



DISASTERS: THE SCALE OF THE ISSUE

**90%**

OF DISASTER EVENTS WERE WEATHER RELATED BETWEEN 1980 AND 2016<sup>1</sup>

INSURED LOSSES FROM WEATHER-RELATED EVENTS **US\$** 1970–1989 5.1 BILLION SINCE 2000 27 BILLION

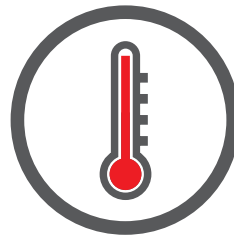
**OF THE US\$175 BILLION IN GLOBAL LOSSES IN 2016**



**31%**  
DUE TO STORMS



**32%**  
DUE TO FLOODING



**10%**  
DUE TO EXTREME TEMPERATURES



**ONLY 28%**  
OF THESE LOSSES WERE INSURED

**THE ECONOMIC COST OF NATURAL DISASTERS<sup>2</sup>**

**13%**

OF GDP FOR SMALL DEVELOPING STATES

**1%**

OF GDP FOR OTHER COUNTRIES

**99%**

OF DISASTER-RELATED LOSSES IN AFRICA DURING 2016 WERE UNINSURED<sup>3</sup>

<sup>1</sup> Data from Munich Re's NatCatSERVICE.

<sup>2</sup> International Monetary Fund (IMF) (2016) *Small States' Resilience to Natural Disasters and Climate Change – Role of the IMF*. IMF, Washington DC, USA.

<sup>3</sup> Munich Re (2017) *Natural catastrophes 2016 – Analyses, assessments, positions*. Münchener Rückversicherung Gesellschaft, Munich, Germany.

## Risk-transfer mechanisms and insurance

It is impossible to prevent all damages arising from disasters, even with the best mitigation and adaptation measures. Under these circumstances, risk-transfer solutions, such as climate-risk insurance, can provide liquidity immediately following a disaster. The main types of catastrophe risk financing are listed in Table 1.

## Emergent thinking

Climate insurance can contribute to resilience, but only as part of a wider adaptation strategy. There is a risk that climate-risk insurance and risk-transfer products divert investment away from resilience building and adaptation measures. There are a number of ways in which insurance can encourage risk-reduction behaviours and foster structured decision-making around ex ante risk.

## Mobilising investment

The insurance industry should be a major capital investor in resilience as it would lead to lower claims and higher profitability. Through its own policies as well as its own investment decisions, the insurance industry could influence investment behaviour in financial markets.

## Using premiums

Reductions in insurance premiums can be used as an incentive to invest in resilience and adaptation measures. One proposal is that premiums could be reduced in proportion to an achieved level of mitigation or adaptation.

## Resilience bonds

Catastrophe bonds bring the risk of natural disasters into the capital market and are a relatively new instrument for risk transfer. An idea, yet to be implemented, is to convert catastrophe bonds into resilience bonds in order to encourage investments in risk reduction. Lower coupon pricing would be offered to reflect an expected reduction in future losses.

## Disaster risk management policies

Disaster risk management policies address risk reduction (prevention), risk response, and recovery post disaster. By incorporating incentives for risk mitigation and climate adaptation into insurance-based products, policy-holders are less likely to divert investment from risk reduction.

**Table 1 Main types of catastrophe risk financing**

Type	Relationship	Pay-out
Traditional insurance	An insurance company offers guaranteed financial protection to an individual or organisation in return for a premium. Insurance is more common in developed countries.	If there is a loss, the insurer compensates the insured based on that loss.
Reinsurance	Insurance companies transfer a portion of the risk they hold to a reinsurance company in exchange for a premium.	An insurance company will use the support of the reinsurance company if they do not have the capacity to provide cover on their own.
Micro-insurance	Local insurance companies offer guaranteed financial protection to lower-income individuals, typically for health- or weather-related risks.	Transactions are typically parametric rather than loss-based. The insurer will pay out if an index, such as 5-day rainfall level, exceeds a pre-specified threshold.
Risk pooling	Regions that share common risks pay premiums into a pool, selecting how much risk they wish to retain and how much they wish to transfer to the 'pool'. There are typically conditions for joining the pool, such as having an approved contingency plan.	Pay-outs are made when conditions fall within specified parameters, but only to members of the pool who are affected.
Insurance-linked securities (catastrophe bonds)	A bond is issued by the risk holder (usually a government or insurance company) for a specified risk.	Pay-out is made for a specified loss or in response to a parametric trigger (e.g. wind speed measured at a particular point).

## Insurance and water

Extreme events, precipitated by climate change, such as droughts, floods, sea level rise, and tsunamis, are largely about water. The role that climate-risk insurance might play in managing risks both from and to water can be explored by looking at current practices and potential points of application.

### Water sector

Climate variability presents a challenge for water supply and sanitation. A lack of water can severely affect the economic performance and well-being of the water users, particularly those who are poor or otherwise vulnerable. Several insurance schemes have been developed to address this. A scheme called ‘reservoir index insurance’ was conceived to cover the monetary needs of the water provider in times of scarce water. Bulk water-option contracts are set up between urban water suppliers and agricultural users. When reservoir inflows drop below a set threshold, the insurance is triggered, enabling the water supplier to regulate the water supply while compensating farmers financially.

### Flooding

Flooding is a low probability event with high consequences, which makes it challenging to price flood risk accurately. Development and climate change are making flood risk increasingly unpredictable, exacerbating the challenges faced by the insurance industry. Flood insurance exists in many countries, including the UK (a model of public–private partnership) and the USA (state-funded schemes), while in others, such as Canada and the Netherlands, it is perceived as an uninsurable risk. There is a strong rationale for engaging in measures to reduce flood risk, and experience from the UK shows that the insurance industry is capable of encouraging governments to implement mitigation measures.

### Insurability

Climate change is introducing risk patterns that pose an increasing challenge for the three components of a functioning insurance market – insurable risks, an insurable population, and solvent insurers. Despite water



resources management underpinning economic and social development, the scope for climate insurance against water-related disasters catalysing development seems to be limited. Its inclusion (bundling) in a broader package of risk-pooling and risk-transfer mechanisms, particularly at the sovereign level, may be more promising. A challenge is to distinguish between risks associated with extreme events and risks arising from poor management.

### Integrated water resources management (IWRM)

The adoption and implementation of IWRM approaches provides a foundation on which to base insurance provision, risk transfer, and risk pooling. The instruments of IWRM, including monitoring networks, data collection, assessments, planning, and modelling will support the design and implementation of risk-transfer products.

### Conclusion

The insurance industry and water sector are starting to explore how they can mutually support development that is responsive to the anticipated changes in climate and climate variability. There are incentives for both sides to continue and deepen this dialogue.

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For more information, please see the full GWP Perspectives Paper at:  
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