

Global Assessment Report on Disaster Risk Reduction

2025

Resilience Pays: Financing and Investing for our Future

Summary for Policymakers



United Nations

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United Nations Office for Disaster Risk Reduction

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Summary for Policymakers



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The GAR2025 call to action

Democratize risk understanding.

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2 Use public financing and regulation to break the risk-creation addiction.

3 Innovate to keep risk transfer and insurance sustainable.

Make the business case.

4

5 Anticipate shocks to reduce humanitarian needs.

6 Everage the multiplier effect of international financial mechanisms.

Summary for policymakers

The Global Assessment Report (GAR) 2025: Resilience Pays: Financing and Investing for our Future highlights how smarter investment can reset the destructive cycle of disasters, debt, uninsurability and humanitarian need that threatens a climatechanged world. This Summary for policymakers outlines the urgent need to transform how disaster risk is addressed amid a rapidly changing climate. Building resilience is an increasingly systemic challenge that affects financial stability, sustainability, and equity. By embedding risk reduction into core policy and investment decisions, GAR 2025 outlines how it is possible to break the recurring cycle of shocks, losses and debt. With the right choices, resilience can become a foundation for long-term prosperity, enabling societies not only to withstand disasters but to thrive despite them.

The challenge

Disaster risk is increasing as more frequent and intense hazard events, unsafe urbanization and ineffective development put more people and assets in harm's way. Disasters are having profound macroeconomic impacts, with direct losses estimated at \$202 billion. When cascading and ecosystem costs are taken into account, escalating disaster costs now surpass \$2.3 trillion annually. Current investment patterns fuel spirals that increase debt and decrease income, foster uninsurability and perpetuate an expensive dependence on humanitarian assistance. Disasters are also increasingly associated with credit rating downgrades. Action is essential to protect societies, property values and wider financial and insurance systems.

No country is immune. Human impacts may be more severe in the global south, but economic losses and uninsurability are growing fastest in more developed countries. The world cannot afford this waste when so many of these losses are preventable.

Resilience can be built affordably and sustainably when governments and societies choose to act. GAR 2025 highlights dozens of examples where smarter, more risk-informed, investments reduce or even prevent disaster losses despite the stark realities of our volatile climate future. Even as hazards become more intense and volatile due to climate change, investments in reducing exposure and vulnerability pay off. Disaster risk reduction (DRR) measures deliver some of the highest benefit-cost ratios in development investment, ranging from 2:1 to 10:1 or more. Just as total disaster costs have been underestimated, so have the benefits of DRR in both developed and developing countries.

Progress towards achieving key targets in the Sendai Framework for Disaster Risk Reduction 2015-2030 in areas such as reducing fatalities is largely on track, clear evidence that DRR measures help save lives. Although the world's population has soared more than fivefold since 1900, disaster-related fatalities have fallen dramatically (Figure 1). ¹More recent data are also encouraging: the global average rate of disaster-related deaths and missing persons per 100,000 people has halved from 1.61 in the decade before the Sendai Framework (2005-2014) to 0.79 in 2014-2023. Over the same 125 years, the deadliest disasters have changed in type, with hazards such as extreme heat emerging as significant sources of mortality only in the 21st century as a warming planet presents new challenges (Figure 1).

Figure 1. The changing pattern and scale of disasters fatalities since 1900



Disasters with 1000 or More Fatalities, 1900-2023

Data sources: EM-DAT and WHO, 2024, with estimates of affected people equal to deaths + injuries if not provided in EM-DAT

Data sources: EM-DAT and WHO, 2024, with estimates of affected people equal to deaths + injuries if not provided in EM-DAT

The increasing cost of disasters

Progress towards other key Sendai targets is uneven, and in areas such as reducing economic losses more needs to be done. The "big five" disasters—earthquakes, floods, storms, droughts and heatwaves—have accounted for over 95% of direct recorded losses in the past 20 years. Between 1970 and 2000, the inflation-adjusted direct costs of disasters averaged \$70 billion to \$80 billion per year. Between 2001 and 2020, these costs, most of which are preventable, had more than doubled to \$180 billion to \$200 billion per year.²





Source: UNDRR using data from EM-DAR, CRED / UCLouvain, 2025, Brussels, Belgium. Extracted 3 March 2025.

Today's globalized world accelerates risk creation and consistently underestimates the cost of compound multi-hazard events and their ripple effects across societies and ecosystems. From destructive algae bloom events that threaten fishing and tourism in the Caribbean to the undercounted costs of human migration or potential tipping point events like the melting of the Thwaites Glacier, humanity is under-counting the real risk of disasters. When cascading impacts and wider social and ecosystem losses are taken into account, the estimated costs of disasters to the global economy are far higher than the direct loss figures outlined above, close to \$2.3 trillion annually (Figure 3).





Source: UNDRR using data from CRED / UCLouvain, 2025; Desinventar, 2025; World Bank, 2025; WHO, 2024a; WHO2024b; IDMC, 2025; IPBES, 2024, FAO, 2023; IPBES, 2016; World Bank, 2016; UNCDD, 2024; UNEP, 2014

DRR can reduce such losses, making it a powerful lever to accelerate sustainable development. Investments in building resilience support progress across multiple Sustainable Development Goals (SDGs), including enhancing food security (SDG 2), improving educational outcomes (SDG 4), reducing the time rural women spend collecting water (SDG 5 and SDG 6), improving air quality (SDG 3 and SDG 11), and cutting greenhouse gas emissions (SDG 13). These co-benefits reinforce one another, amplifying the overall impact of resilience-building efforts.

The choice ahead

Acting now to reduce risk is essential as human actions and demographic trends make large, potentially catastrophic disasters more likely. GAR 2025 looks forward to how exposure and vulnerability to disasters will change in our lifetimes, at how choices made today—especially those regarding energy sourcing, land use planning and investment—will shape the future. For example, the rapid melting of the Thwaites Glacier could accelerate sea level rise by more than half a metre.³ The value of largely coastal infrastructure exposed to greater risk as a result would, at a conservative estimate, amount to more than \$1.8 trillion, affecting low-lying Pacific states such as Kiribati and the Marshall Islands and coastal megacities such as New York and Jakarta (Map 1).

Map 1. Modeled economic losses to residential and non-residential buildings associated with a potential collapse of the Thwaits Glacier





Source: Data: MERIT Hydro, 2019. Cartography: UNEP/GRID-Geneva, 2024.

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Advances in probabilistic risk models make it possible to quantify an increasing range of hazards and even multi-hazard events—into estimates of average annual losses (AAL) to disasters, while also generating projections of probable maximum losses (PML) for extreme events with return periods of 1 in 100 or even 1 in 1,000 years. What is often seen as unpredictable volatility or uncertainty can now be translated into probabilities and expected losses, allowing stakeholders to plan, budget and prepare more effectively for disasters.

Encouragingly, some central banks now recognize climate hazards as sources of financial risk and are taking actions to understand the full extent of exposure.⁴ In 2024, for example, the Banque de France modelled the potential exposure of the tourism sector to a 1-in-1000 year flood event in Paris. It found that 5,127 businesses would be highly exposed, with estimated losses reaching around \notin 2 billion. More than half of these firms (56%) would lose more than 10% of their total assets. As around 15% of them are already highly indebted,

this represents a risk for their creditor banks. In the absence of DRR actions, such as upgrading wastewater systems and flood defenses, the costs of such a major flood event would be even greater for France's cultural assets and invaluable museum collections: without preventive action, 60 museums and cultural assets, including the Louvre and over 151,045 artworks would also be exposed, according to the models.⁵

Across the world, climate change is making it much more likely to experience severe hazard events. For example, the chance of encountering a 1-in-100-year flood during a 70-year lifespan has risen from 63% for those born in 1990 to 86% for those born in 2025. This increase is driven by the fact that floods that were considered "once in a century" in the pre-industrial climate (1850–1900) were already occurring about 30% more often in 1990 and are projected to occur over two and a half times as often by 2025 under current climate pledges (corresponding to an estimated warming of approximately 2.6°C to 3.0°C by 2100) (Figure 4).





Source: UNDRR adaptation of data from (Thiery et al. 2021)6

Similar challenges exist across a range of climate sensitive hazards, including cyclones, droughts and extreme heat events. Urgent action is also essential to avoid locking cities into patterns of future seismic risk, particularly in cities where an additional 1.2 billion people are expected to be living by 2050 (Figure 5). Each home and infrastructure investment is an opportunity to invest in a safer and more resilient future.



Figure 5. Projected urban population growth by 2050

Source: After Tomorrow's Cities using data from the forthcoming UN World Urban Prospects, 2025

For example, in 2025, the Dominican Republic had a baseline AAL from earthquakes of 1.55 deaths per 100,000 inhabitants. Without enhanced DRR action, this rate is projected to increase to 1.69 by 2030 and 1.82 by 2050, mainly due to demographic growth,

urbanization and policy choices.⁷ If the seismic code were adopted nationwide, the rate could fall to 1.40 by 2030 (17% lower than if no action is taken) and to 1.33 by 2050 (26% lower) (Map 2).

Map 2. Projected average annual fatalities per 100,000 inhabitants by municipality in the Dominican Republic in 2050. (A) Following current growth and construction practices; (B) following nationwide adoption of the seismic code



Source: GEM Foundation, 2024

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Breaking the addiction to creating risk

Disasters cause more than physical damage; as GAR 2025 explores in detail, they trigger three downward spirals that deepen crises, turning disasters into systemic collapses and contributing to development

that is by nature unsustainable. Better investment pathways can help break these three mutually reinforcing spirals.



How resilience can reduce debt and protect household incomes

Disasters hit household incomes, shrinking taxrevenue, obliging governments to borrow more. As debt becomes riskier, interest costs soar.

Soon, there's no budget left to fund recovery. Smaller, less resilient economies are hit hardest.



Figure 6. Total direct (\$ and % GDP) losses to disasters by subregion, 2023

Source: UNDRR using CRED and UCLouvain, 2025

As outlined in figure 6, for example, in 2023 North America's economic exposure to disasters, which totalled \$69.57 billion in direct losses, was greater than that of any other region in the world, but only represented 0.23% of Gross Domestic Product (GDP). By contrast, Micronesia incurred just \$4.3 billion in losses, but this amounted to 46.1% of GDP.

The age of uninsurability?

As disasters losses increase, insurance costs rise, coverage rates fall and insurers withdraw. leading to the condition of "uninsurability".8 This second spiral is exemplified in Australia, where well over half a million homes are predicted to be uninsurable by 2030, primarily due to increasing flood risk.9 Once this point is reached, people are left without an economic safety net when disasters strike, opening the door to cascading socioeconomic impacts in high-risk areas (Figure 7).



The spiral of unsustainable risk transfer

Insurability is an increasing concern to many developed economies, and insurance coverage remains below 1% in many developing countries.¹⁰

Yet innovative insurance products can incentivize risk reduction, thereby lowering premiums and protecting local communities.

Moving beyond respond-recover-repeat

The third spiral of unsustainable development manifests in a destructive cycle in which disasters hit and aid flows in (where possible), but communities rebuild without addressing underlying vulnerabilities. The next disaster restarts the cycle, draining resources that could have funded prevention.



Taking action ahead of a crisis is cheaper and more effective than post-disaster recovery. Along with adaptive social protection and contingent finance, can reduce humanitarian costs and give communities the means to invest in long-term risk reduction.

Yet DRR is still a low priority in global development assistance, accounting for less than 0.5% of total expenditure. Moreover, the limited funding that is available is often disproportionately directed to response rather than prevention and preparedness. For instance, between 2005 and 2017, of the \$137 billion provided in development assistance related to disasters, 96% was spent on emergency response, reconstruction, relief and rehabilitation. Less than 4% (\$5.2 billion) was invested into disaster prevention, mitigation and preparedness. Given the clear benefits of prevention, this is an increasingly inefficient investment approach that is not suited to the current and future risk landscape.

Multiple, successive disaster events in Chad, for example, add additional suffering to populations already struggling with conflict, displacement and food insecurity. Floods in late 2024 displaced more people than in the previous 15 years combined and took place against a backdrop of increasing humanitarian need and an influx of refugees fleeing conflict in Sudan. Over 13 million hectares of land were flooded, roads were submerged or destroyed and water and health systems disrupted.

Flooding in in of N'Djaména following the rupture of a dyke in Toukra, located along the Logone river, Chad 2020.



Credit: OCHA/Federica Gabellini

Resilience pays

GAR 2025 outlines how a layered approach to risk management—one that balances risk reduction, retention and transfer—can effectively address the three spirals of unsustainable development. Tools exist to achieve this, but they need to be scaled up and applied more consistently in ways that build on the capacities of local contexts. This shift towards proactive risk management is critical for DRR and yields a triple dividend: economic stability, enhanced resilience and increased private sector investment.

Risk models of the impact of a once-a-millennium flood event in Thailand substantiate this point. The

modelling showed how resilient investment could avoid \$48 billion in losses and reduce a potential four-level credit downgrade to two levels, thereby averting more than \$2.3 billion of annual interest payment increases.¹¹

This work goes far beyond public sector action. By mitigating business risks and breaking the spirals, the private sector can generate financial returns while strengthening operational security. To maximize impact, private sector initiatives should complement public sector investment. Bangladesh – July 25, 2020: A woman from the village is carrying wet jute on her shoulder to dry at flood-affected areas Rajrajeshor, Chandpur, Bangladesh.



Credit: Shutterstock, Jahangir Alam Onuchcha

Accelerating DRR for the 21st century requires action in six key areas as outlined below.

1. Democratize risk understanding

Physical disaster risk needs to be monitored and managed like any other potential risk to the financial system. Both the public and private sectors need access to robust risk information and clear analysis of their likely average annual losses and, in the case of more severe events, their probable maximum losses. Risk metrics should be complemented by resilience indicators, making the benefits of investing in resilience clearer and easier to integrate into decisions.

Quality risk information aligned to local realities is fundamental to directing investment effectively to prevent, reduce and manage risk. While hazard information is improving globally, governments need to do a better job of connecting this information to exposure and vulnerability data to better pinpoint risk. This can make pro-poor investments more effective, accelerate disaster recovery and protect infrastructure.

Harnessing both local knowledge and technological advances in machine learning and the appropriate use of artificial intelligence can accelerate trend analysis and the application of new insights into risk. For this to be effective, risk information needs to be standardized, accessible, comparable and, as far as possible, open source. Most of all it needs to be global: all countries and markets are impacted when risk knowledge is sold only to the highest bidder. Salvador, Bahia, Brazil - December 18, 2020: Fishermen are seen during fishing with a trawl along the fishing colony on Pituba beach, in the city of Salvador



Credit: Shutterstock, Joa Souza

2. Use public financing and regulation to break the risk-creation addiction

Governments can lead by embedding sustainable disaster risk financing strategies into their operations and by mandating resilience standards are applied in public infrastructure and investment. They also have a role in setting guardrails, spreading learning, and improving access to quality risk data. Metrics and taxonomies exist that can be enhanced to increase their coverage and quality through public-private collaborations and standard setting—as UNDRR has already been doing with key partners.

Even small, relatively low-cost actions, such as accelerating the speed at which low-income households are targeted and receive postdisaster recovery support can prevent long-term displacement and protect household incomes and livelihoods. When DRR works, emergencies are prevented and development investment goes further.

The scale of displacement prompted by disasters across the world (Map 3) underlines the urgent need for investment in resilience that protects both lives and livelihoods.

For example, Map 3 shows the number of internally displaced persons (IDPs) due to disasters recorded between 2014 and 2023, with a worldwide total

of almost 237.8 million. Of these, China and the Philippines both experienced over 40 million displaced persons each, while India, Bangladesh and Pakistan reported figures between 10 and 30 million.

For example, floods in the Philippines in January 2023, forced 260,000 people from their homes, generating a loss of economic productivity equivalent to 8,000 life-years, or over \$87 million. These losses rise to over 10,000 life-years or more than \$114 million if families who lost their homes are unable to recover within a year.¹²

Reaping the rewards of resilience also requires ring-fencing DRR budgets to empower responsible agencies; mainstreaming DRR across sectors and plans; and means putting in place appropriate accountability mechanisms, including budget tagging and tracking systems for DRR-related expenditures; and tracking fund allocation across risk management systems. And it means systematically capturing lessons on what worked and what needs improvement after disasters. This, in turn, is important for entities such as public pension funds so that younger generations remain confident that the contributions they make today will retain their value in the future.





Source: Data: IDMC, 2024. Cartography: GEM Foundation

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3. Innovate to keep risk transfer and insurance sustainable

To quote Prime Minister Mia Mottely of Barbados, "When a sector or a country or a region becomes uninsurable, they effectively become uninvestable." Insurance products have often struggled when transplanted wholesale from developed to developing countries without adaptation. In many cases, this has created affordability challenges or eroded trust between policyholders and insurers. A more tailored approach-one that supports insurance in easing governments' relief burden while protecting consumers-is essential if risk transfer tools are to succeed across both developed and developing contexts.

Risk transfer has great potential to incentivize risk reduction: if a country invests in risk reduction, insurance premiums should come down. When insurance companies are required to publish coverage and non-renewal data annually, it sends a powerful signal to markets about the price of unsafe infrastructure, supply chains and areas where risk is increasing. Risk transfer mechanisms such as insurance can no longer thrive unless governments and companies ensure their actions are more resilient to disaster shocks.

Making this work will require insurers to evolve. For example, cover should no longer be priced based on

replacement cost alone. It needs however to enable rebuilding to a standard that is fit for the future, and products need to be better adapted to their specific contexts. For example, the Pacific Catastrophe Risk Insurance Company, has recently deployed a parametric drought policy with a dual-trigger design enabling payouts of both preparedness and response.

Beyond domestic and commercial insurance, finance for adaptation and loss and damage are among the types of risk-sharing instruments that offer considerable potential for expanded risk transfer solutions. Needs-based social safety nets have long functioned in areas such as public health to cover individuals against rare but predictable diseases. The same kind of social safety nets must now emerge at scale to protect low-income workers from infrequent but high-impact disasters (such as periods of extreme heat, when outdoor work is impossible) and to ensure that recovery assistance reaches poor households quickly.

As volatility in hazard patterns increases, the pool of people and assets protected by public and/or private sector-backed risk transfer mechanisms must be enlarged if resilience is to be sufficiently enhanced.

4. Make the business case

The private sector accounts for about 75% of capital investment in most economies, and if these investments are not risk-informed, societal resilience will remain out of reach. Much of the world's hidden disaster risk is concentrated in companies that are under-insured and increasingly exposed to direct damage, supply chain disruption and broader financial volatility.

There is significant scope for innovation and cofinancing partnerships to incentivize private sector innovation and investment in DRR. One example of such innovation is an investment strategy aimed at mobilizing insurance capital into small to mid-size commercial infrastructure projects in developing and emerging markets. This strategy, recently announced by the Insurance Development Forum in collaboration with BlackRock, is designed to provide a replicable, scalable solution for insurance companies that improves the resilience of infrastructure in vulnerable communities, not as a corporate social responsibility project, but as a business venture.¹³

Investments that are underpinned by robust plans to manage risk and future volatility are increasingly likely to attract financing to meet sustainable development targets. Those that are not may struggle. A lack of risk understanding cannot be allowed to hamper investment and development, particularly in the countries that need it most.

Cityscape of Manizales, Caldas, Colombia which has developed an innovative insurance scheme to protect from disasters



Credit: Shutterstock, Jess Kraft

Communities and companies alike have centuries of experience in coping with disasters and taking action to reduce risk. Advances in risk analytics, engineering and emerging resilient technologies offer new opportunities to build more safely and affordably. Industries such as insurance recognize that their expertise in risk analytics has value beyond underwriting; it helps to identify and scale up safer, and therefore more investable, infrastructure. These efforts deserve recognition, and ideally incentives, alongside other strategic tools and development to ensure a just and green transition.

5. Anticipate shocks to reduce humanitarian need

Because resilience-building to date has been insufficient, many vulnerable countries often remain trapped in a vicious cycle of disaster, response and recovery, only to repeat the pattern again and again. Breaking the cycle requires scaling up anticipatory action and finance, while also increasing the proportion of aid activities directed to DRR beyond the current global level of 2%.

The Food and Agriculture Organization (FAO) and other United Nations agencies demonstrated the effectiveness of this approach in Mozambique, where they implemented projects under the national drought framework. Their interventions achieved a strong benefit-cost ratio of 2:25, a total monetized benefits per household of \$99 against a cost of \$44.19. The projects significantly improved livestock health and mortality rates and boosted crop yields and household food security.

This also requires a shift in mindset—recognizing that disasters arise not only from hazards, but also from underlying vulnerabilities or heightened exposure that enable hazards to escalate into humanitarian crises. Employing low-cost tools, such as disaster forensic analysis, to pinpoint learning and areas for improvement after disasters, is also essential.¹⁴ Recovery efforts that stop people falling into poverty and reduce core vulnerabilities or the most damaging exposures are cost effective and have great potential to prevent future crises.

6. Leverage the multiplier effect of international financial mechanisms

International finance institutions and public planners must harness the power of increasingly globalized financial markets to share risk more broadly, find better ways to prevent fiscal gaps, and support faster, better-targeted recovery—ensuring that disasters do not create humanitarian needs and long-term suffering.

Sometimes the costs of a disaster prevent a country from meeting its debt obligations and increase the risk of default. The rate at which such disastertriggered fiscal gaps recur varies greatly from country to country (Figure 4). According to analysis conducted in 2024, in 61 vulnerable countries, this fiscal gap return period is shorter than a decade, meaning every year such countries face a 10% chance of experiencing a fiscal gap.¹⁵ For lower-risk countries, the return period extends to approximately

once in every 50 years. However, better disaster risk financing options can help prevent this growing divide between countries trapped in recurring disaster-driven fiscal crises and those able to pursue more stable, longterm development. The study explored the potential role of International Monetary Fund Special Drawing Rights (SDRs) in cushioning the fiscal impact of disasters. In a scenario where low-income and emerging economies could access just 10% of their SDR entitlements following a major disaster, the average time before the next fiscal crisis would be extended by 19 years for low-income countries and by 12 years for emerging economies. This relatively modest shift in financing could yield significant development gains by reducing risk and buying time for recovery and investment.



Source: Data: IIASA, 2024; Cartography: GEM Foundation, 2024

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A dispute exists between the Governments of Argentina and the United Kingdom of Great Britain and Northem Ireland concerning sovereignty over the Falkland Islands (Malvinas). Disasters currently have the greatest impact on wellbeing and development in contexts where resources and resilience are already limited. Preventing \$314 billion in annual disaster asset losses could generate well-being gains of twice that amount that would benefit the poorest households most.¹⁶

Increasingly, proactive fiscal planning and proof-ofresilience investments can help prevent potential sovereign downgrades. This is particularly beneficial for emerging and developing economies that are both vulnerable to climate risks and burdened with high levels of debt. As multilateral systems evolve to address complex challenges such as adaptation and loss-anddamage finance, it will be essential to draw lessons from risk pooling and reinsurance. This requires innovation and sustained learning, but the potential benefits are substantial. Existing mechanisms can be strengthened to facilitate this, including the Santiago Network, which provides technical assistance to developing countries working to boost resilience to loss and damage.



Terraced Farm, Nepal.

Credit: Michael Estigoy

In many contexts, tools like official development assistance (ODA) and, increasingly, climate adaptation finance, can be used to help fiscally constrained countries enhance their resilience. This not only supports long-term stability; it also enhances the return on aid investments, with DRR measures often yielding some of the highest benefitcost ratios, ranging from 2:1 to 10:1 or more.

Multilateral donors and investment banks can leverage these efficiency gains to protect their

portfolios from the cascading impacts of disaster volatility. Even relatively modest interventions—such as extending reinsurance-style coverage to absorb a share of GDP losses when least developed countries and small island developing states are impacted by a major disaster—can prevent debt defaults and avert decades of stalled development. Concrete measures to buffer against disaster shocks should become standard in the design of sovereign loan programs and in the prioritization of ODA.

Act now: break the cycle and build resilience

Breaking the current destructive cycle of disaster, recovery and debt is urgent and essential for continued prosperity in a climate-changed world. The rising costs and intensifying frequency of disasters can no longer be addressed in isolation—they are systemic threats that demand a fundamental shift in how risk is understood, financed and managed globally. By embedding DRR at the heart of financial decisions and policy frameworks, governments, businesses and communities can interrupt

¹https://www.undrr.org/monitoring-sendai-framework/snapshot

²UNDRR estimate using CRED and UCLouvain, 2025. Extracted 3 march 2025.

harmful cycles of vulnerability, loss and debt while accelerating sustainable, equitable development.

The pathway beyond 2030 need not be defined by shocks and piecemeal, unplanned recovery; instead, proactive investment in resilience can pave the way to a future defined by stability, prosperity and sustainable progress. The opportunities for transformative action are clear—now it is up to decision-makers across the globe to seize them.

⁴Network for Greening the Financial System, 2018. 5de L'Estoile and Kerdelhué, 2025. ⁶The estimates presented in this chart are based on projected changes in extreme climate events under different global warming scenarios. The 1.5°C scenario represents a world where warming is limited to 1.5°C above preindustrial levels (1850-1900), consistent with the most ambitious target of the Paris Agreement. The 2.0°C scenario corresponds to a 2.0°C warming limit, which is the upper boundary set in the Paris Agreement to reduce severe climate risks. The "Current Pledges" scenario reflects global warming levels expected based on current national policies and climate commitments (NDCs, Nationally Determined Contributions), leading to an estimated warming of approximately 2.6°C to 3.0°C by 2100 if all pledges are fully implemented. These scenarios align with Representative Concentration Pathways (RCPs) and Shared Socioeconomic Pathways (SSPs) used in climate modeling. The 1.5°C and 2.0°C scenarios are roughly associated with RCP2.6 and RCP3.4, which represent low greenhouse gas emissions pathways. The "Current Pledges" scenario aligns more closely with RCP4.5 to RCP6.0, which correspond to intermediate emissions pathways leading to higher warming levels.

⁷Calderon and Silva, 2022.

80'Connor et al., 2023

³Davis et al 2023

⁹Hutley et al., 2022.
¹⁰Lloyd's, 2018.
¹¹Bernhofen et al., 2024.
¹²IDMC, 2025.
¹³Green Climate Fund, 2023.
¹⁴UNDRR, 2024.
¹⁵ILASA 2025.

¹⁶Middelanis, R et al., 2025.

