THE STAKEHOLDER LANDSCAPE IN EXTREME EVENTS AND CLIMATE RISK MANAGEMENT
The Stakeholder Landscape in Extreme Events and Climate Risk Management

by Maryam Golnaraghi¹ and Patrick Khalil²

¹ Director, Extreme Event and Climate Risks Programme, The Geneva Association
² Analyst, Extreme Event and Climate Risks Programme, The Geneva Association
The Geneva Association

The Geneva Association is the leading international insurance think tank for strategically important insurance and risk management issues. It is a unique platform for dialogue between leaders of the insurance industry and key decision-makers at the international and national levels to evidence the important social and economic role of the insurance industry.

The Geneva Association identifies fundamental trends and strategic issues where insurance plays a substantial role or which influence the insurance sector. Through the development of research programmes, regular publications and the organisation of international meetings, The Geneva Association serves as a catalyst for progress in the understanding of risk and insurance matters and acts as an information creator and disseminator.

The Geneva Association membership comprises a statutory maximum of 90 chief executive officers (CEOs) from the world’s top insurance and reinsurance companies. It organises international expert networks and manages discussion platforms for senior insurance executives and specialists as well as policy-makers, regulators and multilateral organisations.

Established in 1973, The Geneva Association, officially the “International Association for the Study of Insurance Economics”, is based in Zurich, Switzerland and is a non-profit organisation funded by its membership.
The Stakeholder Landscape in Extreme Events and Climate Risk Management

The threat of large-scale natural disasters and climate is growing across the world, leaving nations increasingly exposed to a myriad of risks. As a result, many initiatives are under way at the international, regional, national and local levels by a diverse range of stakeholders to find better ways to protect human lives and livelihoods, and reduce economic losses.

Human development and settlement patterns, such as growing urban population, wealth and concentration of assets in high-risk regions, determine if and how a natural hazard could turn into a disaster (World Bank Group and United Nations, 2010). These impacts are further exacerbated by climate change, through changing characteristics of weather-related extremes, sea level rise and other environmental changes (IPCC, 2014; IPCC, 2012).

Whilst for a long time dismissed as ‘acts of God’, these socio-economic impacts can only be reduced through proactive integrated risk management. Over the last three decades, international policy dialogue on disaster risk reduction (DRR), climate change and sustainable development has advanced, with the goal to address the underpinning causes of these risks. Golnaraghi et al. (2016) define 2015 as a landmark year in bringing clarity and coherence to reshape the global development pathway. In that year, over 190 Member States adopted three international agreements: (i) the Sendai Framework for Disaster Risk Reduction (2015-2030) (United Nations General Assembly, 2015a) (ii) the 2030 Agenda for Sustainable Development (United Nations General Assembly, 2015b) and (iii) the Paris Agreement (UNFCCC, 2015). They highlight that, whilst each has its respective priorities for action, their common thread is the recognition of the importance of a cohesive and integrated approach to managing the risks of extreme events and climate across different economic sectors, levels of government and the society as a whole. Such an approach is risk-informed, and includes ex ante investments, (i) to reduce risks through early warning systems, emergency preparedness, and preventive measures; and, (ii) distribute the residual economic risk through risk financing and risk transfer (e.g. insurance and alternative risk transfer). This should be augmented with effective post-disaster reconstruction plans to reduce further the risks and build resilience. Finally, the three framework agreements have, recognised, explicitly or implicitly, the important role of insurance in building economic resilience to extreme events and climate risks.

With governments at the centre of these issues, an increasing number of coordinated multilateral initiatives have been forged over the last decade to raise awareness and enable the implementation of disaster and climate risk management capacities at the international, regional, national and local levels. These efforts have engaged various stakeholders, including the United Nations, socio-economic groupings, international development community, NGOs, scientific communities and academia, media agencies and the (re)insurance industry. An analysis of the complex landscape of stakeholders and initiatives indicates progress along four main areas, namely: (i) enhancing risk knowledge and expansion of risk assessment capacities to the public sector, (ii) promoting the integrated approach to disaster and climate risk management, (iii) developing solutions in disaster risk financing and risk transfer and (iv) expanding innovative insurance products in the agriculture sector.

According to Golnaraghi et al. (2016), despite the evident progress and achievements, multi-stakeholder engagement and related initiatives remain highly fragmented. They stress that development of sustainable and scalable risk management practices could benefit from stronger strategic public-private partnerships that leverage stakeholders’ strengths, avoid redundancies and align priorities.

Executive Summary

This document:

(i) highlights patterns of stakeholder engagement in the three international framework agreements,

(ii) provides an overview of the complex global landscape of the stakeholders,

(iii) gives examples of multilateral multi-stakeholder initiatives in disaster and climate risk management, and

(iv) highlights the innovations and initiatives in disaster risk financing and insurance since 2005.
Patterns of International Development and Stakeholders Engagement in Disaster and Climate Risk Management Negotiation Processes Since 1950s

Since the 1950s, the UN and its institutions have been bringing the topics of disaster risk reduction, climate change and sustainable development to the forefront of international policy dialogue. This has been achieved through various mechanisms and engaging different stakeholders. These processes profoundly influenced how these topics were perceived and addressed by national governments over the last five decades.
Since the 1950s, through its complex and multifaceted processes, programmes and institutional mechanisms, the international development community has identified common challenges and priorities of action related to the three international frameworks in disaster risk reduction (DRR), climate change and sustainable development (the United Nations Development Programme, the United Nations Office for the Coordination of Humanitarian Affairs [UNOCHA], the Chief Executive Board [CEB], the UN Development Group [UNDG], the UN Framework Convention on Climate Change [UNFCCC], and the UN Office for the Coordination of Humanitarian Affairs [OCHA]). The General Assembly is the main deliberative, policy-making and representative organ of the United Nations system, and includes all the UN member states.

The UN currently has 15 specialised agencies, which are independent (self-governing) organisations. They have their own designated organs from the Member States, government representatives, planning and budgeting bodies, and the Secretariat. The principal organs of the UN are the General Assembly, the Security Council, the Economic and Social Council, the International Court of Justice, and the Secretariat. The Secretariat carries out the work of the UN under the overall guidance and direction of the General Assembly, the Security Council and other principal organs.

The UN General Assembly has established three UNDESA funds for programmes, projects and activities in the areas of human settlements, infrastructure development, and water resources management. In general, the UNDESA funds are financial mechanisms that are created by the General Assembly to enable the UN to support projects, programmes and activities in specific fields of development.

The UN has two primary purposes:

- To maintain international peace and security,
- To develop friendly relations among nations.

This is done through the United Nations Security Council, which is made up of 15 members. The Security Council has the power to take action on any matter that threatens peace and security.

The UN is a key player in the field of disaster risk reduction (DRR), climate change and sustainable development. It has a mandate to lead international efforts to achieve the Sustainable Development Goals (SDGs) and the Paris Agreement on Climate Change.

The UN has several key roles in the field of DRR and climate change, including:

- Leading, coordinating, and accompanying the implementation of DRR and climate change international agreements and commitments,
- Facilitating the coordination of efforts at national and international levels,
- Strengthening the capacity of countries to reduce disaster risk and mitigate climate change impacts,
- Engaging with Governments, civil society, the private sector, and other stakeholders to promote effective, inclusive, and resilient approaches to DRR and climate change.

The UN has a comprehensive set of legal instruments, including:

- The Hyogo Framework for Action (HFA) 2005-2015,
- The Sendai Framework for Disaster Risk Reduction 2015-2030,
- The Paris Agreement on Climate Change.

These frameworks provide a framework for action at the national and international levels, and have been widely adopted by countries around the world.

The UN has also established a range of mechanisms to support implementation, such as the Global Platform for Disaster Risk Reduction, the Platform for Climate Services, and the United Nations Office for Disaster Risk Reduction (UNISDR).

The UN is a key player in the field of DRR and climate change, and has a critical role to play in ensuring that the world is prepared for and able to respond to the challenges of climate change and disasters.

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Since 2005, there has been a burst of multi-lateral multi-stakeholder initiatives in disaster and climate risk management. These are categorized under four main areas: (1) enhance risk knowledge and risk assessment capacities, (2) promote an integrated approach to managing disaster and climate risks, (3) initiatives and innovation in risk transfer solutions; and, (4) facilitate risk transfer solutions (or mechanisms) for the agriculture sector. These areas remains highly active but fragmented; thus, implementing the integrated approach to disaster and climate risk management requires a new path to strategic partnerships that leverage the strengths of the engaged stakeholders, avoid redundancies and align priorities (Golnaraghi, et. al, 2016).

I. EXAMPLES OF INITIATIVES TO ENHANCE RISK KNOWLEDGE AND RISK ASSESSMENT CAPACITIES

<table>
<thead>
<tr>
<th>RISK KNOWLEDGE DEVELOPMENT</th>
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<tbody>
<tr>
<td>Global:</td>
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<tr>
<td>▪ Global Risk Assessment Report (GAR) (<a href="https://www.unisdr.org/we/inform/gar">link</a>)</td>
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<tr>
<td>▪ World Economic Forum Report (WEF) (<a href="https://www.weforum.org">link</a>)</td>
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<tr>
<td>▪ Global Earthquake Model (GEM) (<a href="https://www.globalquakemodel.org">link</a>)</td>
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<tr>
<td>▪ Inter-Governmental Panel on Climate Change (IPCC) Global Assessment Reports (<a href="https://www.ipcc.ch">link</a>)</td>
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<tr>
<td>▪ Global hazard maps published by Munich Re and Swiss Re</td>
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<tr>
<td>▪ Climate Risk Index by Germanwatch (<a href="https://germanwatch.org/en/cri">link</a>)</td>
</tr>
<tr>
<td>Country: studies by Risk Management Solutions (RMS) and AIR Worldwide Corporation (AIR) (with development banks)</td>
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<tr>
<td>Local: Risky Business Initiative (<a href="http://riskybusiness.org">link</a>)</td>
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<tr>
<th>REGIONAL AND NATIONAL INSTITUTIONAL CAPACITY DEVELOPMENT</th>
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<tbody>
<tr>
<td>▪ Central American Probabilistic Risk Assessment (CAPRA) (<a href="http://www.ecapra.org">link</a>)</td>
</tr>
<tr>
<td>▪ Caribbean Catastrophe Risk Insurance Facility (CCRIF) (<a href="http://www.ccrif.org">link</a>)</td>
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<tr>
<td>▪ The African Risk Capacity (ARC) (<a href="http://www.africanriskcapacity.org">link</a>)</td>
</tr>
<tr>
<td>▪ Pacific Catastrophe Risk Assessment and Financing Initiative (PCRAFI) (<a href="http://pcrafi.sopac.org">link</a>)</td>
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<tr>
<th>RISK MODELLING PRODUCTS/TOOLS</th>
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<tbody>
<tr>
<td>▪ Industry-funded OASIS (open source) (<a href="http://www.oasislmf.org">link</a>)</td>
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<tr>
<td>▪ Various proprietary models (e.g. risk modelling firms such as Risk Management Solutions, AIR Worldwide Corporation; CoreLogic, and AgRisk; insurance brokers such as AON, Guy Carpenter, Willis Towers Watson)</td>
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<tr>
<td>▪ World Bank Group’s support tool for development practitioners: ThinkHazard (<a href="http://thinkhazard.org">link</a>)</td>
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<tr>
<th>PLATFORMS</th>
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<tbody>
<tr>
<td>▪ Understanding Risk Forum (<a href="https://understandrisk.org">link</a>)</td>
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<tr>
<td>▪ Various industry risk modelling conferences</td>
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<tr>
<th>LOSS AND DAMAGE DATABASES AND ANALYSIS</th>
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<tr>
<td>▪ Swiss Re’s sigma (<a href="http://www.swissre.com/sigma">link</a>)</td>
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<tr>
<td>▪ Centre for Research on the Epidemiology of Disasters (CRED) EM-DAT (<a href="http://www.emdat.be">link</a>)</td>
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<tr>
<td>▪ Desinventar by LA RED (<a href="http://www.desinventar.org">link</a>)</td>
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<tr>
<td>▪ The Integrated Research on Disaster Risk (IRDR) programme of The International Council for Science (ICSU) IRDR Disaster Loss Data (DATA) (<a href="http://www.icsu.org">link</a>)</td>
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<th>RISK REPORTING</th>
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<tr>
<td>▪ Financial Stability Board’s Task-Force on Climate Related Financial Disclosure (<a href="https://www.fsb-tcfd.org">link</a>)</td>
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<tr>
<td>▪ Rating Agencies (e.g. S&amp;P and Moody’s)</td>
</tr>
<tr>
<td>▪ Climate Risk Reporting to NAIC (<a href="http://www.naic.org/cipr_topics/topic_climate_risk_disclosure.htm">link</a>)</td>
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II. EXAMPLES OF INITIATIVES PROMOTING AN INTEGRATED APPROACH TO MANAGING DISASTER AND CLIMATE RISKS

### UNITED NATIONS AND RELATED GLOBAL CAMPAIGNS
- UNISDR Safe Schools and Hospitals Global Campaign (https://www.unisdr.org/we/campaign/schools-hospitals)
- UNISDR-UN-Habitat Making Cities Resilient Global Campaign (http://www.unisdr.org/campaign/resilientcities)
- International Recovery Platform (http://www.recoveryplatform.org)
- UNISDR ARISE initiative with the private sector (http://www.preventionweb.net/arise)

### REGIONAL
- Climate-KIC (http://www.climate-kic.org)

### NATIONAL AND LOCAL
- 100 Resilient Cities, Rockefeller Foundation Initiative with many partners (http://www.100resilientcities.org) with Compact of Mayors (https://www.compactofmayors.org) and Local Governments for Sustainability (ICLEI) (http://www.iclei.org) (Also under NGOs)
- Build Back Better, Build Back Smarter by a variety of local, regional, state, and national public agency participants following the aftermath of Super Storm Sandy (U.S.) (http://postsandyinitiative.org)

### INSURANCE INDUSTRY
- (Re)Insurance company’s R&D programmes, centres of excellence and bi-lateral cooperation with international agencies—Examples are:
  - Swiss Re’s Economics of Climate Adaptation (ECA) (http://www.swissre.com/eca)
  - Intact Centre on Climate Adaptation in Canada (http://www.intactcentreclimateadaptation.ca)
- Multilateral R&D:
  - Insurance Institute for Business and Home Safety (U.S.) (https://disastersafety.org)
  - Insurance Research Lab for Better Homes (Canada) (http://www.eng.uwo.ca/irlbh)
  - ClimateWise (http://www.climatewise.org.uk)
  - Institute for Catastrophic Loss Reduction (ICLR) (https://www.iclr.org)
- High-level forums with governments and international partners:
  - The Geneva Association with IIS and ICMIF—High Level Forum on Resilience, hosted by the UN Secretary General (13 April 2016, UN HQ, NYC)
  - Insurance Development Forum with the UN and World Bank Group (http://theidf.org)
  - The Munich Climate Insurance Initiative (MCII) (http://www.climate-insurance.org)

### NGOs
- 100 Resilient Cities, a Rockefeller Foundation Initiative with many partners (http://www.100resilientcities.org), Compact of Mayors (https://www.compactofmayors.org) and Local Governments for Sustainability (ICLEI) (http://www.iclei.org)
- Initiatives by The Nature Conservancy, Environmental Defence Fund, etc. to promote the role of natural infrastructure in reducing risks of extreme events and climate change
- The Munich Climate Insurance Initiative (MCII) (http://www.climate-insurance.org)
III. EXAMPLES OF INITIATIVES AND INNOVATIONS IN RISK TRANSFER

**NATIONAL**
- UK Flood Re (http://www.floodre.co.uk)
- Netherlands Flood Insurance
- Turkey Turkish Catastrophe Insurance (http://www.tcip.gov.tr)
- Mexican Fund for Natural Disasters (FONDEN) (http://www.proteccioncivil.gob.mx/en/ProteccionCivil/Reconstruccion_FONDEN)
- New Zealand Earthquake Authority (http://www.eqc.govt.nz)
- Philippines Risk and Insurance Scheme for Municipalities (PRISM) (https://www.unisdr.org/archive/36205)
- Earthquake Insurance for residential properties in Japan (www.mof.go.jp)

**SOCIO-ECONOMIC GROUPINGS - WORKING GROUPS AND INITIATIVES**
- The Association of Southeast Asian Nations (ASEAN) - Natural Disaster Research and Works Sharing (ANDREWS) (http://asean.org)
- Asia-Pacific Economic Cooperation (APEC) - Asia-Pacific Financial Forum (http://www.apec.org)
- The Caribbean Community Market (CARICOM) (http://www.caricom.org)
- G7 InsuResilience (http://www.bmz.de/g7/en/Entwicklungspolitische_Schwerpunkte/Klimawandel/index.html)

**REGIONAL RISK TRANSFER FACILITIES**
- Caribbean Catastrophe Risk Insurance Facility (CCRIF) (http://www.ccrif.org)
- The African Risk Capacity (ARC) (http://www.africanriskcapacity.org)
- Pacific Catastrophe Risk Assessment and Financing Initiative (PCRAFI) (http://pcrafi.sopac.org)
- Europa Reinsurance Facility Ltd. (Europa Re) (http://www.europa-re.com)

**INSTITUTIONS AND PROGRAMMES WITH GLOBAL REACH**
- International Labour Organisation’s (ILO) Global Action Network (GAN) to Advance Agricultural Insurance (http://www.impactinsurance.org/partner/gan)
- The World Food Programme (WFP) (http://www.wfp.org)
- The Access to Insurance Initiative (A2ii) (https://a2ii.org)
- 5-5-5 Mutual Microinsurance Strategy of the International Cooperative and Mutual Insurance Federation (ICMIF) (https://www.icmif.org/5-5-5-introduction)
- Global Parametrics (http://www.businessinsurance.com/article/20160614/NEWS09/160619949)
- The Munich Climate Insurance Initiative (MCii) (http://www.climate-insurance.org)

**INSURANCE INDUSTRY**
- Lloyd’s Syndicate Disaster Risk Finance Facility for Developing Economies (http://www.phoenix-re.co.uk/2015/11/27/lloyds-to-pool-400m-catastrophe-capacity-for-developing-economies)
- Microinsurance: Blue Marble (http://bluemarblemicro.com), LeapFrog (http://www.leapfroginvest.com)
IV. INITIATIVES TO FACILITATE RISK TRANSFER SOLUTIONS FOR THE AGRICULTURE SECTOR

INITIATIVES FROM GOVERNMENTS AND NGOs HAVE LED TO A RISE IN THE USE OF AGRICULTURE INSURANCE IN SEVERAL DEVELOPING COUNTRIES.

The total number of insured smallholders worldwide is 177 million divided into ~440,000 in Africa, ~3.3 million in Latin America and the Caribbean, ~173 million in Asia (of which 140 million are in China and 33 million in India)

NATIONAL AGRICULTURAL INSURANCE PROGRAMMES

- Examples include: U.S., India, Mexico, etc.

INSTITUTIONS AND PROGRAMMES WITH GLOBAL REACH

- International Labour Organization’s (ILO) Global Action Network (GAN) to Advance Agricultural Insurance (http://www.impactinsurance.org/partner/gan)
- World Food Programme’s Initiatives (http://www.wfp.org)
  - The R4 Rural Resilience Initiative (WFP & Oxfam America)
  - The Livelihoods, Early Assessment and Protection (LEAP) (Ethiopia & WFP)
  - The Food Security Climate Resilience Facility (FoodSecure) (WFP)
  - Weather Risk Management Facility (WRMF) (WFP & International Fund for Agricultural Development)
The rapid increase in global economic losses from disasters has put the spotlight on insurability. Since 2005, there has been a notable increase in innovations and initiatives in disaster risk financing and risk transfer (including insurance) targeting new markets. With a number of factors hurdlesing the expansion of risk transfer around the world, scalability and sustainability remain a central concern (Golnaraghi et al., 2016).

### Highlights of Major Developments in Disaster Risk Financing and Risk Transfer

#### Historical Evolution of Disaster Risk Financing and Risk Transfer Developments in Middle- and Low-Income Countries (1996–Present)

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<tr>
<th>Year</th>
<th>Development</th>
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<tbody>
<tr>
<td>1996</td>
<td>Mexican Fund for Natural Disasters (FONDEN)</td>
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<td>1999</td>
<td>UN Office for Disaster Risk Reduction (UNISDR) established</td>
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<tr>
<td>2000</td>
<td>Turkish Catastrophe Insurance Pool (TCIP)</td>
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<td>2001</td>
<td>Taiwan Residential Earthquake Insurance Programme</td>
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<td>2003</td>
<td>India’s first weather index insurance pilot by ICIC Lombard General Insurance co.; Indonesian Earthquake Reinsurance Pool (MAIPARK)</td>
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<tr>
<td>2005</td>
<td>MCII established</td>
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<tr>
<td>2006</td>
<td>Mexico’s first Sovereign Catastrophe Bond; Mongolia’s Indexed Based Insurance (IBI) for livestock</td>
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<tr>
<td>2007</td>
<td>Caribbean Catastrophe Risk Insurance Facility (CCRF), India’s large-scale weather indexed crop insurance; first disaster linked-contingent financing protection for Productive Safety Net Programme (PSNP) in Ethiopia</td>
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<tr>
<td>2008</td>
<td>World Bank launches ‘Cat DDO’; indexed-based Weather Derivative in Malawi; Pacific Catastrophe Risk Assessment and Financing Initiative (PCRAFI); Romanian Cat Insurance Scheme, OASIS Multi-Window Mechanisms to address losses from climate change</td>
</tr>
<tr>
<td>2009</td>
<td>GIIF launched; Indonesia’s flood microinsurance; Manizales, Colombia’s Earthquake Property Insurance; HARITA pilot in Ethiopia</td>
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<td>2010</td>
<td>Kenya and Ethiopia: index-based livestock insurance</td>
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<td>2011</td>
<td>Mexico’s indemnity-based excess of loss insurance for public assets Vietnam’s agriculture insurance pilot; India’s Modified Area Yield Crop Insurance Scheme; Micro-Insurance Catastrophe Risk Insurance (MICRO) established; Philippines’ CLIMBS (microinsurance), HARITA in Ethiopia expands; World Economic Forum publishes Vision for Managing Natural Disaster; ASEAN Roadmap for Disaster Risk Financing and Insurance (DRFI)</td>
</tr>
<tr>
<td>2012</td>
<td>Inter-American Development Bank launches contingent credit product for natural disasters; Sendai dialogue on DRR launched; G20 adopt the concept of DRFI</td>
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<tr>
<td>2013</td>
<td>Pacific Catastrophe Risk Insurance Pilot Program Project (PCRIP), Japan International Cooperation Agency (JICA) launches contingent credit products for natural disaster (SECURE); weather derivatives with Uruguay (intermediated by the World Bank); Political Champion Group for Resilience insurance initiative established</td>
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<tr>
<td>2014</td>
<td>Africa Risk Capacity (ARC) sells first policies for sovereign drought risk insurance; Kenya crop and livestock insurance; South East Europe and Caucasus Catastrophe Risk Insurance Facility, role of DRFI encouraged in the World Development Report 2014; The Philippines Risk and Insurance Scheme for Municipalities (PRISM)</td>
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<tr>
<td>2015</td>
<td>Nicaragua joins CCRIF, Sendai Framework for Disaster Risk Reduction (2015–2030), adopted with clear reference to importance of risk transfer solutions (paragraph 30); G7 launches a climate insurance initiative (InsuResilience), APEC finance ministers Cebu Action Plan (CAP) for DRFI, 2030 Agenda for Sustainable Development adopted at the 70th UN General Assembly with reference to resilience and role of insurance; several international conferences are held to take stock of the progress, gaps and opportunities in DRFI and IBI for agriculture; Climate Change Paris Agreement adopted with reference to insurance</td>
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<tr>
<td>2016</td>
<td>VisionFund’s Asian Region Disaster Insurance Scheme’ (ARDIS)</td>
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The Stakeholder Landscape in Extreme Events and Climate Risk Management

A SUMMARY OF INNOVATION, TRENDS AND CHALLENGES IN AGRICULTURAL INSURANCE

Agricultural risks associated with extreme event and climate and economic risks—in the agriculture sector typical risks are yield losses due to bad weather, pests and diseases; post-harvest losses during storage and transport; unexpectedly low market prices, as well as further supply chain issues, affecting logistics and food security across many parts of the world. The IPCC’s Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (IPCC, 2012) illustrates past and projected impacts across different regions, for example:

- Africa is particularly exposed, as 50 per cent of its total export value is based on agriculture. As an example, the projections of climate change impacts for Namibia indicate annual losses of 1 to 6 per cent of GDP by 2050, with livestock production, traditional agriculture, and fishing expected to be hardest hit, with a combined loss of USD 461 to 2,045 million per year by 2050.
- In New Zealand, the 1997-1998 severe drought conditions across large areas led to losses estimated at NZD 750 million (2006 values) or 0.9 per cent of GDP.
- For Asia about 15 per cent (23 million ha) of Asian rice areas already experienced frequent yield loss due to drought.
- Droughts are currently the third costliest natural disasters in the United States, with crop losses being the dominant type of economic impact. Future projections indicate increase in heat wave frequency and duration and increasing dryness for some U.S. regions.

Latest developments with the expansion of insurance in agriculture—Agriculture insurance is widely used across the world to protect the income of farmers and the operations of agro-businesses and co-operatives, mainly through crop and livestock cover. Insurance penetration is highly biased towards high-income countries, who account for 88 per cent of global agriculture insurance premiums. Initiatives from governments and NGOs have led to a rise in the use of agriculture insurance in several developing countries. So far, the private sector has played only a minor role in insuring farmers and rural communities against agricultural risks in the developing world. Most recently, there is growing private sector involvement in agricultural insurance, attracted in part by the development of index-based insurance (IBI) but also by a shift towards more public-private and non-profit-private partnerships in the delivery of insurance.

Product innovation through indexed based insurance (IBI) and challenges with their scalability—IBI is considered as the most promising new type of agriculture risk transfer, designed to address many of the above challenges. It can reduce the costs and difficulties of administering and delivering agricultural insurance and remove many of the negative incentive problems as well as provide a speedy and reliable source of funding once an insured catastrophe has occurred. The Global Index Insurance Facility (GIIF) of the World Bank/IFC and the International Labour Organization (ILO) in cooperation with several private insurers have contributed to the development of these solutions. Using satellite-based data for the implementation of the Mongolia’s IBI for livestock is noteworthy. The Community of Index Insurance Practitioners ("Index Insurance Forum"), formed by GIIF and ILO in September 2014 and The Global Action Network (GAN) on Agricultural Insurance was formed in November 2014 and is hosted by the ILO’s Impact Insurance Facility. Several private insurers joined the Index Insurance Forum and launched an advocacy coalition in July 2015 that brings together public and private sector actors.

However, main challenges for expansion of IBI and its scalability in developing countries include: (i) problems of weak demand by farmers, (ii) difficulties in developing appropriate indices and distribution networks, (iii) coping with climate change, (iv) insufficient public investments in necessary public goods, (v) first-mover problems, and (vi) data availability and reliability for index setting. Basis risk is another key problem that arises if an individual farmer who experiences crop losses due to an insured weather event that is too localised to trigger a regionally based insurance payout. Furthermore, filing for payouts without incurring damages (fraud) by the insured could be a major concern.

Country examples for scaling up the use of agriculture insurance:

**India**: Evolution with National Agriculture Insurance Scheme (NAIS) since 1999.

**Mexico**: Mexican Agricultural Fund for Natural Disasters (CADENA) aims to internationally reinsure part of the costs of its state managed relief programmes. CADENA was launched in 2003 by the Government and insures 2.5 million small-scale farmers.

EFFECTIVE PUBLIC-PRIVATE PARTNERSHIPS ARE AT THE CENTRE OF DEVELOPING EFFECTIVE AND SUSTAINABLE RISK TRANSFER AND INSURANCE PROGRAMMES
References


This report provides insights about the patterns of stakeholder engagement in the international framework agreements related to disaster risk reduction, climate change and sustainable development over the last five decades. It presents the complex stakeholder landscape, multi-stakeholder initiatives in extreme event and climate risk management as well as highlights major developments in expanding risk transfer and insurance, over the last decade.