



Key Principles for Climate-Related Risk Insurance

By Pete Ogden, Ben Bovarnick, and Yume Hoshijima August 2015



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Introduction and summary

In December, the more than 190 countries that are party to the U.N. Framework Convention on Climate Change will convene in Paris to seek a new international agreement on climate change.¹ One of the critical issues they must resolve is how the international community will increase finance for climate change mitigation and resilience. The Obama administration has taken important steps to ramp up its activities in the area of climate finance, including a \$3 billion pledge to the Green Climate Fund, which will help address mitigation and adaptation needs. In the months leading up to the Paris conference, however, both the United States and the international community can do more to support a successful outcome by taking steps toward realizing the June 2015 pledge by the Group of Seven, or G-7, to expand access to climate-related insurance across the developing world.²

The impacts of extreme weather events fueled by climate change—which are exacting an increasing economic toll both domestically and abroad—are most acutely felt in developing countries. Losses from natural disasters in developing countries averaged \$54 billion per year from 1980 to 2004, and more than 1.9 billion people in developing regions were affected by natural disasters from 2003 to 2013.³ Climate change magnifies the severity of future weather events and places developing nations at greater risk of catastrophe.⁴

The limited resources of many developing countries can leave them unable to finance disaster recovery efforts in the aftermath of natural disasters. In response to this trend, national governments, international financial institutions, and the private sector are increasingly developing and deploying innovative ways to help countries and people cope with post-catastrophe financial hardship—particularly in the area of risk management through insurance.

At the G-7 annual summit in June 2015, the leaders of the United States, Canada, France, Germany, Italy, Japan, and the United Kingdom zeroed in on the opportunity to help more countries and people in the developing world make use of insurance programs to better manage climate-related risks. At the summit, they announced an ambitious goal: to increase access to insurance

against climate-related risks for 400 million new people in the most vulnerable developing countries by 2020.⁵ Climate-related risk insurance is currently available to 100 million people in developing countries and major emerging countries; achieving the G-7 goal would require creating five times as much coverage over the span of five years.⁶ From 1980 to 2006, the share of insured economic losses in developed countries grew from 20 percent to 40 percent, while in the developing world it held steady at approximately 3 percent.⁷

Parametric risk insurance—insurance policies that use environmental measurements, such as wind speed or the amount of rainfall, to trigger an immediate payout—can play a key role in reducing the risks of climate change in developing countries. This report examines the ways in which parametric insurance programs can most efficiently limit the risks that climate change poses to developing countries. As G-7 leaders and the international community move forward with future programs to effectively address climate-related risks, the Center for American Progress has identified the following five principles by which to abide:

1. Parametric insurance will require the support of international partners.
2. Parametric insurance pricing should encourage and reward an individual or country for enhancing climate resilience, rather than incentivize extra risk taking.
3. Parametric insurance programs can and should work in tandem with each other.
4. Information gathered by programs should be shared and made available through a clearinghouse.
5. Parametric insurance pools should be regionally or globally diversified.

There is no way to meet the climate challenge without cutting greenhouse gas emissions and investing in enhanced resilience at home and around the world. G-7 leaders, however, are right to recognize that expanding insurance coverage could immediately help people and countries cope with the growing risks of climate change. By adhering to the principles outlined in this report, parametric insurance programs can be designed to help manage these risks and incentivize smart resilience investments in developing countries around the world.

The origins and purpose of parametric insurance for climate-related risks

Traditional indemnity insurance products—such as a standard homeowner’s policy—offer individuals who are willing to pay a premium the ability to recuperate some or all of the economic cost from damages to their property, as determined by an assessment of the damage after the fact. Unlike traditional indemnity insurance, parametric insurance does not price premiums and payouts according to the assessed damage to specific insured assets. Rather, parametric instruments model damage based on environmental benchmarks—tracked by weather stations, satellites, and other data collection tools—in order to approximate actual damages and issue payouts when these benchmarks are met.⁸

Hurricane Ivan, which swept through the Caribbean in 2004, caused immense destruction that sparked the development of the first multinational parametric insurance model. Grenada was hit hard, and its limited resources were quickly expended in relief, cleanup, and emergency rehabilitation operations. The revenue shortfall—equivalent to 5 percent of the country’s gross domestic product—prevented payment of government salaries and cut basic government services precisely when these resources were most needed. While international aid ultimately restored the government’s salaries and services, Grenada and its neighbors faced clear vulnerabilities in the wake of the hurricane. Caribbean nations banded together with the World Bank, donor countries, and private insurers in the aftermath to launch the Caribbean Catastrophic Risk Insurance Facility, or CCRIF. This organization created an innovative collective risk insurance pool that could provide an immediate jolt of financial resources in the wake of future natural disasters in order to stave off similar liquidity crises in the future.⁹ By using parametric index insurance models, CCRIF is able to charge countries premiums for 1-in-1,500-year risks at 26 percent of the cost of traditional insurance.¹⁰

An important advantage of the parametric insurance model is that it eliminates the need for an onsite assessment of the damage to determine losses, meaning that a policy can pay out rapidly. For instance, an insurance pool—such as CCRIF—issues immediate payouts for tropical cyclone damage when a participating country experiences wind speed and storm surges above a prespecified magnitude.¹¹

As parametric insurance policies rely on a simpler value analysis, there is no need to wait for loss adjusters to arrive at the scene—a journey that can be challenging in post-disaster environments—in order to inspect the damages and write up reports. These inspections can be costly to complete and lead to higher insurance premiums. Insurance pools also can help to serve as a stop gap measure while international assistance, which can take time to coordinate and deliver, ramps up.

The benefits of the immediate payouts were evident in late 2010, when Hurricane Tomas hit several Caribbean countries and caused severe damages across Barbados, St. Lucia, and St. Vincent.¹² CCRIF successfully disbursed 50 percent of the obligated funds seven days after the storm and provided the remaining balance 14 days after the disaster.¹³ In St. Vincent, CCRIF's quick payout facilitated “urgent restoration of services and clearing of the affected areas,” according to Prime Minister Ralph Gonsalves.¹⁴ Barbados used the funds to supplement its disaster budget, make temporary repairs to a major road, and support resettlement and repair of temporary shelters. St. Lucia used CCRIF funds to de-silt rivers, repair major roads, and stabilize critical infrastructure—such as bridges and drinking water plants.¹⁵

There are also broader economic benefits for countries participating in parametric insurance programs. The experiences of the African Risk Capacity, or ARC—a multicountry parametric insurance pool designed to respond to drought—demonstrate how the rapid disbursement of funds at the initial signs of drought can provide immediate and lasting support.

ARC became operational in 2014, two years after the end of a severe drought in East Africa that caused a famine that affected 13.5 million people.¹⁹ According to the International Monetary Fund, if ARC had been operational during the East African famine, it could have issued payouts in early 2011 that could have helped ameliorate some of the worst impacts of the drought.²⁰ A study by Oxford University and the International Food Policy Research Institute estimated that each dollar spent through ARC would have saved \$4.4 in post-crisis relief.²¹

Since 2003, 43 countries have secured coverage or begun to develop their own parametric risk insurance programs. These countries hold parametric insurance policies triggered by events such as drought, excess rainfall, high wind speeds, storm intensity, flooding, extreme temperatures, and earthquakes. The payouts disbursed to national governments or individual households are designed to support recovery in the agriculture, infrastructure, and energy sectors.

Caribbean Catastrophic Risk Insurance Facility

Although only launched in 2007, CCRIF is the oldest multicountry parametric risk pool in the world. It was capitalized with contributions from Canada, the European Union, the United Kingdom, France, Ireland, Bermuda, Japan, the World Bank, and the Caribbean Development Bank, and is sustained through fees paid by the insured countries. Today, CCRIF provides immediate liquidity for natural disaster relief to 16 Caribbean countries and 2 Central American countries—Nicaragua and Honduras.¹⁶ CCRIF transfers disaster risks to reinsurance and capital markets; by sustainably managing risks, it can survive a series of multiple loss events with less than a 1-in-1,000-year probability of occurrence.¹⁷

International support enabled CCRIF to offer high levels of coverage from its outset. CCRIF originally developed risk models and insurance pools for hurricane and earthquake coverage but has since also introduced excess rainfall insurance and is developing parametric wind insurance for electric utilities.¹⁸

TABLE 1

Parametric insurance programs around the world

Active parametric insurance programs nations use to cope with extreme weather and natural disasters



African Risk Capacity, 2014–present

- **Type:** Sovereign parametric risk pool—drought
- **Location:** Kenya, Mauritania, Niger, Senegal



Agriculture and Climate Risk Enterprise (formerly Kilimo Salama), 2009

- **Type:** Agricultural index insurance—drought, excess rainfall, diseases
- **Location:** Kenya, Rwanda, Tanzania



Caribbean Catastrophe Risk Insurance Facility, 2007

- **Type:** Sovereign parametric risk pool—storm-related wind damage, earthquakes, excess rainfall
- **Location:** Anguilla, Antigua and Barbuda, Bahamas, Barbados, Belize, Bermuda, Cayman Islands, Dominica, Grenada, Haiti, Jamaica, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Trinidad and Tobago, Turks and Caicos Islands, Nicaragua, Honduras



Index-based livestock insurance, 2010

- **Type:** Livestock index insurance—drought
- **Location:** Kenya, Ethiopia



FONDEN catastrophic bonds, 2006

- **Type:** National parametric catastrophe bonds
- **Location:** Mexico



Index-based food insurance pilot, 2013

- **Type:** Flood index insurance
- **Location:** Bangladesh



Weather Based Crop Insurance Scheme, 2003

- **Type:** Agricultural index insurance
- **Location:** India



PepsiCo index insurance, 2007

- **Type:** Agricultural index insurance—temperature, humidity
- **Location:** India



Index-Based Livestock Insurance Program, 2005

- **Type:** Livestock index insurance
- **Location:** Mongolia



USAID Climate Resiliency and Index Insurance Program, 2013 or 2014*

- **Type:** Agricultural index insurance—wind, rainfall
- **Location:** Dominican Republic



Pacific Catastrophic Risk Insurance Pilot, 2013

- **Type:** Sovereign parametric risk pool—cyclone, earthquake, tsunami events
- **Location:** Cook Islands, Marshall Islands, Samoa, Tonga, Vanuatu



R4 Rural Resilience Initiative, 2009

- **Type:** Agricultural index insurance—weather (includes a climate resilience labor-for-insurance payment plan)
- **Location:** Ethiopia, Malawi, Senegal, Zambia



Sompow Weather Index Insurance, 2010

- **Type:** Agricultural index insurance—weather (for profit)
- **Location:** Myanmar, Thailand, Philippines



Usinas y Transmisiones Electricas index insurance, 2014

- **Type:** Energy index insurance—drought
- **Location:** Uruguay



GIZ technical expertise sharing, 2011–2014

- **Type:** Technical assistance to facilitate index insurance
- **Location:** China

* The idea of index insurance was introduced to farmers in 2013, but product was not sold until 2014

Sources: **African Risk Capacity:** African Risk Capacity, "Drought Triggers ARC Insurance Payout in Sahel Ahead of Humanitarian Aid" (2014), available at http://www.africanriskcapacity.org/documents/350251/844579/PL_Press+Release+Sahel+Payouts+_EN_22012015_vFinal_CR.pdf; African Risk Capacity, "G7 endorses African Risk Capacity as model for climate insurance" (2015), available at http://www.africanriskcapacity.org/documents/350251/844579/ARCLtd_Pool2Announcement_EN_150706_Final.pdf; African Risk Capacity, "First Risk Pool," available at <http://www.africanriskcapacity.org/countries/risk-pool-1> (last accessed July 2015). **Agriculture and Climate Risk Enterprise (formerly Kilimo Salama):** International Finance Corporation, "Agriculture and Climate Risk Enterprise (ACRE) – Kilimo Salama – Kenya, Rwanda, Tanzania," available at http://www.ifc.org/wps/wcm/connect/industry_ext_content/ifc_external_corporate_site/industries/financial+markets/retail+finance/insurance/agriculture+and+climate+risk+enterprise (last accessed July 2015). **Caribbean Catastrophe Risk Insurance Facility:** Caribbean Catastrophe Risk Insurance Facility Segregated Portfolio Company, "Annual Report: 2013–2014" (2014), available at http://www.ccrif.org/sites/default/files/publications/CCRIF_Annual_Report_2013_2014.pdf; Francis Ghesquiere and Olivier Mahul, "Caribbean Catastrophe Risk Insurance Facility (CCRIF): Pooling Risk to Protect Against Natural Disasters" (Washington: Global Facility for Disaster Reduction and Recovery, 2011), available at http://www.gfdrr.org/sites/gfdrr.org/files/documents/DRFL_CCRIF_Jan11.pdf. **Index-based livestock insurance:** Andrew G. 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Challenges to expanding climate-related parametric insurance

In order to expand climate-related parametric insurance access to vulnerable countries in the developing world, it will be necessary for donor countries, international financial institutions, and multilateral development banks to overcome several key obstacles.

1. **Insurance policies require a country or other subscriber to pay a premium, which may be prohibitively expensive.** In some cases, it may be necessary for developed countries or international organizations to provide assistance that can help reduce the cost of the initial premium. To support the Pacific Catastrophe Risk Insurance Assessment and Financing Initiative, for example, Japan co-finances insurance premiums for Tonga, the Marshall Islands, Samoa, the Solomon Islands, and Vanuatu.²²
2. **Parametric instruments require extensive environmental data with high spatial resolution, as well as sophisticated modeling technology.**²³ Many developing countries do not have access to this information or technical capacity, making it difficult for their governments and domestic insurance providers to design parametric insurance products.²⁴ G-7 countries that do possess the tools needed can help developing countries overcome these deficiencies by providing technical assistance. And because these data can benefit multiple insurance programs, international institutions can facilitate data sharing and an exchange of technical best practices to improve international coordination and assistance.
3. **Purveyors of parametric insurance programs must reach new clients, educate them about the parametric model, and forge trusting relationships.** These purveyors—such as international organizations and private insurers—face the additional challenge of frequently working with populations that are unfamiliar with insurance.

Successful programs

While challenges exist, successful implementation of parametric insurance programs around the world demonstrates the potential of this strategy to further expand coverage to developing countries. These programs have successfully engaged governments and individuals from an array of cultures while leveraging interest from private investors and support from private insurance providers.

Kilimo Salama: Insurance for small farmers

In Kenya, initial efforts to implement agricultural insurance through Kilimo Salama, the predecessor to the Agriculture and Climate Risk Enterprise, were hindered by smallholders' unfamiliarity with agricultural insurance. Kilimo Salama worked to educate smallholders about insurance products and allow insurees to test out insurance by purchasing low levels of coverage. As participants grew more comfortable with Kilimo Salama's insurance, they began to purchase higher levels of coverage and make greater investments in their farms.²⁵

HARITA and R4: Comprehensive risk management in the Horn of Africa

More than 85 percent of Ethiopians rely on agriculture for their livelihoods, which leaves them highly vulnerable to severe droughts.²⁶ To help hedge against this risk, Oxfam International, the U.N. World Food Programme, and the international reinsurer Swiss Re established the Horn of Africa Risk Transfer for Adaptation, or HARITA, in Tigray, the drought-sensitive northern region of Ethiopia. HARITA expanded Ethiopia's existing labor-for-food scheme—the Productive Safety Net Programme, or PSNP—to allow insurance-for-labor transactions and connect with community members by offering microloans and microinsurance through local financial institutions working with Tigray's relief

society.²⁷ PSNP HARITA quickly expanded from 200 households in one village in 2009 to 13,000 households in 43 villages in 2011, yielding significant benefits to participating households.²⁸

HARITA's success led to the creation of R4, a project that extended HARITA to surrounding countries.²⁹ R4 supports irrigation and forestry projects for climate resilience through an “insurance-for-work” program that provides households with insurance coverage while reducing the impact of climate change on their villages.³⁰ The program, which aims to enroll 100,000 households by 2017, is operational in Ethiopia and Senegal and is currently expanding to Malawi and Zambia.³¹

Mexico's FONDEN: Parametric reinsurance and catastrophe bonds

In 2006, Mexico became the first national government to issue a parametric catastrophe bond to finance a countrywide Natural Disasters Fund, or FONDEN. The \$160 million in catastrophe bonds—or cat bonds—were issued over a three-year time frame to transfer the risk of a catastrophic earthquake. After the bond expired in 2009, Mexico issued a \$290 million multiperil catastrophe bond to be triggered by an earthquake or hurricane event.³² Mexico launched a \$315 million catastrophe bond in 2012 for earthquake and hurricane risk to succeed the 2009 bond, which had such high demand for investment that Mexico achieved highly competitive financing terms—providing the country with comparatively low cost of capital.³³ To date, Mexico has not experienced a natural disaster that has caused payout of the bonds.

Index insurance in India: Area-yield or parametric insurance

Rain-fed agriculture in India is widespread and leaves the country's farmers highly vulnerable to drought.³⁴ To help manage the risk, India has developed a successful agricultural index insurance market that is jointly managed by its federal insurance provider—the Agriculture Insurance Company of India Limited, or AIC—and private insurers. To facilitate agricultural insurance enrollment, Indian states can opt into one of two programs: the National Agriculture Insurance Scheme, or NAIS; or the Weather Based Crop Insurance Scheme,

or WBCIS. AIC offers farmers a heavily subsidized area-yield insurance policy through NAIS that is similar to standard crop insurance programs.³⁵ However, area-yield insurance programs are relatively expensive because they necessitate “long and reliable series of area-yield data” that are costly to gather and unavailable in many countries.³⁶

In states that opt into WBCIS instead, the state directs AIC or a private insurer to offer federally subsidized weather index insurance policies to farmers. Weather index insurance has been offered by two private insurers since 2003 and by AIC since 2004.³⁷ The index insurance program scaled up rapidly as states increasingly chose index insurance over area-yield insurance. Today, about 32 million Indian farmers purchase agricultural insurance, with 20 million covered by area-yield policies and 12 million covered by public or private weather index policies.³⁸

Principles for designing parametric insurance programs to address climate-related risks

As parametric insurance programs gain traction around the world, they offer important lessons for countries seeking to limit their own vulnerability to natural disasters caused by climate change. Many of the programs in operation demonstrate how international donors can catalyze the creation of new parametric insurance programs, ranging from technical support to financial support. Existing programs also provide important models as the international community works to scale up insurance coverage for climate-related risks in the developing world. The successes and challenges of programs to date can provide clear design principles for future climate-related parametric insurance programs.

To effectively scale up parametric insurance coverage in the developing world, the international community must learn from the experiences of existing programs and adhere to five key principles when designing parametric insurance programs.

1. Parametric insurance will require the support of international partners

Developing countries are the most vulnerable to climate change but have the least capacity to respond to its effects. International support from the G-7, multilateral development banks, and the private sector will play a necessary role in facilitating climate-related risk insurance by supporting developing nations' abilities to access insurance markets, collect necessary environmental or economic data, and secure financing for recovery efforts. Additionally, public financial support will be especially necessary to limit the first-mover costs associated with insufficient experience and limited liquidity that might dissuade private insurers from entering new insurance markets.³⁹

Principle in practice

The Pacific Island Countries, or PICs, are highly vulnerable to natural disasters—including tropical cyclones, earthquakes, and rising sea levels. In order to mitigate risk exposure of the PICs, the World Bank, Japan, the Global Facility for Disaster Reduction and Recovery, and the Secretariat of the Pacific Community partnered to develop the Pacific Catastrophe Risk Insurance Pilot, or PCRIP. The small geographic size and relatively small economies of the PICs—which limited both their access to immediate resources for disaster response and their access to insurance markets—made support from these partners essential. Throughout the three years the PCRIP pilot has been in operation, Japan has financed or co-financed the premiums of the participating countries lacking the means to pay the costs themselves. As PCRIP has developed, participating countries have made greater contributions to their premiums, and the Cook Islands pays their premium in full.⁴⁰

2. Parametric insurance pricing should encourage and reward resilience investments

Although traditional insurance schemes are designed to cushion the severity of costs associated with a disaster, climate-related parametric insurance programs are most effective when they are structured to encourage resilience investments that can limit the damage of the disaster itself. To do this, parametric insurance programs should adopt pricing schemes or premiums that offer subscribers reduced annual premiums in exchange for investments in resilience that can reduce the long-term costs associated with climate change and the operation of insurance programs.

Conversely, improperly structured financial support can create a moral hazard that encourages individuals or countries to take on greater climate risks, rather than providing incentives to reduce them. For instance, the U.S. government underwrites the U.S. National Flood Insurance Program, or NFIP, in order to support insurance policies that require steep premiums or are deemed too risky by private insurers. This means, however, that U.S. taxpayers are required to subsidize unsustainable insurance policies year after year. The NFIP or other supporting state and federal policies do not adequately discourage homeowners from living in high-risk flood plains, and developers generally take insufficient precautions to reduce the risk of building on those flood plains.⁴¹

Principle in practice

The previously mentioned R4 initiative incorporates an innovative strategy for climate risk reduction. R4 offers an insurance-for-work program that provides farmers access to insurance policies in exchange for work on projects “intended to reduce farmers’ vulnerability to droughts.” These projects will increase farmers’ resilience to climate change while simultaneously insuring them against future losses.⁴²

On a national scale, public investments to increase the resilience of national infrastructure could decrease a country’s vulnerability to a moderately severe natural disaster, thereby reducing its short-term capital needs in the aftermath. This should allow a country to purchase more modest insurance policies, or policies with a higher index level, at a lower premium. For example, investments in a country’s sewage and stormwater management that reduce the likelihood of major flooding as a result of extreme rainfall would reduce the likelihood that such a disaster would necessitate a large insurance payout—thereby reducing the premium.

The Caribbean Catastrophe Risk Insurance Facility, meanwhile, uses a changing premium model that shifts costs annually as the risks of natural disasters and costs of rebuilding vary.⁴³ While these adjustments tend to account for shifting costs of capital set by international markets, they should also reflect investments made by countries that reduce their exposure to risk. National investments to reduce risk exposure by member countries would reinforce the pool and allow CCRIF to lower premiums.

3. Parametric insurance programs can and should work in tandem with each other

Parametric insurance programs should be varied; program developers must recognize that these initiatives do not exist in a vacuum. Climate change poses threats to infrastructure, agriculture, and commercial sectors, but these impacts are not necessarily triggered simultaneously. By participating in multiple parametric insurance pools—such as those offered by CCRIF—a country could, for instance, insure itself against crop failure from drought in the summer and infrastructure failure due to extreme rainfall and flooding in the winter.

Other programs could work even closer together by addressing different consequences associated with specific events exacerbated by climate change. For instance, government-held parametric insurance might be used to reduce the spike in food costs, while index insurance for citizens could offer temporary financial support and give them resources for future investment. If the programs received payouts from separate, independent pools whose membership was distinct and diversified, the country could weather multiple consequences of a climate-related disaster without compromising the stability of either insurance program.

Principle in practice

The Agriculture and Climate Risk Enterprise, or ACRE, and the African Risk Capacity are parametric insurance programs that address two different consequences of severe drought. ARC index insurance—which is held by the governments of Kenya, Mauritania, Niger, and Senegal—alleviates food price spikes that would leave citizens starving.⁴⁴ Simultaneously, farmers in those countries also hold ACRE seed insurance, which reduces the costs associated with planting in the following year and prevents collapse in farming cycles. By operating in tandem, these programs could mitigate the economic and humanitarian costs of a drought.

4. Information gathered by programs should be shared and made available through a clearinghouse

Development of successful climate-related parametric insurance programs will require risk assessments of regions around the world, as well as continued monitoring of changing climate and weather conditions. These continued assessments present an opportunity to enhance the collective effectiveness of parametric insurance programs in overlapping regions and to improve data collection that can be used to protect individuals in vulnerable or high-risk regions. In particular, parametric insurance schemes that rely on real-time monitoring of conditions on the ground in participating countries can offer a wealth of information about the impacts of climate change as residents experience them.

For instance, weather stations designed to track rainfall trends for triggering disbursement of agricultural index insurance can also provide governments with insight into the availability of clean drinking water or resources for hydropower.

Because information gathered to improve the effectiveness of insurance programs could yield multiple benefits, data collection should occur in a transparent and collaborative manner. A climate insurance clearinghouse managed by an international financial institution, such as the Green Climate Fund or the World Bank, could gather climate and weather data for collective use to reduce the costs of risk assessments and index tracking. A clearinghouse could also provide a central source for information on parametric insurance designs and best practices.

Principle in practice

Rainfall data gathered by ARC could be shared with R4 operations in Malawi and Zimbabwe to better inform disbursement of microloans to participating households and adaptation projects within the countries. ARC uses low-resolution satellite data to develop its Africa RiskView hazard map and project natural disasters.⁴⁵ R4, which uses a narrower focus on individual households, could incorporate these data with its knowledge of local programs to better project the impacts of natural disasters at the local level.

5. Parametric insurance pools should be regionally or globally diversified

Climate risks can span large geographic areas, and natural disasters can strike multiple countries in a single region. A parametric insurance program that only covers countries in a small geographic space could risk bankruptcy if a disaster strikes all of the participating countries and forces the fund to pay out all of its obligations at once. Climate-related parametric insurance programs are likely to be more dependent on large risk pools than traditional insurance programs in order to smooth risks over time. Subscriber diversification allows insurers to reduce the amount of capital they must keep on hand to maintain a sustainable insurance program and also reduces the costs of insurance.

Given that the latent demand for affordable climate-related insurance is spread widely across many developing countries, parametric insurance programs should share risks globally to improve the robustness and affordability of insurance coverage. This would reduce the levels of capital necessary to capitalize funds and assure their long-term sustainability. Climate-related parametric insurance programs can achieve global diversification by increasing the scale of insurance programs, collaborating with existing reinsurance companies, and securitizing insurance risks for sale in global capital markets.

Principle in practice

Major reinsurers have merged and consolidated over the past few decades to improve their global risk diversification. The World Bank has also explored the possibility for a global catastrophic reinsurance facility or development of a global catastrophe mutual bond, which would structure a global parametric insurance pool underwritten by the World Bank and capitalized by private investors.⁴⁶

A global catastrophe mutual bond would collect fees from participating states according to expected damages and level of coverage. In order to subsidize developing states' fees and assure capitalization of the risk pool, the bond would be supported by donor countries as well as the private sector, where investors would receive low but predictable rates of return.⁴⁷

Similarly, as regional risk pools—such as ARC, CCRIF, and PCRIP—become firmly entrenched, a coordinating organization such as the World Bank could provide intermediary support or merge risk pools in order to further stabilize the parametric insurance market, reduce capital retention requirements for programs, and encourage greater global cooperation.

Conclusion

In only a few months' time, representatives from governments around the world will descend on Paris to finalize a new international climate agreement. Since climate finance remains one of the thorniest outstanding issues, the United States should continue to demonstrate leadership in this area by taking immediate steps to help developing countries prepare for and cope with the impact of climate change by expanding access to parametric insurance programs and abiding by the five key principles described above. The United States and other countries can work with the Green Climate Fund, the World Bank, other international finance institutions, and private-sector companies to provide public and private support, as well as programmatic management.

Reducing post-disaster cost volatility through participation in insurance pools will help countries limit costs associated with natural disasters and enhance recovery efforts. International support for insurance programs will allow countries to share the risks associated with climate change with insurers and reinsurers who can further diffuse costs by transferring risks to capital markets through catastrophe bonds.

Insurance is a risk management mechanism designed to minimize the variability of losses—not prevent them outright. None of these mitigation efforts, however, diminishes the urgent need to cut greenhouse gas emissions; insurance programs cannot be used on their own to finance new development of clean energy or increase the resilience of infrastructure. Similarly, these programs will not solely underwrite new economic initiatives or leverage substantial new investment in developing countries. Parametric insurance programs must be deployed in concert with sustainable economic development and climate resilience investments and initiatives. Nonetheless, parametric insurance programs are a tool that the international community can and should immediately deploy in order to better manage the escalating climate-related risks it is now too late to avoid.

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