



SOLUTIONS PAPER,  
MARCH 2026

# Enhancing insurability against natural disasters

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# BACKGROUND

Natural disasters increasingly disrupt economies worldwide, but their impacts are particularly severe for vulnerable low-income countries. The growing frequency and intensity of such events, including across G7 countries, are harmful for economic stability and exposing weaknesses in global financial resilience. At the same time, the insurance protection gap is widening, leaving both advanced and vulnerable countries with significant uncovered risks. To address these challenges, the T7 suggests recommendations aimed at closing the insurance protection gap and ensuring long-term system sustainability, while also recognising that insurance is one of multiple solutions for resilience and preparedness and that other measures are also required. Our recommendations in relation to insurance focus on: scaling the use of financial protection tools against natural disasters, promoting fairer burden-sharing between the insurance industry and public authorities, highlighting the role of preventive action to reduce risks, and mobilising financial resources for countries most vulnerable to climate change, particularly those eligible for ODA.

## Theme 1: Distribute costs fairly and effectively between public and private

Enable the expansion of insurance markets by collaborating to address barriers

1.1. The G7 should work with the OECD and IAIS to build on and enhance the High-Level Framework on Public-Private Insurance against Natural Hazards with the aim to make disaster coverage more affordable over the long term for families and businesses. The interests of consumers should be preserved, by ensuring they understand their options, and with clear burden-sharing rules so that insurers benefiting public backstops pay their fair share, including compliance with value for money requirements in pricing processes. The new work should highlight proven approaches like incentives to reduce risks, catastrophe bonds, and upfront investments in prevention. Identification of common gaps and solutions could be facilitated via a high-level dialogue between insurers, policymakers and providers of state backstops. These discussions would share real-world lessons on proven approaches.

Build resilience into Public Private Partnerships (PPPs)

1.2. The G7 should work together and collaborate with other actors e.g. UN FIT, OECD and Worldbank and the European technical working group convening certain European schemes, such as Swiss KGV and Flood Re in order to link PPPs to measurable resilience outcomes, based on lessons learned from existing schemes (e.g. Flood Re's "Build Back Better", Japan's Disaster Risk Reduction x Technology Public-Private Partnership Platform). This effort should take into account developing country contexts where fiscal space and institutional capacity are constrained, creating an enabling environment by supporting local capital market development and positioning resilience

infrastructure as an investable asset class. The G7 should engage the IMF and World Bank in this effort potentially working with other countries which lend to other sovereigns e.g. members of the Paris Club, in order to ensure that their approaches to macro surveillance, debt sustainability and resilience financing are compatible with scaled-up use of PPPs.

Strengthen collaboration and coordination at multilateral level

1.3 The G7 should drive the joint creation by willing countries of a high-level co-ordination platform to align the Global Shield and regional risk pools (including, African Risk Capacity and CCRIF, and exploring new pools in G7 regions e.g. the European model proposed by EIOPA and the ECB), working closely with key MDBs including the World Bank, IDB, EIB, ADB and AfDB. This platform would support further expansion of the Global Shield and help address current gaps, including the difficulty that some pools, such as the ARC, face in covering slow-onset risks (e.g. persistent drought) and non-economic needs. It would also improve support for the most vulnerable countries that lack access to more complex risk transfer solutions, such as cat bonds (which the Global Shield and other risk pools do not have experience issuing). In supporting the provision of technical assistance to developing countries and coordinating access to pre-arranged financing, learnings can be taken from initiatives such as IDRIMA on best practices for tailoring to local contexts and needs.

## Theme 2: Creating space for insurability and investability in developing countries

Standardise parametric tools to accelerate their widespread uptake

2.1. The G7 should task the IAIS with developing common standards and international norms for overseeing forecast-based financing, parametric insurance and catastrophe bonds and technical assistance for their implementation. Standards should clearly articulate benefits and limits (costs, viable scale, when to combine with indemnity), include methodological standards for identifying/verifying indexes, and transparency, consumer protection and safeguards against basis risk, especially in low-income markets.

Pay out rapidly after disasters hit

2.2 G7 members should engage with the International Development Finance Club and its members to scale pre-arranged financing for disasters, particularly insurance and forecast-based financing, through harmonising approaches such as: for structuring of catastrophe bonds; the design of parametric-like triggers for climate resilient debt clauses in sovereign debt agreements; and debt-for-nature/climate swaps as important tools for freeing up fiscal space and supporting long-term investability

## Theme 3: Creating a shared international understanding of physical risks

Create shared tools and knowledge which are actionable by national governments

3.1. The G7 should make a request to the joint platform of the NGFS-CFMCA to develop a shared methodology and open-source tool for scenario-based territorial fiscal impact assessments, with the aim of embedding disaster risk into medium-term fiscal policy planning. This work should prioritise high-impact hazards and enable consistent analysis across risk dimensions: hazard, exposure, vulnerability and socio-economic conditions. This should support the development of methodologies for quantifying contingent liabilities.

3.2. The G7 should also ask the joint platform of the NGFS-CFMCA to produce a live resilience “solutions catalogue” organised by hazard type and region, featuring evidence-based scalable measures with inclusion supported by evidence of impact on loss reduction and insurability, local conditions for deployment and implementation challenges. The catalogue should cross-reference with latest EMDE investment pipeline information, to support investment planning in the most vulnerable countries and ensure local ownership.

Consolidate risk indicators in order to support systemic surveillance

3.3. The G7 should commission a trusted third party to build a shared a free-access database which brings together existing natural catastrophe risk indicators from various sources, and design new indicators where there are gaps (particularly the case for metrics to be used by Ministries of Finance and Central Banks) together with a monitoring plan. The database should include a phased option for low-data environments, and should be aligned with the FSB Climate Roadmap, in order to facilitate new joint work between the international standard-setters (e.g. BCBS, IAIS and IOSCO), it should also be interoperable with the IMF FSAP approaches. In developing the database, the G7 should review existing initiatives such as UEA-Belém indicators and the metrics developed under the Kananaskis Wildfire Charter, in order to ensure complementarity.

Share risk data with communities and the most vulnerable

3.4 The G7 should facilitate the creation by a trusted third party of a global open source platform making all publicly available data about natural hazard exposure accessible and usable for frontline workers, exposed industries, impacted communities and individual consumers, to facilitate prevention and risk management. These actors should be enabled to accurately understand their exposure to natural hazards. Building on the Climada and EM-DAT tools, and on work conducted by EIOPA and IAIS, key principles of the platform should be focused on accessibility (e.g. use of local languages), usefulness (e.g. for adaptation planning including monitoring payouts) and equity (e.g. to support public safeguards against widening inequalities).The platform should also make

clear where data is lacking, and the G7 should review these gaps in future in order to identify actions to address them.

3.5. The G7 should engage key institutions (e.g. OECD, UNDP, IMF, WB, EIB, CREWS & Met Offices) to support delivery of recommendations 1.1 to 1.3 in EMDE contexts by providing open tools, shared metrics and data access, ensuring usability for the most vulnerable LDCs.

# ANNEXES

## Annex I – Technical Resources and Relevant Initiatives

### Theme 1: Distribute costs fairly and effectively between public and private actors

#### 1.1 Public Private Insurance Architectures for Natural Hazards

Public–private insurance schemes have long been put forward as examples to follow (Browne & Hoyt, 2000; Kunreuther, 2001; Charpentier, 2008; Herweijer et al., 2009). However, they can take many forms. They can broadly be divided into three categories, which can be adapted to country-specific insurance structures: mandatory solidarity-based systems with a state-backed reinsurer; targeted public reinsurance pools for high-risk segments; and federal insurance schemes with direct underwriting.

To efficiently support the implementation of PPPs, two main strengths can be considered:

- **Stability and insurance culture.** Compulsory coverage must be legally enforceable and embedded in a stable regulatory framework. Private market leadership and risk-based regulation are essential to ensure credible enforcement and prudential consistency; otherwise, compulsion may weaken market discipline rather than support sustainable risk pooling. Strengthening insurance literacy at the national level may also require long-term investment
- **Reliable hazard mapping and exposure data** are equally essential. Technical capacity is needed to assess risk at a granular level and translate it into actuarially “sound” premiums (Charpentier, 2008).

#### Key References:

European Central Bank, & European Insurance and Occupational Pensions Authority. (2024). *Towards a European system for natural catastrophe risk management*: ECBank & EIOPA December 2024 [https://www.eiopa.europa.eu/document/download/d8c87070-f602-4bf7-b8d8-726ec0b5c173\\_en](https://www.eiopa.europa.eu/document/download/d8c87070-f602-4bf7-b8d8-726ec0b5c173_en)

Browne, M.J., Hoyt, R.E. The Demand for Flood Insurance: Empirical Evidence. *Journal of Risk and Uncertainty* 20, 291–306 (2000). <https://doi.org/10.1023/A:1007823631497>

Herweijer, C., Ranger, N. & Ward, R. Adaptation to Climate Change: Threats and Opportunities for the Insurance Industry. *Geneva Pap Risk Insur Issues Pract* 34, 360–380 (2009). <https://doi.org/10.1057/gpp.2009.13>

Geneva Association. (2026). *Addressing growing protection gaps through better public-private insurance programmes*. Author: H. Schernberg. Geneva Association.  
<https://www.genevaassociation.org/publication/public-policy-regulation/addressing-growing-protection-gaps-through-better-public>

Kunreuther, H. (2001). Mitigation and Financial Risk Management for Natural Hazards. *The Geneva Papers on Risk and Insurance. Issues and Practice*, 26(2), 277–296.  
<http://www.jstor.org/stable/41952568>

Charpentier, A. (2008). Insurability of Climate Risks. *The Geneva Papers on Risk and Insurance. Issues and Practice*, 33(1), 91–109. <http://www.jstor.org/stable/41952975>

### 1.3 Build resilience into Public Private Partnerships (PPPs)

The joint ECB and EIOPA work on the climate insurance protection gap shows that coverage levels differ widely across Member States and that climate risks are rising unevenly across Europe (ECB & EIOPA, 2023). This fragmentation limits risk sharing, weakens market depth in some countries, and increases fiscal exposure where insurance penetration is low. However, effective risk pooling requires a shared insurance or reinsurance framework.

A coordination platform should provide technical support to developing countries. Promoting insurance culture also means building capacities for catastrophe modelling, contract design, risk-layering strategies along with access to capital market instruments. Multilateral Development Banks (MDBs) such as the World Bank, IDB, EIB, ADB and AfDB can play a central role in building domestic institutional capacity.

The objective will be to create a layered architecture in which regional pools, national PPPs, and private markets operate in complementarity, strengthening both resilience and financial sustainability.

#### **Key References:**

European Central Bank, & European Insurance and Occupational Pensions Authority. (2023). *Policy options to reduce the climate insurance protection gap*. ECB and EIOPA.  
[https://www.ecb.europa.eu/pub/pdf/other/ecb.policyoptions\\_EIOPA~c0adae58b7.en.pdf](https://www.ecb.europa.eu/pub/pdf/other/ecb.policyoptions_EIOPA~c0adae58b7.en.pdf)

#### **Similar coordination platforms for other perils:**

[The International Forum of Terrorism Risk \(Re\)Insurance Pools \(IFTRIP\)](#)

## **Theme 2: Creating space for insurability and investibility in developing countries**

Positioning Parametric and Microinsurance in EMDEs

Parametric and microinsurance instruments help to insure what is often considered as not insurable. Following the layered allocation logic, parametric products are most appropriate for medium-frequency, covariant shocks where liquidity speed matters, while microinsurance can help cover specific population segments within broader national architectures.

<b>Dimension</b>	<b>Parametric Insurance</b>	<b>Microinsurance</b>
Trigger	Predefined index (rainfall, river height, wind speed, satellite data)	Indemnity or simplified coverage; sometimes index-based
Objective	Rapid liquidity, reduced transaction cost	Financial inclusion and household protection
Data Requirement	High quality, verifiable index data	Minimal but reliable loss or exposure data
Distribution	Often sovereign, meso-level, or bundled via institutions	Mobile operators, MFIs, cooperatives, municipalities
Premium Structure	Often externally supported or pooled	Low premium, short term, simplified underwriting
Main Risk	Basis risk and political controversy over triggers	Low uptake, trust deficit, scale insufficiency
Regulatory Need	Clear index governance and verification	Proportionate regulation, consumer protection

In EMDEs, digital technology is central for scale and cost reduction (IAIS, 2018 ; Micro Insurance Network, 2024). Mobile network operators can serve as distribution platforms. Premium collection through mobile money is already reducing transaction costs and overcomes geographic barriers.

And digital distribution requires both physical and institutional infrastructure to operate efficiently. Auto-enrolment and context-specific bundle coverage can increase penetration but might weaken the informed consent if transparency is insufficient.

### The need for a common understanding on Parametric Insurance

Public-private insurance schemes have long been put forward as examples to follow (Browne & Hoyt, 2000; Kunreuther, 2001; Charpentier, 2008; Herweijer *et al.*, 2009). However, they can take many forms. They can broadly be divided into three categories, which can be adapted to country-specific insurance structures: mandatory solidarity-based systems with a state-backed reinsurer; targeted public reinsurance pools for high-risk segments; and federal insurance schemes with

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A coordination platform should provide technical support to developing countries. Promoting insurance culture also means building capacities for catastrophe modelling, contract design, risk-layering strategies along with access to capital market instruments. Multilateral Development Banks (MDBs) such as the World Bank, IDB, EIB, ADB and AfDB can play a central role in building domestic institutional capacity.

The objective will be to create a layered architecture in which regional pools, national PPPs, and private markets operate in complementarity, strengthening both resilience and financial sustainability.

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European Central Bank, & European Insurance and Occupational Pensions Authority. (2023). *Policy options to reduce the climate insurance protection gap*. ECB and EIOPA. [https://www.ecb.europa.eu/pub/pdf/other/ecb.policyoptions\\_EIOPA~c0adae58b7.en.pdf](https://www.ecb.europa.eu/pub/pdf/other/ecb.policyoptions_EIOPA~c0adae58b7.en.pdf)

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And digital distribution requires both physical and institutional infrastructure to operate efficiently. Auto-enrolment and context-specific bundle coverage can increase penetration but might weaken the informed consent if transparency is insufficient.

### The need for a common understanding on Parametric Insurance

Parametric insurance is often presented as a solution to liquidity and transaction cost constraints. However, it also introduces structural challenges.

Parametric insurance does not resolve structural insurability problems. In heavy-tailed risk regimes, where loss distributions approach infinite mean or exhibit extreme variance, diversification itself may fail (Charpentier, 2007). In such contexts, expanding parametric coverage without parallel investments in prevention may increase instability rather than reduce it.

In some cases, the conditions required to trigger the insurance are not met. This can have significant adverse consequences, particularly when a country urgently needs liquidity, for example during a pandemic, and the contractual trigger requirements are not satisfied.

This is why instruments like parametric insurance can contribute to insurability in EMDEs if several conditions (Lopez *et al.*, 2026, p. 43) are met:

- Availability: the index must be easily computable by both parties and its existence need to be guaranteed through time
- Transparency: the information used to conceive the index need to be reliable and non-biased
- Interpretability: the insured party needs to be capable of understanding why the index is correctly measuring the risk.

These conditions can be the building blocks on which parametric insurance can be seen as trustable, discussed and adjusted, including in the event of a litigation.

### Key References:

Micro Insurance Network (2024). *The Landscape of Microinsurance 2024*.

<https://microinsurancenetwork.org/resources/the-landscape-of-microinsurance-2024>

International Association of Insurance Supervisors (2018). *Application paper on the use of digital technology in inclusive insurance*. IAIS. <https://www.iais.org/uploads/2022/01/181112-Application-Paper-on-the-Use-of-Digital-Technology-in-Inclusive-Insurance.pdf>

Lopez, O., Neves, C. & Sabatié, L. (2026). *Assurance paramétrique: des produits susceptibles de repousser les limites de l'assurabilité*. Opinion et Débats, Institut Louis Bachelier. [https://cdn.prod.website-files.com/672cea0ae7889396005b1e87/696f48fd6b485ae97786fe92\\_Assurance%20param%C3%A9trique%20des%20produits%20susceptibles%20de%20repousser%20les%20limites%20de%20l%27assurabilit%C3%A9.pdf](https://cdn.prod.website-files.com/672cea0ae7889396005b1e87/696f48fd6b485ae97786fe92_Assurance%20param%C3%A9trique%20des%20produits%20susceptibles%20de%20repousser%20les%20limites%20de%20l%27assurabilit%C3%A9.pdf)

Charpentier, A. (2007) 'Insuring risks when pure premium is infinite?', Bulletin Français d'Actuariat 13: 67-82. [https://www.ressources-actuarielles.net/EXT/IA/sitebfa.nsf/0/64F0BD66136D7542C12572F400362559/\\$FILE/CHARPENTIER.pdf?OpenElement](https://www.ressources-actuarielles.net/EXT/IA/sitebfa.nsf/0/64F0BD66136D7542C12572F400362559/$FILE/CHARPENTIER.pdf?OpenElement)

CPI, (2025) 'Climate-resilient debt clauses: a primer for FiCS members' <https://www.climatepolicyinitiative.org/publication/climate-resilient-debt-clauses-a-primer-for-fics-members/>

Disaster Risk Financing and Insurance in South East Asia

### Key References:

ASEAN Disaster Risk Financing & Insurance in ASEAN: Trend Report DM-12-2025. ASEAN Secretariat.

[https://asean.org/wp-content/uploads/2025/04/20240401\\_Trend-Report\\_DM-12-2025.pdf](https://asean.org/wp-content/uploads/2025/04/20240401_Trend-Report_DM-12-2025.pdf)

Asian Development Bank & Springer. (n.d.). *Disaster Risk Financing in Asia*. In *Economic Challenges in Asia* (Chapter). Springer. [https://ideas.repec.org/h/spr/eclchp/978-981-13-9005-0\\_2.html](https://ideas.repec.org/h/spr/eclchp/978-981-13-9005-0_2.html)

Key Disaster Risk Reduction (DRR) Mechanisms in ASEAN

- **ASEAN Agreement on Disaster Management and Emergency Response (AADMER):** The region's legally binding framework for disaster management, DRR, and climate change adaptation.
- **AHA Centre (ASEAN Coordinating Centre for Humanitarian Assistance):** Supports regional, national, and local cooperation through mechanisms such as the ASEAN-ERAT and the ACE Programme.
- **Risk Assessment and Monitoring Tools:**
  - ASEAN Risk and Vulnerability Assessment (RVA) Guidelines

- Urban Resilience Guidebook
- ASEAN Disaster Risk Communication Framework (ADRCF)
- **SEADRIF (Southeast Asia Disaster Risk Insurance Facility):** Provides regional insurance solutions, such as flood insurance for Laos and Cambodia, and facilitates a catastrophe risk pool for ASEAN+3 members.

## Regional Context and Challenges

- Japan's national resilience system (including seismic preparedness) is more advanced than in most of South East Asia.
- Average annual damage in the region exceeds **US\$4.4 billion**, and **over 50% of global disaster-related fatalities** occur in South East Asia.
- Infrastructure is frequently constructed without disaster-resilient standards.
- Public funding remains largely reactive rather than preventive.
- Insurance penetration is very low:
  - <5% overall insurance coverage
  - <10% of small businesses holding Business Continuity Plans (BCPs)

## Global Initiatives Relevant to G7 Engagement

**NGFS–CFMCA Dialogue Platform** <https://www.ngfs.net/en/press-release/ngfs-and-coalition-finance-ministers-strengthen-collaboration-climate-launch-joint-dialogue-platform>

A collaboration platform launched by the *Network for Greening the Financial System* (NGFS) and the *Coalition of Finance Ministers for Climate Action* (CFMCA) to deepen knowledge exchange between central banks and finance ministries on the macroeconomic dimensions of climate change and sustainable finance.

**African Risk Capacity (ARC)** <https://www.arc.int/>

A specialized agency of the African Union that provides climate risk insurance and early response support to African governments through parametric financing to help manage droughts and other extreme weather events.

**International Development Finance Club (IDFC)** <https://www.idfc.org/>

A global network of national and regional development banks working together to mobilize sustainable development and climate finance and support implementation of the SDGs and the Paris Agreement.

**Caribbean Catastrophe Risk Insurance Facility (CCRIF)** <https://www.ccrif.org/>

A regional risk-pooling mechanism that provides fast parametric insurance payouts to Caribbean and Central American governments following hurricanes, earthquakes, and other natural disasters.

**Vulnerable Twenty Group (V20)** <https://cvfv20.org/>

A cooperation initiative of finance ministers from the world's most climate-vulnerable economies working to mobilize climate finance, share best practices, and drive collective action on climate risk and resilience.

**Climate Risk and Early Warning Systems (CREWS)** <https://crews-initiative.org/fr/home/>

An international financing initiative supporting climate risk early warning systems in vulnerable countries.

**Global Shield Against Climate Risks** <https://grma.global/>

A major international platform aimed at expanding pre-arranged financing and protection for vulnerable countries.

**Global Resilience Measurement Academy (GRMA)** <https://grma.global/>

An initiative focused on improving the measurement and understanding of climate resilience through capacity building, data harmonisation, and methodological innovation to support governments and financial institutions.

**Tripartite Programme: Increasing Insurance Protection in Climate-Exposed Countries.** <https://www.insdevforum.org/projects/the-idf-undp-bmz-tripartite-programme-increasing-insurance-protection-in-climate-exposed-countries/>

A partnership between the Insurance Development Forum, UNDP and the German Federal Ministry for Economic Cooperation and Development designed to expand insurance protection in climate-exposed countries through technical assistance, product development, and policy engagement.

**Bridgetown Initiative–IDF Partnership: Proposals to Activate Insurance as a Catalyst for Resilience, Development and Sustainable Growth.** <https://www.insdevforum.org/press-release-idf-bridgetown-initiative-partnership-launches-proposals-to-activate-insurance-as-a-catalyst-for-resilience-development-and-sustainable-growth/>

A collaboration under the wider Bridgetown Initiative aimed at deploying insurance as a catalyst for resilience, development financing, and recovery in climate-vulnerable economies, including through sovereign-level insurance and risk-pooling mechanisms.

**IDRIMA (Joint AFD/IDF Initiative):** (2025). *IDRIMA White Paper*. AFD/IDF. (Link: [IDF\\_White\\_Paper\\_30-05-25.pdf](#))

A joint initiative between AFD and the Insurance Development Forum that develops and deploys scalable insurance solutions to strengthen financial resilience in vulnerable countries, supported by research, product innovation, and institutional partnerships.

### **Theme 3: Creating a shared international understanding of physical risks**

## Existing Risk and Hazard Mapping Platforms within G7 Countries:

### United States

- **FEMA National Flood Hazard Layer (NFHL)** – flood hazard layers (incl. FEMA flood maps) as GIS services/downloads.
- **FEMA National Risk Index (NRI)** – interactive map + dataset covering 18 natural hazards at community level.
- **NOAA NCEI Natural Hazards (incl. Storm Events)** – archive and access tools for hazard/disaster-related datasets (storms, floods, etc.).
- **USGS Earthquake Hazards** – hazard maps (shaking hazard products for building codes, etc.).

### Canada

- **Canada Flood Map Inventory (NRCan / Open Government Portal)** – inventory of where flood hazard maps exist and how to access them.
- **Flood Hazard Identification and Mapping Program (FHIMP)** – program and access route to higher-risk area flood hazard information.
- **Canadian Wildland Fire Information System (CWFIS)** – national wildfire danger/occurrence maps, hotspots, forecasts, plus datamart.
- **Earthquakes Canada (NRCan)** – seismic hazard maps (incl. simplified hazard map).
- **Geo.ca “Emergency” theme** – discovery portal for Canadian hazard/emergency geospatial datasets.

### United Kingdom

- **Flood Map for Planning (England)** – official planning-focused flood risk info + printable maps / data requests.
- **UK (Wales) National Flood Hazard and Risk Maps (dataset)** – published flood hazard/risk mapping outputs (Wales).

*(UK hazard information is quite devolved—England/EA, Wales/NRW, Scotland/SEPA, NI/DAERA—so the main “platforms” tend to be national-by-nation rather than one single UK-wide portal.)*

### France

- **Géorisques** – France’s public portal to check location-based exposure across multiple natural hazards (flood, wildfire, seismic, landslide, coastal, etc.).
- **Géorisques interactive maps** – interactive hazard layers and map tools.

### Germany

- **BfG Geoportal: Flood hazard & flood risk maps (HWRM)** – national viewer interfacing to Länder-specific hazard/risk maps.
- **GFZ “Erdbebenzonen” (earthquake zone query/map)** – public earthquake zoning map interface (DIN-related).

- **BGR Federal Earthquake Service** – public seismicity map (events since 1900, etc.).

## Italy

- **Dipartimento della Protezione Civile – “Mappe rischi”** – public maps/dashboards for meteo-hydro and volcanic risk (incl. alerting products).
- **ISPRA IdroGEO** – national platform for hydrogeological instability: landslides + flood hazard/risk, reports and downloads.
- **ISPRA flood hazard & risk maps (alluvioni)** – flood hazard/risk map resources.

## Japan

- **GSI “Hazard Map Portal” (ハザードマップポータルサイト)** – national portal to explore local hazard maps (run by MLIT/GSI).
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## 3.2 Adaptation Solutions and Catalogues

**For examples of categorisation frameworks for adaptation measures, see:**

European Environment Agency. (2021). *Using Key Type Measures to Report Climate Adaptation Action in EEA Member Countries*. EEA.

<https://www.eionet.europa.eu/etcs/etc-cca/products/etc-cca-reports/using-key-type-measures-to-report-climate-adaptation-action-in-the-eea-member-countries>

This work illustrates diverse adaptation intervention types relevant for solution catalogues.

## 3.3 Consolidate risk indicators in order to support systemic surveillance

- For indicators aligned with the **IPCC AR5 risk framework** (hazard × exposure × vulnerability), relevant resources include:
  - International Monetary Fund. (n.d.). *Climate Data Hub: Resilience and Risks*. <https://climatedata.imf.org/pages/resilience-and-risks>
  - Joint Research Centre (European Commission). (n.d.). *INFORM Risk Index*. <https://drmkc.jrc.ec.europa.eu/inform-index>
- These differ from **adaptation and resilience indicators**, which measure progress toward adaptation goals rather than underlying natural catastrophe risks.
- United Nations Framework Convention on Climate Change (UNFCCC). (2024). *Synthesis of submissions on the UAE–Belém work programme on indicators*. UNFCCC Secretariat. <https://unfccc.int/sites/default/files/resource/Synthesis%20of%20Submissions%20UAE-Belem%20Work%20programme%20Final.pdf>

- United Nations Office for Disaster Risk Reduction (UNDRR). (n.d.). **Sendai Framework Indicators**. <https://www.preventionweb.net/sendai-framework/sendai-framework-indicators>  
These focus on implementation progress and reduction of losses, with emphasis on rapid-onset hazards. They are less climate-specific and focus on observed damages rather than forward-looking resilience
- A collection of adaptation and resilience metrics from more than 30 different standards bodies and reports, including ISSB, TCFD and SASB can be found at: Bernhofen, M, Spacey Martín, R., and Ranger, N. (2024). Adaptation and Resilience Metrics (March 2024). Resilient Planet Finance Lab, Environmental Change Institute, University of Oxford. <https://www.eci.ox.ac.uk/page/adaptation-targets-and-metrics>

## Annex II – Summary Table of Recommendations and Implementation Arrangements

Ref	Lead institution(s) accountable	Intended deliverable	Implementation support
<b>Theme 1: Distribute costs fairly and effectively between public and private actors</b>			
<b>1.1 Strengthen public-private disaster insurance frameworks</b>	OECD, IAIS (working with G7)	Enhanced High-Level Framework on Public-Private Insurance; methodological guidance; dialogue platform	Technical assistance; policy guidance; support to consumer protection and market development
<b>1.2 Build resilience into PPPs</b>	G7 with UN FIT; IMF and World Bank involvement	Guidance for linking PPPs to measurable resilience outcomes	Technical assistance; support for local capital market development; enabling environment for resilience infrastructure
<b>1.3 High-level multilateral coordination platform for risk pools &amp; Global Shield</b>	G7 + willing countries; MDBs (WB, IDB, EIB, ADB, AfDB)	Coordination platform aligning Global Shield & risk pools; interoperability framework	Technical assistance; Support for developing countries; Improvements to risk transfer access (incl. Cat bonds).
<b>Theme 2: Creating space for insurability and investability in developing countries</b>			
<b>2.1 Standardise parametric tools &amp; forecast-based financing</b>	IAIS (tasked by G7)	Common international standards; TA toolkit for parametric insurance, catastrophe bonds & forecast-based financing	Technical assistance; Guidance; Methodological Standards; Safeguards to reduce basis risk.

<b>2.2 Scale pre-arranged financing &amp; rapid payouts</b>	International Development Finance Club (IDFC) with G7 members	Common frameworks; harmonised approaches for ILS structuring & parametric triggers	Technical assistance; Financing mechanisms; Improved rapid payout mechanisms.
<b>Theme 3: Creating a shared international understanding of physical risks</b>			
<b>3.1 Develop shared methodology &amp; tool for fiscal impact assessments</b>	NGFS–CFMCA Joint Platform (at G7 request)	Shared methodology and Open-source tool for scenario-based territorial fiscal impact assessments	Technical assistance; Data infrastructure; Integration with national fiscal planning processes.
<b>3.2 Live resilience “solutions catalogue”</b>	NGFS–CFMCA Joint Platform	Live, open-access resilience solutions catalogue (by hazard and region), linked to EMDE investment pipelines	Data infrastructure; Evidence gather; Link to EMDE investment pipelines.
<b>3.3 Consolidated catastrophe risk indicator framework</b>	Trusted third party	Open-source consolidated natural catastrophe risk indicator framework + monitoring plan	Technical assistance; Data infrastructure; Alignment with FSB/IMF frameworks.
<b>3.4 Open-source hazard exposure platform for communities</b>	Trusted third party (building on CLIMADA, ED-MAT, EIOPA, IAIS work)	Publicly accessible open-source data platform for hazard exposure	Data infrastructure; Usability support (local languages, accessibility); Gap identification for future G7 action.
<b>3.5 Support EMDE adoption of 1.1-1.3 tools</b>	OECD, UNDP, IMF, WB, EIB, CREWS, Met Offices	Technical assistance packages + shared metrics toolkit + open data access framework for EMDEs	Technical assistance to EMDEs; Open tools; Data infrastructure.

## Annex III – Glossary

**ADB:** Asian Development Bank

**AfDB:** African Development Bank

**ARC:** African Risk Capacity

**BCBS:** Basel Committee on Banking Supervision

**CCRIF:** Caribbean Catastrophe Risk Insurance Facility

**CFMCA:** Coalition of Finance Ministers for Climate Action

**CREWS:** Climate Risk and Early Warning Systems

**EIB:** European Investment Bank

**EIOPA:** European Insurance and Occupational Pensions Authority

**EMDE:** Emerging Markets and Developing Economies

**EU:** European Union

**FSAP:** Financial Sector Assessment Program

**FSB:** Financial Stability Board

**IAIS:** International Association of Insurance Supervisors

**IDB:** Inter-American Development Bank

**IMF:** International Monetary Fund

**IOSCO:** International Organization of Securities Commissions

**LDCs:** Least Developed Countries

**MDBs:** Multilateral Development Banks

**NGFS:** Network for Greening the Financial System

**ODA:** Official Development Assistance

**OECD:** Organisation for Economic Co-operation and Development

**PPP:** Public-Private Partnership

**UNDP:** United Nations Development Programme

**UN FIT:** United Nations Forum for Insurance Transition

**WB:** World Bank

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