Swiss Re

A blueprint for managing climate risks in emerging markets

Innovative public-private partnerships can help communities cope with the financial costs of climate-related disasters and make them more resilient by bridging the gap between economic and insured losses.

Economic losses from climate-related disasters are already substantial, and they are on the rise. Insured losses alone have jumped from an annual USD 5 billion to 27 billion over the last 40 years. Without further investments in adaptation, climate risks could cost some countries up to 19 percent of annual GDP by 2030 and set back years of development gains [1]. Innovative risk transfer arrangements involving the public and private sectors provide new opportunities to manage these risks by narrowing the gap between economic and insured losses. They could have particularly far-reaching benefits in emerging markets and countries of the developing world, which are the most hurt and the least prepared.

1 Financing climate risks

Risk transfer is a cost-effective way to finance low-probability, high-severity climate risks [2] when complemented by disaster prevention/adaptation measures (physical measures such as flood protection, and policies/regulations such as building codes and regional planning) and global emission reductions (mitigation).

How can the public sector help reduce financial climate risks?
Determine and quantify risk profiles on country, sector or specific target group levels by assessing the impact of climate change and economic development trends under different climate scenarios, e.g. high, medium, low.

- Identify and assess economic costs & benefits of suitable adaptation options and rank them according to their risk reduction contribution.
- Adaptation measures could be categorized as follows:
  - risk prevention: physical adaptation measures, like dams, irrigation etc.
  - political guidance: policies/regulations and planning (e.g. regional planning, building codes, emergency planning)
  - financial protection: risk transfer, financial risk reserving
- Implement suitable adaptation measures according to their economic effectiveness.
- Determine your risk transfer needs by country, sector or specific target group levels

[1] Source: Economics of Climate Adaptation, 2009
[2] Source: Economics of Climate Adaptation, 2009

In order to transfer climate risks to the commercial insurance market, it is necessary to make substantial investments in publicly available weather data, economic statistics and modelling capacity.

How can the public sector facilitate financial risk transfer solutions?

- Help improve weather data provision services by international or local met offices (weather stations and satellite data), e.g. fund services in low to medium countries.
- Establish asset statistics about geographical distribution of economic values in developing countries
- Fund loss modelling agencies (e.g. academic) which develop loss models correlating weather data and asset losses per asset category

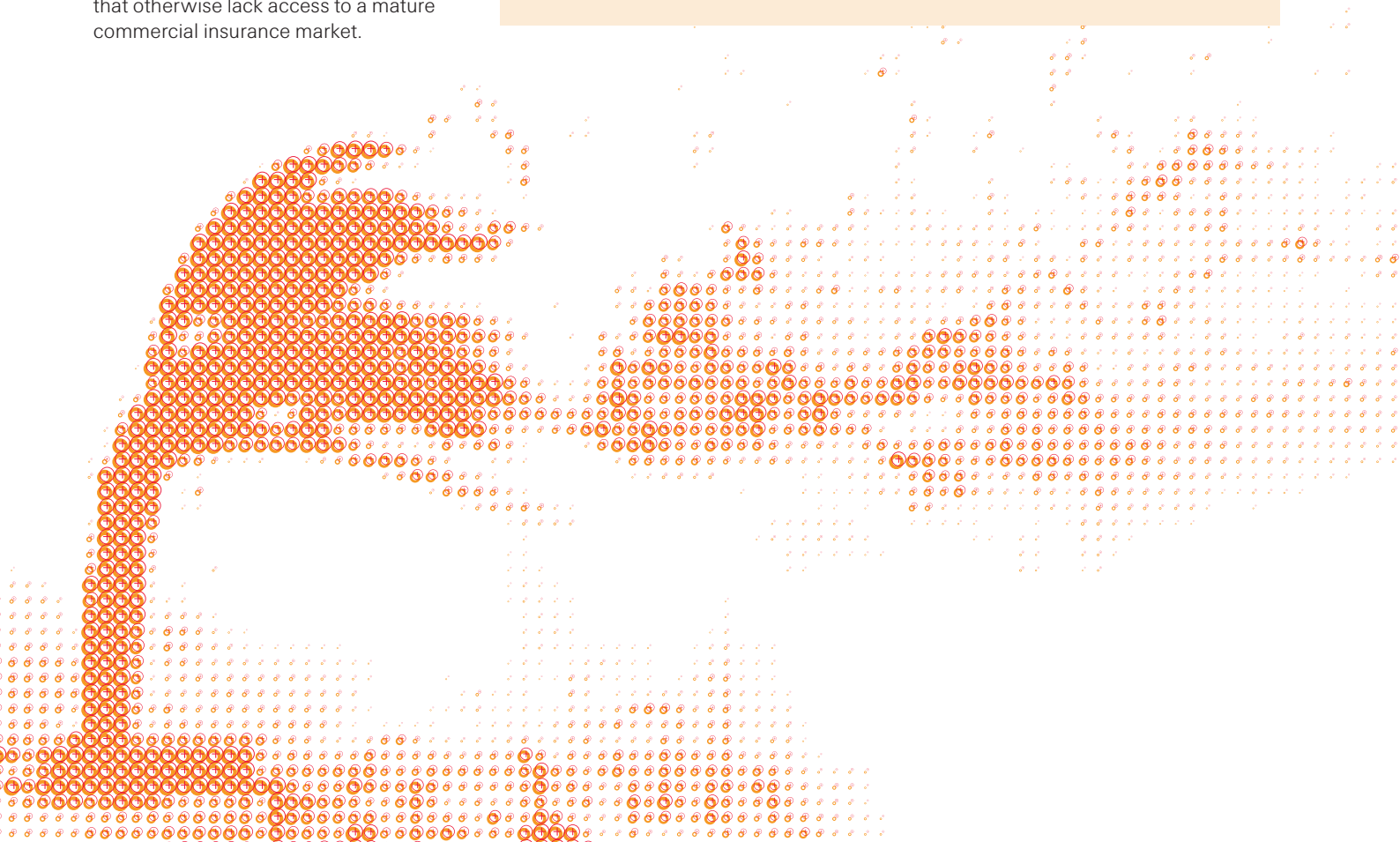
Risk =	**Weather data** Hazard frequency (e.g. 100 year event) ■ Hazard intensity (e.g. wind speeds)	X	**Asset data** ■ Geographical distribution of assets ■ Financial values of assets	X	**Vulnerability data** ■ Losses per asset category in relation to hazard severity
Sources	– Met offices		– Public asset statistics – Insurance companies		– Insurance companies – Modelling firms – Public/academic modellers

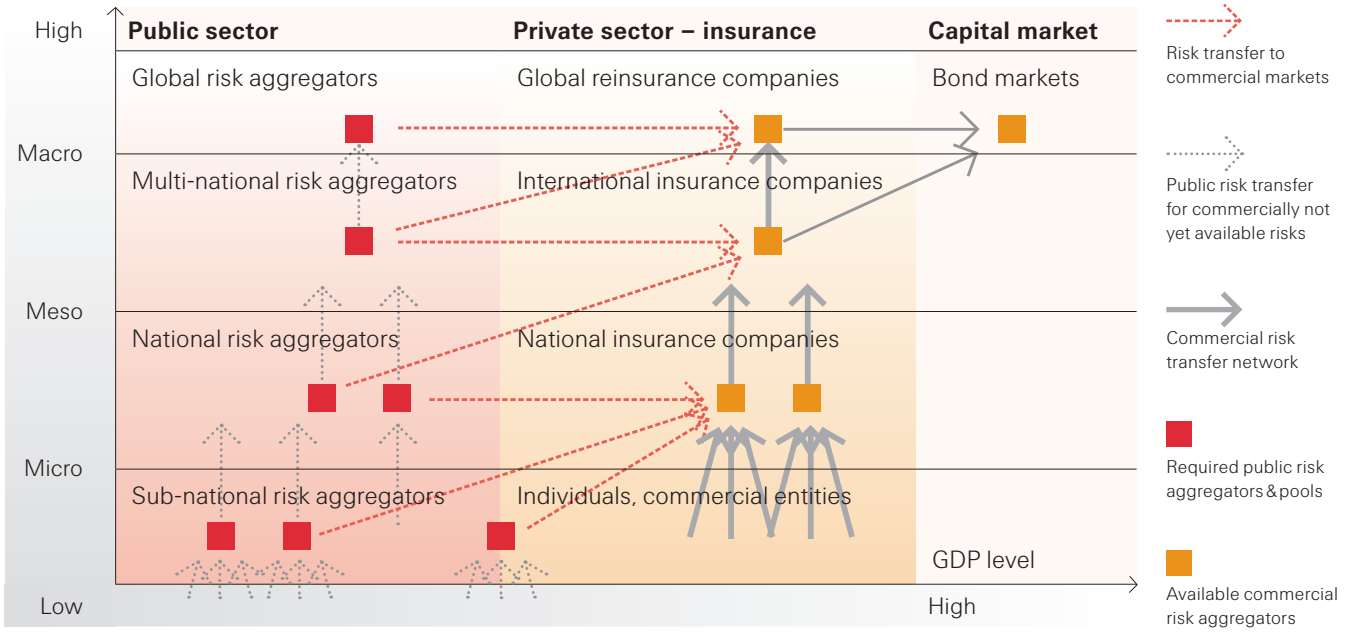
2 Bridging the insurance gap: a blueprint for public-private climate risk transfer

Most disaster losses are not insured, on average only 20-40%.[3] Developing countries face the largest gap between insured and economic losses.[4] Collaborative risk transfer arrangements involving the public and private sectors offer ways to extend covers to countries that otherwise lack access to a mature commercial insurance market.

How can the public sector help develop a joint financial risk transfer network?

- The public sector can help set up a public risk transfer network, which is linked to the private insurance sector.
- Agents of this public risk transfer network would act as interface to the private insurance sector, as distribution channel for insurance policies and premium and claims settlement (examples include: farmers associations, governmental agencies and international aid organizations, multilateral, governmental, UN organizations etc.).
- Public funds are required to set up and finance these agencies and ensure capacity building.
- Public funds may also be used to temporarily subsidize premiums in low income countries.





Keeping climate risks insurable

For insurers to develop commercially viable climate risk solutions, public sector authorities need to cultivate an appropriate enabling environment and, in some instances, fund public risk aggregators. Besides the economics, other principles of insurability apply.

What risks are insurable?

- Adhere to principles of insurability, namely assessability[5], randomness[6], mutuality[7] and economic viability[8]
- What is insurable: randomly occurring events such as river flood, flash flood, storm surge, precipitation, hail, wind, agricultural yields affected by precipitation, cash flows affected by weather (e.g. water, solar, wind power stations)
- What is not insurable: gradual shifts such as sea level rise, biodiversity losses, ecosystem degradations, deforestation and similar

Subsidising public-private risk transfer in low-income countries makes sense

Insurance pricing which reflects risks adequately acts as a powerful signal to society and helps steer economic development away from risk-prone regions. But to ensure that a price signal is effective, insurance pricing in different regions must be transparent to the end beneficiary. In low-income countries, where insurance solutions may not be affordable for end beneficiaries, it may make sense to partly subsidize insurance capacity building and / or premiums in order to help lift societies out of a poverty trap.

A good example is the HARITA pilot program in Ethiopia developed by Oxfam America, Columbia University, the Ethiopian national safety net program and Swiss Re. The pilot offers insurance-for-work for activities intended to reduce farmers' vulnerability to droughts, which makes insurance more affordable for the rural smallholders it serves. This has led to a quick and growing uptake of insurance solutions by poor farmers.

3 Source: Sigma database, published in Swiss Re, Closing the financial gap, 2011.
4 Measured in premiums as a percentage of GDP, average insurance penetration rates of 2.9% in developing countries are far below those in industrialised countries. Source: Swiss Re Economic Research & Consulting.
5 Assessability: loss probability and severity must be quantifiable
6 Randomness: time of occurrence must be unpredictable, occurrence itself must be independent of the will of the insured
7 Mutuality: numerous exposed parties must join together to form a risk community, to share and diversify the risk
8 Economic viability: private insurers must be able to obtain a risk-adequate premium

Existing Swiss Re public-private risk transfer solutions

In recent years, Swiss Re has devised a number of innovative transactions involving both insurance and capital market instruments to address climate risks. These solutions can be replicated elsewhere and adjusted to the specific risk exposure in other parts of the world.

Macro level

- **MultiCat Mexico:** In 2009, the Mexican government concluded a risk transfer transaction intended to cover 290 million USD of earthquake and hurricane risk and help smooth the impact of payouts on the national budget. The so-called MultiCat Programme, arranged by the World Bank in collaboration with Swiss Re Capital Markets, provides public sector entities with a flexible cat bond issuance platform to access natural disaster protection from the capital markets. The transaction is based on a parametric approach, triggering payouts according to a pre-defined index.

- **Caribbean Catastrophe Risk Insurance Facility (CCRIF):** Launched in June 2007, the CCRIF was designed set up by World Bank and local governments to provide 16 Caribbean governments with immediate relief in the form of short-term liquidity in the event of hurricanes and earthquakes. It was the world's first regional insurance fund and offers insurance coverage for governments in the region. By focusing on putting contingent funding in place before catastrophes occur, this program represents a real shift in the way that governments treat risks and the economic costs associated with them.

- **Malawi weather derivative:** In 2008, Swiss Re joined the World Bank in issuing a weather derivative to protect farmers in Malawi against the loss of maize production as a consequence of drought. Payments are triggered when lack of rain, measured by reference to an index, adversely affects maize production. Besides minimising financial risks, the contract offers support in reducing food insecurity caused by a maize shortage.

- **Weather index insurance in Ethiopia:** Together with Oxfam America and local partners, Swiss Re launched a pilot project in Ethiopia in 2008 that innovates with its approach to insuring the poor. The HARITA project gives rural communities the option to pay for their premiums with their own labour, engaging them in locally designed crop irrigation, reforestation and other climate adaptation initiatives in return for insurance cover. This innovative approach has allowed a growing number of rural households to benefit from insurance, and it is now being extended to communities in neighbouring countries.

Micro to medium level

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A factsheet on rural resilience

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