drought insurance product in Malawi and Zambia. Under this model, national governments act as policyholders, with premiums subsidized during the pilot phase by KfW Development Bank to support product testing and uptake.

The product is designed to enable early financial response to drought risk during the agricultural planting season. It uses ARC's Africa RiskView modelling framework, which applies the Water Requirement Satisfaction Index (WRSI) to assess whether crops receive sufficient moisture during critical growth periods. For the anticipatory product, the WRSI-based trigger focuses on the sowing and early growth window, allowing payouts to be released when early-season water stress indicates a high probability of crop failure. These early payouts can enable governments to support replanting with drought-tolerant or short-cycle crops, provide agricultural inputs or offer temporary livelihood assistance before losses escalate.

The anticipatory product operates alongside ARC's traditional sovereign drought insurance, but the two assess drought risk at different stages of the agricultural season. While the anticipatory mechanism enables payouts shortly after the sowing window, the traditional product assesses conditions over the full agricultural season and provides financial support once drought impacts are more fully assessed. Together, they form a layered risk financing approach, enabling both early action and post-impact response. Early pilots in Malawi and Zambia illustrate how this layered system functions in practice.

Across various contexts, from Guatemala to Fiji, Malawi and Zambia, the examples presented in this section illustrate how linking forecast-based data with pre-arranged financial mechanisms can facilitate AA. While several of these initiatives remain at an early stage of implementation, evidence from Malawi's anticipatory sovereign drought insurance pilot – together with findings from related meso-level and emerging household-level initiatives documented elsewhere – demonstrates the operational feasibility of anticipatory insurance mechanisms and highlights the importance of institutional readiness for translating early financing into timely action. Although Malawi's anticipatory sovereign drought insurance pilot experienced technical and administrative delays that limited the timeliness of disbursement, Scherer and Shumba (2025) highlight a successful meso-level anticipatory insurance payout under Tearfund's multi-country programme in Malawi, while Calcutt and Endo (2026) document anticipatory insurance payouts through the DRIVE Index-Based Livestock Insurance programme in the Horn of Africa.

Overall, despite differences in institutional arrangements and trigger mechanisms, the core principle remains: integrating AA and CRI can improve the timeliness and predictability of disaster financing, while strengthening the technical foundation for early decision-making.

The following sections explore how these benefits are realized in practice.

**TABLE 2. MALAWI – ARC ANTICIPATORY DROUGHT INSURANCE
(LAYERED WITH TRADITIONAL SOVEREIGN DROUGHT COVER)**

SEASON	ANTICIPATORY INSURANCE	TRADITIONAL SOVEREIGN INSURANCE
2023/2024	Premium: US\$ 4.0 million (South and Lower Shire). No anticipatory payout (rainfall during sowing window within normal thresholds) (KfW subsidized).	ARC Replica payout triggered by El Niño-driven drought: US\$ 11.2 million to the Government of Malawi under the sovereign policy and US\$ 0.4 million to the United Nations High Commissioner for Refugees (UNHCR) through the ARC Replica mechanism to support refugee-related AA. (Replica premium financed by the African Development Bank (AfDB) through the ADRIFi Multi-Donor Trust Fund).
2024/2025	Premium: US\$ 4.1 million (South and Lower Shire). US\$ 0.3 million anticipatory payout triggered during the sowing window due to water stress (KfW subsidized).	US\$ 3.07 million total payout under traditional drought insurance. Combined payout across the anticipatory and traditional sovereign policies: US\$ 3.38 million.
2025/2026	Malawi did not renew the anticipatory policy after the pilot phase due to financing constraints.	Traditional sovereign insurance status not publicly confirmed at the time of writing; agricultural season ongoing.

**TABLE 3. ZAMBIA – ARC ANTICIPATORY DROUGHT INSURANCE
(LAYERED WITH TRADITIONAL SOVEREIGN DROUGHT COVER)**

SEASON	ANTICIPATORY INSURANCE	TRADITIONAL SOVEREIGN INSURANCE
2023/2024	Premium: US\$ 0.5 million. No anticipatory payout (rainfall during sowing window within normal thresholds) (KfW subsidized).	ARC drought insurance triggered due to severe drought: US\$ 9.98 million payout to the Government of Zambia and US\$ 3.33 million to WFP through the ARC Replica mechanism. (Replica premium financed by AfDB through the ADRIFi Multi-Donor Trust Fund).
2024/2025	Premium: US\$ 0.45 million. No anticipatory payout (seasonal rainfall during sowing window within thresholds) (KfW subsidized).	No confirmed payout reported.
2025/2026	Premium: US\$ 0.25 million. Anticipatory insurance policy renewed; agricultural season ongoing (self-funded).	Traditional sovereign insurance status not publicly confirmed at the time of writing; agricultural season ongoing.



3. Benefits and enabling conditions for integrating climate risk insurance and anticipatory action

3.1. Timeliness: acting before the crisis peaks

A critical advantage of integrating AA with CRI is the ability to respond rapidly and predictably, well before the full impacts of a disaster unfold. Traditional AA funding, such as pre-arranged cash transfers, can often take days or even weeks to mobilize, particularly when reliant on humanitarian or donor systems. By contrast, forecast-based insurance mechanisms release pre-arranged finance once predefined forecast thresholds are met, creating a reliable window for AA. As illustrated in the previous section, forecast horizons across emerging initiatives are tailored to the characteristics of the hazards they address. UNCDF's meso-level anticipatory insurance products are linked to cyclone forecasts 24–48 hours before predicted landfall through a dual-trigger design that releases up to 20% of the insured sum for AA, with the remaining 80% reserved for post-event response. Similarly, the Pacific Catastrophe Risk Insurance Company (PCRIC) dual-trigger drought product adopts the same 20:80 payout structure, releasing up to 20% of the insured sum at the early action trigger during the drought "warning" stage, with the remaining 80% available at the rapid response trigger once drought conditions reach the "declaration" stage (Scherer and Shumba, 2025). Unlike these dual-trigger products, ARC's anticipatory drought insurance uses a single anticipatory trigger that activates earlier in the agricultural season, when forecast conditions indicate heightened drought risk during the sowing window. Together, these examples demonstrate how forecast-based insurance can align financing with the time available to act before impacts escalate.

However, timely triggers alone do not guarantee timely action. Even when forecast thresholds are correctly met, bureaucratic bottlenecks, unclear operational protocols or limited institutional readiness can delay disbursement, reducing the effectiveness of anticipatory interventions. It is therefore essential to address these operational gaps to ensure that early finance translates into early impact.

3.2. Risk reduction and cost efficiency: protecting development gains

Beyond improving timeliness, integrating CRI with AA can strengthen the efficiency and effectiveness of disaster risk management. By financing early interventions, this approach helps reduce losses, lower recovery costs and protect development gains.

In Guatemala, WFP's meso-level forecast-based index insurance is designed to trigger early-season support, such as the distribution of drought-resistant seeds, enabling farmers to adapt before the worst impacts of a failed harvest take hold.

Across the Pacific, UNCDF's meso-level anticipatory insurance products enable participating cooperatives to undertake pre-agreed preparedness measures – such as securing assets, protecting livelihoods and supporting evacuation – before cyclones make landfall, minimizing damage and the subsequent costs of response and recovery.

At the sovereign level in Africa, ARC's anticipatory drought insurance releases financing during the sowing window when forecast conditions indicate heightened drought risk, allowing farmers to replant while the season remains viable and reducing both crop losses and the scale of post-disaster assistance required.

By funding early preventive actions, insurance-linked AA helps governments and communities to act smarter, not just faster, and reduces the economic burden of post-disaster recovery.



3.3. Technical expertise: making triggers work for people

Effective integration of CRI and AA depends not only on financial tools, but also on the technical robustness of risk models and the institutional capacity to translate forecast information into timely action. Although parametric insurance brings considerable expertise in risk modelling and trigger design, ensuring that payouts translate into timely and effective action remains complex.

As demonstrated in the previous section, institutions such as ARC, WFP and UNCDF have adopted different trigger architectures, forecast horizons and implementation pathways to reflect the characteristics of the hazards they address. These approaches increasingly seek to align insurance triggers with national early warning systems, seasonal forecasts and operational decision-making processes, ensuring that financing is both scientifically accurate and locally relevant. However, challenges persist, especially in low-income and rural areas where data infrastructure is limited, and local actors may lack the tools or training to interpret forecast signals.

Regardless of the trigger mechanism employed, calibration remains central to both affordability and effectiveness. Triggers set too low may result in frequent payouts, driving up premium costs and undermining financial sustainability. Conversely, thresholds set too high may delay activation, thereby missing the critical window for AA. In both cases, poor alignment between trigger thresholds and on-the-ground conditions can increase basis risk, creating a mismatch between modelled conditions and actual losses or needs. Over time, this can undermine confidence in early action mechanisms and erode trust, particularly when anticipated assistance fails to materialize.

One emerging solution to these challenges is the adoption of dual-trigger approaches, which combine forecast-based

early activation with post-event validation. By balancing timeliness with verification, these layered mechanisms can help reduce basis risk while preserving the credibility, affordability and effectiveness of anticipatory insurance.

Ultimately, it is the co-production of trigger systems through the integration of scientific precision, local knowledge and community validation that enables CRI and AA to function effectively together. This extends beyond the technical design of trigger systems to the institutions, governance arrangements and local capacities required to interpret, trust and act upon forecast information. Even the most sophisticated trigger systems will struggle to deliver meaningful outcomes if the information they generate cannot be understood, trusted or acted upon. Are forecast warnings communicated in ways that communities and local institutions can understand and use? Are decision-making protocols clearly defined so that roles and responsibilities are understood before a trigger is reached? Once a trigger is activated, what actions are automatically initiated, and how quickly can funds be mobilized? How can local knowledge and lived experience help to interpret forecast information and validate whether triggers accurately reflect conditions on the ground?

Addressing these questions requires investment in the broader enabling ecosystem that supports the effective integration of CRI and AA. As these integrated CRI-AA systems continue to mature, scaling their impact will depend on sustained investment in:

- Data infrastructure and early warning systems
- Local technical training and institutional capacity
- Community engagement and financial literacy

Without this broader ecosystem of technical expertise, robust data systems, clearly defined decision-making processes and local ownership, insurance-linked anticipatory systems will remain limited in their reach, effectiveness and long-term sustainability.

4. Innovations and opportunities: moving from pilots to scale

Early pilots and operational experiences have revealed a set of emerging innovations that offer practical blueprints for scaling the integration of CRI and AA. These innovations demonstrate advances in technology as well as changes in risk sharing and financial structuring. Table 4 presents

innovations currently being implemented or tested in practice. These examples demonstrate how organizations are already integrating AA and CRI across different scales and contexts.

TABLE 4. INNOVATIONS AND OPPORTUNITIES

INNOVATION OR OPPORTUNITY	WHAT IT DOES	EXAMPLE
Dual trigger mechanism	Combines forecast-based triggers for early action with post-event data to validate or scale payouts, reducing basis risk and improving alignment.	UNCDF Fiji: anticipatory payouts triggered by wind forecasts; post-event cyclone data confirms final payout. WFP Guatemala: forecasts trigger early action (e.g. seed distribution); cumulative rainfall validates insurance payout.
Forecast-calibrated insurance for AA	Uses predictive indicators (e.g. upstream rainfall) as early signals to activate insurance payouts before peak impact, enabling anticipatory preparedness.	Britam and Swiss Re in Kenya: flood insurance uses upstream satellite-based rainfall estimates as a pre-trigger. If river levels rise downstream (as measured by river gauges) within 7–10 days, payouts are released, allowing early action.
Layered instruments	Unlike dual-trigger mechanisms, which combine multiple trigger points within a single product, layered instruments use separate financing layers or products to address different stages or severities of risk (e.g. anticipatory and post-impact), improving coverage and flexibility.	ARC – Malawi/Zambia: anticipatory insurance triggers early based on forecasted rainfall; traditional ARC insurance triggers later based on in-season impacts.
Second envelope strategy for AA	Enables flexible funding even when triggers are not met but conditions still demand action, enhancing responsiveness and reducing missed opportunities.	International Federation of Red Cross and Red Crescent Societies (IFRC) forecast-based financing: a two-envelope model allows anticipatory funding based on evolving conditions, even without formal trigger activation (e.g. for heatwaves or disease outbreaks).

INNOVATION OR OPPORTUNITY	WHAT IT DOES	EXAMPLE
Replica model	Allows humanitarian agencies to mirror sovereign insurance policies, unlocking AA funding through pre-arranged payouts.	ARC Replica (e.g. Senegal 2022): parallel payouts to the Government of Senegal and Start Network supported anticipatory cash transfers and food assistance, reaching more than 335,000 people.
Insured emergency funds for AA	Guarantees liquidity for AA by protecting and replenishing emergency financing facilities when disaster risks escalate. This helps to ensure that funds remain available for rapid deployment and can support timely interventions at scale.	IFRC Disaster Response Emergency Fund (DREF) insurance; OCHA Central Emergency Response Fund (CERF) anticipatory action insurance (under development): these approaches use insurance to protect and replenish emergency financing facilities, helping ensure liquidity for AA and early response during periods of heightened demand.
Complementary layering of AA and CRI	Aligns pre-disaster actions for immediate needs with post-disaster insurance payouts, offering a full-cycle preparedness and recovery solution.	UNICEF Today and Tomorrow Initiative: combines investments in disaster risk reduction, climate adaptation and AA with parametric cyclone insurance that provides rapid post-event payouts based on the Child Cyclone Index.

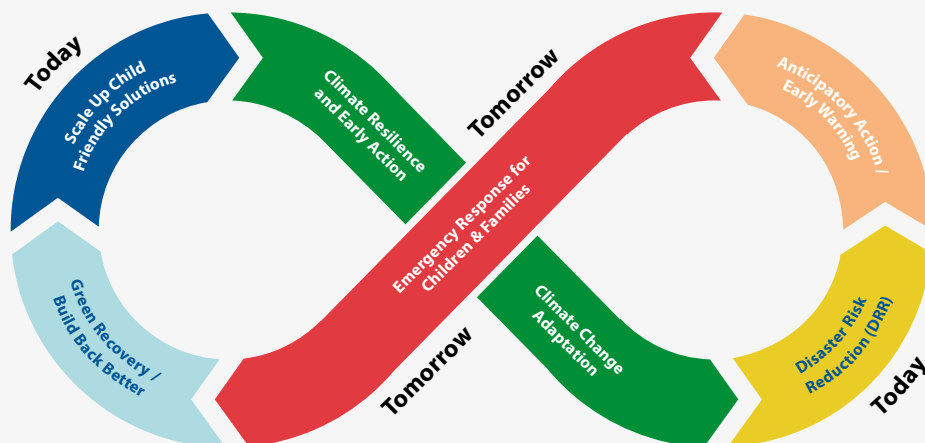
Table 5 presents prospective opportunities identified through expert consultations. While these approaches remain largely conceptual, they highlight promising directions for future research, product development, and policy innovation.

TABLE 5. FUTURE OPPORTUNITIES IDENTIFIED THROUGH EXPERT CONSULTATIONS

INNOVATION OR OPPORTUNITY	WHAT IT DOES	EXAMPLE
Layered risk financing models	Combines AA financing with multiple risk financing instruments – e.g. contingency funds, parametric insurance and catastrophe (CAT) bonds – to support different stages and severities of disaster risk, from early preparedness to post-disaster recovery.	Hypothetical: contingency funds finance early actions for moderate risks, parametric insurance provides additional financing as impacts escalate, and CAT bonds support response and recovery following extreme events.
Multi-year insurance policies linked to AA	Provides predictable funding over multiple seasons, spreading premiums and aligning financing with seasonal and climate forecasts.	Hypothetical: multi-year drought insurance aligned with El Niño-Southern Oscillation (ENSO) forecasts supports AA and releases finance when long-term drought conditions deteriorate.

Box 1 shines a spotlight on UNICEF’s Today and Tomorrow Initiative, demonstrating how AA and parametric insurance can be combined within a single financing framework to support both preparedness and rapid disaster response.

BOX 1. UNICEF’S TODAY AND TOMORROW INITIATIVE: A LAYERED MODEL FOR PROTECTING CHILDREN



UNICEF’s Today and Tomorrow Initiative provides a practical example of how to integrate AA and CRI into a single disaster risk financing framework to protect vulnerable children and communities.

The initiative combines investments in disaster risk reduction, climate adaptation and AA (“Today”) with parametric insurance (“Tomorrow”), creating a layered financing approach that supports both preparedness and rapid post-disaster response.

Today: AA and system resilience

The Today component focuses on strengthening the resilience of essential systems that support children and communities before disasters occur. This includes investments in:

- Climate-resilient health, education and WASH (water, sanitation and hygiene) infrastructure
- Social protection systems and child protection mechanisms
- Disaster risk reduction and community preparedness programmes
- AA initiatives designed to reduce vulnerability before shocks occur

Tomorrow: insurance for rapid response and recovery

The Tomorrow component provides parametric cyclone insurance that delivers rapid financial support following severe storms.

Payouts are triggered using the Child Cyclone Index, which measures the impact of cyclone wind speeds on children (0–18 years) in affected areas. The index aggregates exposure at the national level and triggers payouts when wind speeds of at least 39 miles per hour affect at least one child. Once triggered, funds are typically released within 36–72 hours after a cyclone leaves the affected area, enabling rapid response and early recovery.

The insurance component currently provides up to US\$ 99.6 million in tropical cyclone coverage over three years, protecting up to 13.5 million people across eight countries: Bangladesh, Haiti, Madagascar, Mozambique, Comoros, Vanuatu, Solomon Islands and Fiji.

As of June 2025, the initiative has generated over US\$ 11.4 million in parametric insurance payouts, alongside longer-term investments in disaster risk reduction, climate adaptation and AA. Together, these components provide end-to-end support before, during and after disasters, strengthening financial protection systems for vulnerable children and communities.



5. Key considerations for scaling anticipatory insurance

While the benefits of linking AA and CRI are increasingly evident, scaling this approach beyond pilot initiatives will require overcoming a range of systemic and operational challenges:

- **Regulatory hurdles**

In some jurisdictions, parametric insurance faces legal ambiguity, classified as speculative instruments or gambling. Legal reforms are needed to recognize anticipatory insurance as a legitimate component of disaster risk financing.

- **Trigger reliability and data gaps**

Both AA and CRI depend on timely and accurate data. Where high-resolution weather and impact data are lacking, trigger failures and basis risk undermine effectiveness. Investments in forecast validation, early warning infrastructure (e.g. weather monitoring networks, forecasting systems and communication platforms) and open, interoperable data systems are critical.

- **Trigger design and insurability constraints**

Events targeted by AA may occur more frequently than risks that insurers are willing to cover. For example, AA triggers may correspond to events with a return period of one in three years, whereas insurable risks typically require less frequent occurrences, such as one in seven to ten years. Designing triggers that balance operational usefulness with actuarial insurability, therefore, remains a key challenge.

- **Basis risk and false positives**

Forecast-based systems may occasionally generate false positives where early action is triggered, but the anticipated impacts do not fully materialize. While such outcomes are often accepted within a no-regrets AA framework, they can raise concerns about efficiency and resource allocation. Separately, insurance mechanisms face basis risk when trigger outcomes do not align with

actual losses or on-the-ground needs. In both cases, perceived mismatches between forecasts, triggers and real-world conditions can undermine confidence in integrated AA–CRI systems if not carefully managed.

- **Operational payout constraints**

Although parametric insurance is often promoted as enabling rapid payouts, the speed of disbursement can still depend on climate data validation, trigger confirmation processes, reinsurance recoveries and financial transfer mechanisms. In practice, delays in these processes may reduce the timeliness of AA unless payout protocols are specifically designed to enable rapid release.

- **Misaligned priorities**

There is often a tension between the needs of insurers and those of humanitarians: insurers seek precision and payout certainty, while humanitarians prioritize flexibility and responsiveness to evolving needs. Co-design processes that balance risk modelling with operational realities are essential for developing tools that both work in practice and retain the confidence of all stakeholders.

- **Affordability and long-term viability**

Most existing anticipatory insurance initiatives remain heavily subsidized to reach vulnerable populations. Without phased transition strategies, many may struggle to continue once donor support ends. Long-term viability will depend on integrating premiums into national disaster risk financing strategies and exploring blended finance models that combine public, private and concessional sources. Effective scaling will also require strong coordination among governments, insurers, humanitarian agencies and local institutions, supported by clear governance arrangements that define roles, responsibilities and ownership across the AA–CRI system. Ensuring local ownership and institutional buy-in will be critical for long-term sustainability and equitable access.



Looking ahead

CRI is not a universal solution but, when linked with AA, it becomes a powerful enabler of faster, smarter and more cost-effective disaster response. This report has shown how early pilots across diverse contexts are unlocking that potential, acting before impacts peak and reducing the costs associated with inaction.

Scaling this integration will require sustained, coordinated commitment – from governments investing in data and delivery systems, to insurers developing adaptive, risk-informed products, and humanitarian actors ensuring that local realities and equity shape every step of the AA-CRI model.

The pathway forward is clear: build on what works, co-create what's missing, and embed anticipatory insurance into systems that communities already trust.

Acknowledgements

Author

Stella Shumba

Reviewers

Akata Taito (UNCDF), Shirin Merola (WFP), Agrotosh Mookerjee (Risk Shield) and Sophie Lee (UNICEF).

Photographs

© Rachael Hansen/UNU-EHS

The author would like to thank the following individuals for sharing their time, insights and experiences, which significantly informed the development of this policy report: Connor Meenan (Centre for Disaster Protection), Viktoria Seifert (Willis Towers Watson), Matthias Amling (Welthungerhilfe), Lesley Ndlovu (African Risk Capacity), Rodrigo Salazar (World Food Programme), Florent Del Pinto (IFRC), Niccolò Lombardi (Food and Agriculture Organization of the United Nations), Neha Batra (Weather Risk Management Services), Agrotosh Mookerjee (Risk Shield), Jorge Barrientos (Microinsurance Catastrophe Risk Organization), Ruben Dario Vargas Franco (UNICEF), Lolesh Sharma (Pacific Reinsurance Ltd) and Lepani Uluinaviti (Sun Insurance).

The author also gratefully acknowledges Sinja Buri, Mariam Parekhelashvili, Sarita Katwaroo, Linda Du Roy and Hasina Razafindrakoto (UNU-EHS) for their contributions to the interviews and review process.

References

Calcutt, E. and I. Endo (2026). Over US\$12 million, including US\$9 million of insurance payouts triggered to pastoralists across the Horn of Africa during drought. Global Shield Financing Facility Blog, 27 April. Available at: <https://globalshieldfinancingfacility.org/post/over-us12-million-including-us9-million-insurance-payouts-triggered-pastoralists-across-horn>. Accessed on 23 June, 2026.

Scherer, N. and S. Shumba (2025). *Leveraging Insurance for Anticipatory Action: Insights and Emerging Lessons*. Berlin: Anticipation Hub. Available at: https://www.anticipation-hub.org/Documents/Policy_Papers/A4_AH-Leveraging_Insurance_and_AA_RZ_Web.pdf.

