INCREASING CLIMATE RESILIENCE THROUGH RISK FINANCING

CASE STUDY MOZAMBIQUE

THOMAS LONDON AND ROBERT WYKOFF
INCREASING IMPACTS

2017 marks one of the worst years in recent history for global natural catastrophes. Staggering losses stemming from a series of devastating floods, hurricanes, and earthquakes have brought the topic of disaster risk financing back to center stage as governments, the public, and insurance companies work to recover and rebuild. By October 2017, global insured catastrophe losses for the year were in excess of US$100 billion, only the third time such a threshold was breached.¹ Extreme weather events that destroy homes, businesses, infrastructure, and agricultural assets have high opportunity costs, particularly in emerging economies, where scarce resources must be reallocated to reconstruction efforts.

Scientific consensus suggests that climate change will exacerbate the intensity of tropical cyclones, severe storms, and droughts. While many of these losses are privately insurable, governments are often responsible for filling the gap when the private sector is unable or unwilling to. Although insurance is currently providing a greater portion of relief from natural catastrophe losses, the industry’s growth is being eclipsed as trends such as urbanization drive total dollar losses higher. (See Exhibit 1.)

Private insurance can be quite important in supporting economies in resilience and disaster recovery. For example, research indicates that a one percent rise in insurance penetration translates to a 13 percent reduction in total uninsured losses and a 22 percent reduction in taxpayers’ contribution following a disaster. Further, insurance improves the sustainability of an economy and leads to greater rates of growth – a one percent rise in insurance penetration leads to increased investment equivalent to one percent of national GDP.²

With insurance covering an estimated 40 percent of catastrophic losses, developed countries generally have the fiscal resources and political stability to address catastrophe risk. However, in developing countries it is estimated that only five percent of catastrophe losses are insured.³ Those assets with insurance are often foreign investments, such as oil and gas exploration efforts, located far from urban centers, built to international construction standards, and insured with large international insurers. These facilities suffer relatively little losses during catastrophes and offer few premium benefits to local insurers.

DEVELOPING A MARKET

Mozambique offers a case study of the challenges developing economies face as limited resources hamstring competing efforts to grow the economy, build resilient infrastructure, and prepare for disasters.⁴ The country is Africa’s third most susceptible to weather-related perils, the result of its proximity to the Indian Ocean, 2,400 km of coastline, and downstream location on numerous major African rivers. Approximately 41 percent of Mozambique’s coastal areas are exposed to catastrophe events, while economic activity in these areas constitutes 52 percent of the country’s gross domestic product.⁵ Weather-related events account for 94 percent of the country’s economic losses, and climate change

---

³ Cummins, Mahul. Catastrophe Risk Financing in Developing Countries: Principles for Public Intervention. The World Bank.
is expected to increase both the frequency and severity of weather events.\(^6\) When disasters occur in Mozambique, vital resources must be redirected to relief efforts.

To help the country tackle these challenges, international donor agencies are exploring ways to build capacity and proactively finance catastrophe losses by tapping into local and international insurance markets. USAID’s Coastal City Adaptation Project aims to enhance Mozambique’s capacity to respond to climate change by decreasing the country’s exposure to rising sea levels and weather events. The Project involves mitigation efforts and training local communities on best practices to prepare for, respond to, and recover from disasters. For the first time, USAID is exploring the viability of engaging the private insurance market to support foreign risk financing initiatives in developing economies.

Effective risk transfer programs spread risk among many parties through a process called layering. For example, insurance can directly cover government assets, reinsurance can provide a backstop for government insurance schemes, and insurance linked securities can fund infrequent but severe events by transferring risks to global financial markets. In the most extreme circumstances, international donor support can serve as a backstop for devastating losses.\(^7\) (See case study on next page.)

Research and analysis suggest that greater private sector participation will support the development of a national catastrophe insurance program. Should efforts in Mozambique prove successful, programs developed there could serve as a template for ones in other countries. USAID’s pilot program simultaneously addresses several critical components to maximize the odds of success: at risk populations are being educated about relevant prevention and response techniques; buy-in is being achieved at all levels of government; appropriate tools, data, and analytics are being explored to identify and quantify risks; and training and guidance are being tailored to a wide audience ranging from rural populations to the CEOs of large insurance companies.

### CHALLENGES REMAIN

While progress is being made in Mozambique, capacity building efforts are not without their challenges. Examples include:

- At-risk populations are often unwilling to relocate given the disruptive effects it has on communities.
- In-country technical ability is scarce, necessitating external resources be brought in.
- Financial tools such as risk financing can be a tough sell in regions where even food is not reliably available.
- Data to support the identification and analysis of at risk regions are often incomplete or non-existent.
- Assessing losses in devastated areas proves difficult when critical infrastructure has been destroyed by disaster.

---


\(^7\) World Bank; Policy Research Paper Disaster Risk Financing and Contingent Credit: A Dynamic Analysis; Daniel Clarke and Olivier Mahul; June, 2011.
TRANSFERRING PUBLIC RISK TO THE PRIVATE SECTOR

Privatizing risk typically begins with a low limit pilot program. As data are gathered and familiarity with the process grows, a program’s limits, coverages, and geographic territories may be expanded. The following are examples of governments that have successfully transferred public risk to the private sector:

**MEXICO**
The Mexican government pioneered government risk transfer strategies with the world’s first sovereign catastrophe bond in 2005. This provided coverage for US$160 million across three regions, supplemented by an additional parametric reinsurance program. Four years later, Mexico made history again by issuing the first ever multi-peril catastrophe bond for hurricane and earthquake losses.\(^1\) The coverage continues today, funding the reconstruction of public assets, key infrastructure, and low-income properties damaged by natural disasters.\(^2\) In 2017, a series of earthquakes triggered coverage, obliging the entire earthquake tranche of the bond.

**TURKEY**
In one of the most seismically active countries, the government established the Turkish Catastrophe Insurance Pool and issued a US$400 million catastrophe bond in 2013. The bond covers parametric earthquake risk and is triggered by seismometer measurements taken by the country’s Early Warning and Rapid Response System. As of 2015, the pool increased its total coverage to US$500 million.\(^3\)

**CARIBBEAN CATASTROPHE RISK INSURANCE FACILITY**
CCRIF is a regional catastrophe fund for Caribbean governments to limit the financial impact of hurricanes and earthquakes. It is the first multi-country risk pool and represents a cost-effective way to pre-finance short-term liquidity for recovery efforts following a catastrophe, filling the gap between immediate response aid and long-term redevelopment. Parametric triggers enable rapid payouts by eliminating delays due to loss adjustment processes and providing an objective basis for payouts and pricing. Since its inception, over US$100 million in payouts have been issued, all within 14 days of the given disaster event.\(^4\) In 2017, Hurricane Irma resulted in US$31.2 million in payouts and Hurricane Maria triggered a US$19.3 million payout to Dominica, marking over US$50 million in payouts for 2017.

---

The negative impacts of climate change are a global problem, and international efforts are underway to help populations likely to be most impacted. Capacity building for disaster resiliency is a crucial step in preparation and insurance is a vital tool in the capacity building arsenal. By shifting the financial burden of loss from taxpayers to the insurance sector, governments, businesses, and communities can focus limited resources on vital projects that will continue growing and developing their economies.

Chemonics International and Guy Carpenter partnered with the United States Agency for International Development (USAID) to evaluate risk financing options in emerging economies and pilot the Coastal City Adaptation Project program in Mozambique.

Thomas London and Robert Wykoff are assistant vice presidents at Guy Carpenter, based in New York and Philadelphia, respectively.

---

**Exhibit 2: Layering in action**

<table>
<thead>
<tr>
<th>LOSS FREQUENCY</th>
<th>LOSS SEVERITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>RISK TRANSFER</td>
<td>Insurance and reinsurance</td>
</tr>
<tr>
<td>RISK RETENTION</td>
<td>Insurance linked securities</td>
</tr>
<tr>
<td></td>
<td>Reserves</td>
</tr>
</tbody>
</table>

Source: World Bank