

Paying the Premium: Insurance as a Risk Management Tool for Climate Change

AARJAN DIXIT AND HEATHER MCGRAY

World Resources Institute Working Papers contain preliminary research, analysis, findings, and recommendations. They are circulated without a full peer review to stimulate timely discussion and critical feedback and to influence ongoing debate on emerging issues. Most working papers are eventually published in another form and their content may be revised.

Suggested Citation: Dixit et al. 2009. "Paying the Premium: Insurance as a risk management tool for climate change". WRI Working Paper. World Resources Institute, Washington DC.

I. EXECUTIVE SUMMARY

Climate change is projected to exacerbate the intensity, and frequency, of weather-related hazards such as storms and droughts (IPCC, 2007). These climatic changes are likely to intensify the growth in economic damages from extreme weather events seen over the past two decades (Munich Re Group 2008) and suffered primarily by developing countries least able to cope with them. Absent effective risk reduction strategies and activities, climate-related disasters could severely undermine the ability of regions and nations to meet basic development goals.

In this context, well-designed disaster risk management strategies are crucial adaptation investments. Such strategies comprise an array of interventions to mitigate the risk of damage, including early warning systems, local village-level responses, and structural interventions. They also include insurance.

By allowing individual countries, companies or individuals to transfer risk of future losses to an insurance provider, insurance can protect policy-holders from large-scale economic losses due to weather disasters, can provide financial liquidity immediately after a loss, and can help build resilience to economic shocks (see Box 1). If implemented well, insurance offers a real opportunity to help the poor and vulnerable become resilient to the impacts of climate change by allowing markets to bear some of the costs of adapting to these events.

Box 1 | Insurance Defined

Insurance is a financial mechanism that allows one party to transfer the risk of future losses to a second party (insurance provider) willing to bear this risk for a fixed period in return for the payment of premiums. These transfers are made possible by the following:

Risk Assessment: Insurance requires the assessment of risks so that they can be recognized and priced.

Risk Pricing: Insurance puts a monetary value on risks.

Insurance can help restore the wellbeing of a policy holder after a shock. Also, if well designed, insurance can create incentives for policy holders to reduce risky behavior.

A. Insurance at the UNFCCC

Interest in insurance as a risk management mechanism has run high within the international climate change negotiations under the United Nations Framework Convention on Climate Change (UNFCCC). Indeed, insurance is one of the few specific policy instruments for adaptation listed in key

UNFCCC decisions.¹

The challenges of increasing effective insurance coverage for climate-related events in the developing world are, however, substantial. Insurance is a complex financial product that needs strong regulatory oversight, support from the banking and credit systems, reliable weather data, and significant technical capacity. Insurance must also be carefully targeted and tailored to meet the needs of the insured.

Within the UNFCCC negotiations based around the 2005 Bali Action Plan, various insurance related proposals have been put forward. However, because insurance is technically complex, different proposals have been conflated or linked in ways that obscure their functions and objectives, as well as the decisions or actions needed to implement them.

B. About this paper

This working paper aims to clarify the issues around insurance mechanisms designed to improve resilience among the poor to climate change impacts. We hope our analysis will inform the ongoing insurance discussions at the UNFCCC in the build up to the Conference of Parties in Copenhagen in December 2009.

The next section makes the connection between poverty, climate change and the role of insurance. Section III articulates three types of instruments – solidarity fund, catastrophic risk finance mechanism, and consumer insurance products - that could be undertaken under the auspices of a global climate agreement. Section IV analyzes three current UNFCCC insurance proposals in light of this typology. Section V identifies four design objectives required for negotiators to come up with an effective UNFCCC-led insurance mechanism: risk reduction, roles of key stakeholders, benefits to the most vulnerable people, and incentives to adapt to changes in the climate.

The table on the next page gives an at-a-glance summary of the types of insurance discussed, how they relate to UNFCCC proposals, and the roles of key players in implementing each type of instrument.

C. Conclusions

Based on our analysis, WRI suggests that, as Parties further develop their ideas around insurance, priorities should include: program elements that promote effective risk reduction; clear, realistic roles for the UNFCCC, national governments and the private sector; mechanisms for assuring that the poorest and most vulnerable benefit from insurance; and safeguards to prevent maladaptation.

Section V of this paper suggests several options for elaborating current proposals to address these key elements. Each of the proposals under discussion at the UNFCCC has the potential to address these effectively. Without further development, however, Parties cannot be assured that any of the proposals will form the basis of an effective insurance mechanism.

¹ The Bali Action Plan of December 2007 calls for “consideration of risk sharing and transfer mechanism, such as insurance” as a means to address losses in developing countries due to climate change. Article 4.8 of the UNFCCC and article 3.14 of the Kyoto Protocol also allow room for insurance to be included as a tool to combat the impacts of climate change.

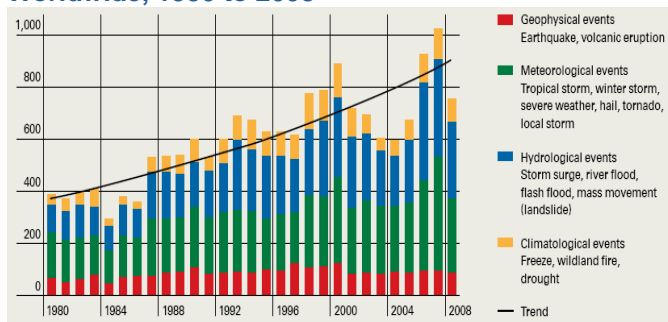
Table 2 | Insurance Instruments Proposed in the Submissions to the UNFCCC

| Instrument Category | Specific Instrument | Included in | Instrument Objectives | UNFCCC's Role | National Governments' Role | Private Sector's Role |
|-----------------------------|---|---|---|--|---|---|
| Global fund | Solidarity fund, compensation mechanism | AOSIS Proposal | The fund pays out directly to countries that have suffered catastrophic damages from a climatic event or climate change impact. | <ul style="list-style-type: none"> Set up governance structure of fund. Mandate Annex 1 parties to pay into fund Create mechanisms to disburse funding. Decide eligibility of recipient countries. | Annex I parties provide funds. Non-Annex I parties receive funds and decide how to spend them. | None. The fund would be comprised of public money and flow directly to public institutions. |
| Catastrophic risk insurance | Subsidized global risk pool | MCII Proposal; Secretariat Scheme C | Rich countries pay insurance premiums to a global risk-pooling facility on behalf of vulnerable countries. | <ul style="list-style-type: none"> Set up global risk-pooling facility, including governance structure and facility operator (likely from the private sector). Provide for gathering and management of data and information necessary to determine premiums, including comprehensive global risk assessments Agree architecture through which Annex I parties pay premiums. Decide eligibility of participating vulnerable countries Decide what risks are covered. | <ul style="list-style-type: none"> Plan and implement comprehensive risk management frameworks. Decide how they will take part in this scheme. Complete prevention activities as part of eligibility criteria. | <ul style="list-style-type: none"> Decide on price for climate risks. Build risk models incorporating risk data. Operate insurance scheme either independently or under a public-private partnership. |
| | Sovereign risk pool | Secretariat Scheme C; MCII Proposal; AOSIS Proposal | Vulnerable countries pay premiums to insure their budgets against catastrophic risks. When multiple countries pool their risks, premiums are lower and countries have better access to capital through reinsurance. | <ul style="list-style-type: none"> Help set up risk pooling facilities. Provide technical support and financing support for backstopping (if losses are very high). Provide data and risk models. | <ul style="list-style-type: none"> Join regional insurance mechanisms. Pay premiums to an insurance facility. Decide how much insurance coverage to purchase. Decide how to spend insurance payouts. Provide data. Improve and standardize insurance market regulations. | <ul style="list-style-type: none"> Operate mechanism through the private sector or a public-private partnership. Reinsure through capital markets. Determine (private sector) prices for risks and premiums. Build risk models. Sell insurance coverage. |
| Consumer insurance products | Commercial life and property insurance | Secretariat Scheme C; MCII Proposal; AOSIS Proposal | Individuals and businesses pay premiums to a commercial entity to spread the risk of a certain event in the future over a period of time. When an event occurs, insurance policy holders receive payouts. | <ul style="list-style-type: none"> Provide technical support, incentives, and help in removing market barriers. | <ul style="list-style-type: none"> Form and improve regulatory frameworks for insurance. Safeguard contract enforcement and other legal rights. | <ul style="list-style-type: none"> Provide insurance through private commercial entities. Provide reinsurance through global insurers and capital markets. |
| | Microinsurance | Secretariat Scheme C; MCII Proposal; AOSIS Proposal | Insurance is specifically designed for and targeted to the poor, which often means providing insurance to a large number of people with small assets to insure. | <ul style="list-style-type: none"> Offer technical support (program and policy design, funding for research, sharing best practice, support for data gathering) Financial support for insurance pilots | <ul style="list-style-type: none"> Establish national regulatory frameworks. Obtain valuable local data through meteorological and agricultural extension services. Offer research and education on insurance and risk management. Decide whether to set up stand-alone or integrated insurance programs. | <ul style="list-style-type: none"> Determine price and model risks. Operate insurance programs. Provide reinsurance of microinsurance portfolios. |

II. CLIMATE CHANGE, INSURANCE AND THE POOR

The Intergovernmental Panel on Climate Change’s (IPCC) fourth assessment report in 2007 confirmed that natural disasters have been occurring more frequently, with the number of extreme events expected to rise each year owing to anthropogenic climate change (IPCC 2007). Economic losses attributable to weather events also show a rising trend (UNFCCC 2008a). In the last decade (1996 to 2005), economic losses from disaster events were seven times greater than those in the 1960s, and insured losses rose by a factor of twenty-five (Hoeppe and Gurenko 2006). Most of these losses are attributable to global population growth, the greater concentration of people and economic value in urban areas, and the worldwide migration of populations and industries into areas like coastal regions (which are particularly exposed to natural hazards). However, the increasing severity of climate forces has also contributed to this rising trend. Figure 1 shows the global increase of catastrophic events in the last few decades, including growth in climate related events.

Figure 1 | Number of Natural Catastrophes Worldwide, 1980 to 2008



Source: Munich Re Group, 2008

Between 1985 and 1999 - due to their economies’ considerably greater vulnerability to natural disasters - developing countries lost 13.4 percent of their combined GDP owing to natural disasters, compared with losses amounting to 2.5 percent of combined GDP in industrialized countries (Freeman and Scott 2005). Yet, while coverage of developed countries’ commercial insurance for natural disasters has doubled over the last 20 years from about 20 percent of economic losses to about 40 percent, insurance coverage in developing countries has remained stagnant at about three

percent of total losses (Hoeppe and Gurenko 2006).

Just as the Gross Domestic Products of poor countries are hit harder by disasters than those of rich countries, it is the poor in all countries who suffer the most from extreme weather events (Mechler, Linnerooth-Bayer, and Peppiatt 2006). The well-to-do can cope using a variety of measures: they can buy private insurance, sell assets, or draw on their savings. But because the poor have fewer assets and only limited access to formal financial institutions, their options in response to a natural disaster are much more limited. They may reduce their consumption of food, eat cheaper but less nutritious food, take their children out of school, or sell key productive assets such as tools or livestock. Although such steps can help poor households cope with an extreme weather event in the short term, in the long term they undermine well-being. Recovery from such episodes will become much harder as the frequency of extreme events increase with climate change. In other words, the worsening physical impacts of climate change will aggravate the vulnerabilities of poor communities (Mechler et al. 2006; WRI 2008).

As the need to bolster the resilience of the poor grows more urgent under a changing climate, options for improving access by the poor to insurance deserve careful consideration. If well designed, insurance can offer cost-effective resilience to weather shocks (Dercon 2004; Morduch 1994) and can help poor households build and maintain other resources that provide resilience, such as savings, remittances, and access to credit. Insurance can help poor households in three ways. First, insurance can provide access to immediate financial liquidity after a disaster and the losses it may cause. The availability of cash immediately after a disaster means that people do not need to sell their productive assets—and fall deeper into poverty (Barnett et al. 2006). Second, access to insurance can unlock other development benefits like access to credit and other financial instruments that may be vital to sustaining livelihoods (Linnerooth-Bayer and Mechler. 2006). Finally, insurance can continue to provide a long term safety net to protect the poor from losses caused by weather extremes.

Coupled with prevention and risk reduction measures and other innovations that help prevent the moral hazards

associated with shielding people from risks, insurance can help the poor make riskier investments that may bring them higher returns (see Box 2 and Box 3) (Churchill 2006; Hoeppe and Gurenko 2007; Holzmann and Jorgensen 2000).

Box 2 | Moral Hazards and Maladaptation

Moral hazards in insurance happen when the availability of insurance protection alters an individual's motives to prevent losses. Such moral hazards increase costs to the insurance provider and ultimately increase the price of coverage. Often insurance, especially crop insurance is unfeasible in many developing countries due to the high costs of controlling moral hazards. Shielding insurance policy holders from climate risks can cause them to behave in ways that increase the risks and cause maladaptation in the future. For example, the availability of subsidized insurance to home owners in flood plains can lead to more development in areas that will be more susceptible to climate change.

To remedy this, several innovations like index based insurance, are emerging in insurance design linking incentives for insurance with preventive behavior. For example, insurance premiums can be tied to specific land and natural management practices, or insurance holders themselves can police each other to ensure that risks are minimized. These minimize moral hazards and decrease the risk of maladaptation. If the incentives to reduce risk are properly aligned with the incentives to buy insurance, insurance can guide individuals to make decisions that will strengthen their resilience to climate change impacts. Moreover, low-income households' access to insurance can aid in development, which in turn can strengthen their resilience to climate change.

III. TYPES OF INSURANCE RELEVANT IN THE UNFCCC

In this brief we consider three general categories of insurance for managing the risks associated with climate change, based on who pays, who is insured, and the value of assets insured:

A. Global Fund

The global community sets up a solidarity fund or some other form of a compensation mechanism to pay the governments of vulnerable countries against catastrophic risks caused by climate change directly through an emergency fund.

B. Catastrophic Risk Insurance

The international community sets up a global risk pool to pay premiums for vulnerable countries to insure them against the impacts of climate change. Alternatively, vulnerable countries themselves share the risks because of weather-related catastrophic events through sovereign risk pools and risk transfer facilities. The Caribbean Catastrophic Risk Insurance

Facility (CCRIF) is an example of this second type of insurance mechanism (see Annex A).

C. Consumer Insurance Products

Both individuals and businesses can purchase private insurance. New insurance products allow insurance to tackle risks from weather disasters, remove moral hazards and also decrease transaction costs. Poor individuals may best be served by microinsurance from a public-private partnership between insurance companies and the state or other non-governmental organizations (see Annex B for an example).

Box 3 | Climate-Related Innovations: Index-Based Insurance

Index-based insurance instruments are a recent innovation in insurance design to respond to large-scale losses from weather disasters and have helped lower the transaction costs of providing traditional loss-based insurance. An index can be used with many different types of insurance (e.g. those in Table 1). Using an index, insurance payouts are tied to a physical parameter like rainfall, instead of basing payouts on actual losses. If the level of rainfall is below a certain reading at a particular station or a geographic range, a payout is made, regardless of the damages sustained. The rainfall acts an index in the scheme.

Insurance policy holders have little control over how the index behaves and receive a payout irrespective of individual losses as long as an index threshold is crossed. This mechanism provides incentives for policy holders to reduce individual risks because they can receive payouts even if they sustain no actual losses from a specific climate event. Moreover, since the coverage normally extends to everyone in a geographic area affected by the physical index, it is less likely that only those individuals at most risk will be the primary purchasers of insurance.

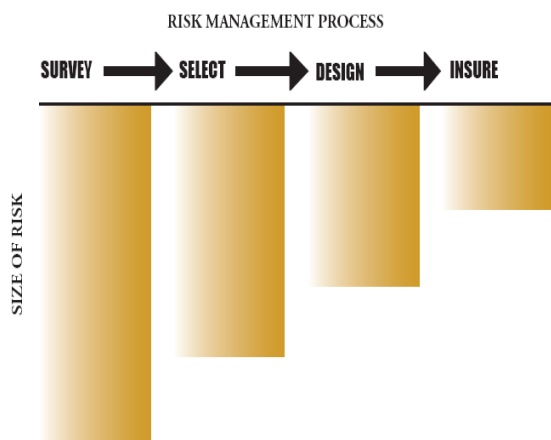
Index based insurance does, however, have disadvantages. It requires an index parameter that tracks damages very closely. An index that does not do so increases the likelihood that buyers are not sufficiently covered for the actual losses that may occur due to a weather event. Such insurance schemes also require reliable and accessible historical data to correctly price losses and model risks. Policy holders in many developing countries also need to be familiar with the idea of index based insurance, in particular, and insurance, in general. Often, these concepts are new and unfamiliar in many developing country contexts. Finally, index insurance schemes require payouts as soon as a trigger is reached. This means that scaled-up schemes need to have large cash reserves or extensive reinsurance to finance such payouts.

IV. RISK MANAGEMENT AND INSURANCE IN THE UNFCCC

There is growing recognition, both in the UNFCCC and

outside, that insurance is only one of many tools needed as part of wider risk management programs that both national governments and the international community need to undertake. Preventing and reducing risks first by surveying, selecting and designing interventions or mechanisms are often the best course of action. These first three steps of the risk management process help to minimize risks that an individual, community or a country faces. Risks that are impossible to prevent or reduce can then be pooled and transferred through insurance. In this context, insurance must operate in very close coordination with other disaster risk reduction and prevention measures, and is frequently the last step in risk management strategies (UNEP 2007). Figure 2 illustrates the role of insurance in risk management.

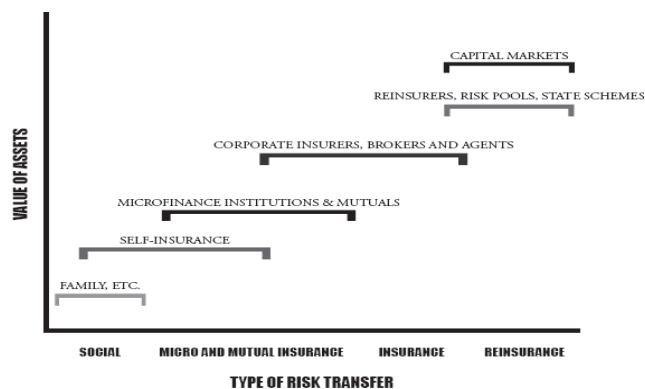
Figure 2 | Typical Sequence of Risk Management Steps



Source: UNEP 2007.

Insurance that manages the risks of climate change can operate on many levels and take many different forms. Each approach functions differently and has different stakeholders and a different design. For example, the kinds of technical capacity, data, and governance needed to operate a global risk pool for catastrophic risks differ from those needed to start a national micro- or macroinsurance program. Similarly, an insurance product that services low-income households in developing countries will require a different business plan, involve different stakeholders, and operate differently than will a commercial insurance product for corporations. Figure 3 differentiates insurance products according to the size of assets they cover and identifies some of their stakeholders.

Figure 3 | Insurance Providers: Key Players



Source: UNFCCC 2008b.

A. UNFCCC Proposals

A number of insurance proposals have been made in the course of the climate negotiations under the Bali Action Plan, covering all the insurance types outlined above in Table 1. Most focus on establishing an insurance program to cover catastrophic climate-related risks for vulnerable countries, and would require large infusions of capital. The most recent Party proposal on insurance was made by Barbados and the Cook Islands on behalf of the more than forty countries of the Alliance of Small Island States (AOSIS) (AOSIS, 2008). Switzerland, Mexico, some countries of the European Union, Bangladesh (on behalf of the Least Developed Countries), China, India, Argentina, the Philippines, Malaysia, and Saudi Arabia have also expressed interest in insurance schemes. The Munich Climate Insurance Initiative (MCII), an observer organization, also has submitted an insurance proposal (MCII, 2008). Of these submissions, only two are sufficiently detailed to provide a basis for analysis. We also examine the UNFCCC Secretariat’s suggestions for an insurance mechanism in a technical paper prepared for the Poznan talks in December 2008 (UNFCCC, 2008b).

1. The AOSIS Proposal

The AOSIS proposal includes elements covering insurance, rehabilitation, and risk management (see Figure 4). The insurance component would cover damages from extreme weather events like hurricanes and cyclones. The rehabilitation component would address problems that Small Island Developing States (SIDS) face as a result of climate

change such as rising sea levels, desertification, and water shortages. This component would cover risks that most traditional insurance would not cover by calling upon the developed world to compensate the SIDS for damages caused by climate change. Finally, the risk management window is intended to aid in mainstreaming risk management initiatives into national development planning and help in preventing the various risks associated with climate change. This proposal places insurance in a larger framework that includes a Technical Advisory Facility, and a Financial Vehicle that would help set up insurance systems in places where insurance markets have failed or are likely to fail.

Figure 4 | The AOSIS Proposal



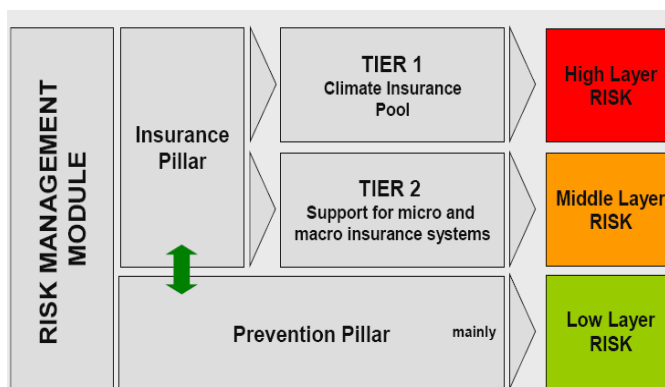
Source: Mace, MJ. 2008. AOSIS presentation Poznan

2. The Munich Climate Insurance Initiative Proposal

The Munich Climate Insurance Initiative (MCII) proposal has two broad pillars that are designed to operate simultaneously (see Figure 5). The first is a prevention pillar, which engages countries in risk reduction and prevention. The second is an insurance pillar, which has two tiers reflecting the different levels of risk that need to be addressed. The first tier would insure against events causing damages that exceed the ability of any one country to pay for disaster financing. Annual contributions from Annex I countries to a Climate Insurance Pool (CIP) would be used to purchase the insurance liability for each country eligible for coverage for such events. The insurance payments would most likely go to governments, and deductibles and eligibility criteria (participation in the prevention pillar) would be used to avoid moral hazard problems and encourage preventive measures. The second tier would be a Climate Insurance Assistance Facility (CIAF) that would provide support and capacity building for all other types of insurance mechanisms. This tier would provide capacity-building services in the form of

catalyzing micro- and national-level disaster insurance systems, as well as technical support for collecting and disseminating weather data, financing risk assessment studies, investing in weather station infrastructure, and offering delivery services. In addition, this tier could provide more direct support by offering or brokering pooling and reinsurance arrangements or even subsidizing premiums when needed (MCII 2008; MCII 2009).

Figure 5 | The Munich Climate Insurance Initiative Proposal



Source: MCII presentation, Poznan, Poland December 2008.

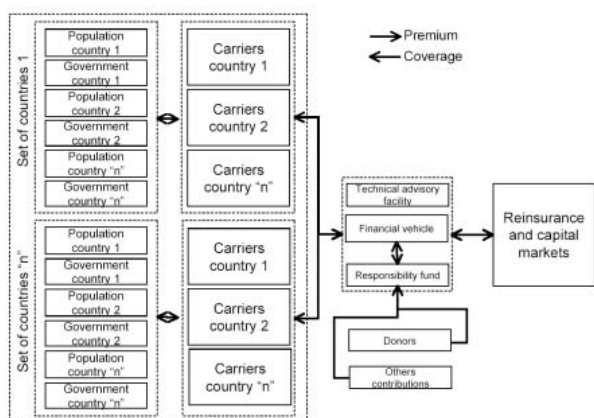
2. The UNFCCC Secretariat's Recommendations

The technical paper prepared by the UNFCCC secretariat proposes three different schemes for insurance related to climate risk management, the first two designed for countries with fairly mature financial markets. Scheme A is aimed at finding reinsurance channels for existing insurance providers in a particular country. The international process would help remove some of the existing barriers to an effective market by providing funds for the data gathering, risk modeling, technical training, and the development of regulatory frameworks. Scheme B is similar, but would enable a number of different insurance providers from different countries to pool and transfer their weather-related risks for property and infrastructure to the global reinsurance markets.

Scheme C is similar to the MCII proposal and is designed to include large parts of the global community, and to cover risks that could not otherwise be insured (see Figure 6). Like Schemes A and B, it contains provisions to help national insurance companies and other risk carriers (local

cooperatives, NGOs, multilateral institutions, and insurance companies) gain access to international reinsurance. The scheme also would incorporate two facilities; a technical advisory facility to help countries build capacity, determine prices, and model risks; and an optional financial vehicle to give countries access to better coverage and lower premiums. The financial vehicle also would regulate access to a “responsibility fund” financed by both Annex I countries and those participating countries that may use the fund as a reinsurer. The fund would be designed to cover frequently occurring, lower-levels risks that may be uninsurable. It could also help insure very risky events, but only if the countries used the financial vehicle as a means to transfer risks to the international markets.

Figure 6 | Scheme C of the UNFCCC Secretariat’s Insurance Proposal



Source: UNFCCC 2008b.

Table 2 categorizes the different proposals according to the typology of insurance instruments described in section III.

V. NEXT STEPS: ELEMENTS OF AN EFFECTIVE UNFCCC INSURANCE MECHANISMS

The insurance proposals tabled thus far provide a diversity of insurance options for the Parties to consider. However, these proposals cannot be judged solely on the type of insurance they would institute – the effectiveness of a UNFCCC insurance mechanism will depend heavily upon detailed elements of the proposals that, in many cases, remain to be fleshed out. Here, we raise four key issues that will need to be addressed before Parties can craft an effective insurance

mechanism: risk reduction, roles of key stakeholders, benefits to the most vulnerable people, and incentives to adapt to changes in the climate.

Table 2 | Insurance Instruments Proposed in the Submissions to the UNFCCC

| Instrument Category | Specific Instrument | MCII Proposal | AOSIS Proposal | Secretariat’s Proposal, Scheme C |
|------------------------------------|--|---------------------------------|--|---|
| Global fund | Solidarity fund/compensation mechanism/Responsibility fund | NA | Compensation and rehabilitation Window | NA |
| Catastrophic risk insurance | Subsidized global risk pool | Tier 1 (Climate Insurance Pool) | NA | Responsibility Fund feeding into Financial Vehicle |
| | Sovereign risk pool | Tier 2 | Insurance Window, | Risk pooling component |
| Consumer insurance products | Commercial life and property insurance | Tier 2 | Technical Advisory Facility and Financial Vehicle/facility | Technical Advisory Facility and Financial Vehicle assist carriers to provide insurance to populations |
| | Microinsurance | Tier 2 | Technical Advisory Facility and Financial Vehicle/facility | Technical Advisory Facility and Financial Vehicle assist carriers to provide insurance to populations |

A. Risk Reduction

As noted above, submissions and Party interventions make it clear that the Parties have reached a certain level of consensus on the importance of risk reduction and the need to consider insurance in the context of a larger risk management framework.² However, there is no consensus

² For example, speaking on behalf of the European Union on April 6, 2009, in the Adaptation Contact Group breakout sessions on risk management and insurance during the UNFCCC Bonn talks (March 29–April 9, 2009), the Czech Republic identified a spectrum of risk management activities including mitigation, adaptation, disaster risk reduction, sharing/transferring risks and humanitarian interventions. According to the EU, each country needs to determine for itself what means of addressing risks is the most effective.

yet regarding the role of the UNFCCC in promoting risk reduction and the relationship between risk reduction and insurance under the new agreement. Parties will need to select among the following options:

1. Risk reduction measures are a condition for participating in a UNFCCC insurance scheme.

This approach has the advantage of preventing the moral hazard that may emerge under proposals where premiums are not paid by the insured. It is proposed by MCII and rejected by AOSIS.

2. Insurance programs create incentives for participants to reduce their risks.

Creating such incentives would depend on careful design of the insurance mechanism so that the price of insurance would vary with the level of risk reduction. For example, participation in a prevention “window” could result in lower premiums for countries participating in a risk pooling scheme. Such incentives will be harder to create for insurance products where those who are insured do not pay the premium associated with their risk.

3. The UNFCCC promotes risk reduction separately, without an explicit link to an insurance scheme.

Disaster risk reduction, early warning systems, and better management and planning are necessary for adapting to climate change and may be priorities for adaptation support elsewhere within the UNFCCC, regardless of the kind of insurance system put in place.

B. Roles of Key Stakeholders

Implementing the different types of insurance would require different sets of actions on the part of the UNFCCC, national governments, and the private sector. For the most part, proposals on the table have not yet acknowledged these players’ distinct roles or addressed in any detail how they will be performed. Table 1 describes more fully the roles played by each of these stakeholders in each type of insurance under discussion. The roles can be roughly categorized as follows:

1. Financing

For catastrophic risk insurance, the costs of insurance premiums will fall to developed countries if premiums are paid (or subsidized) through the UNFCCC. If a sovereign risk pooling model is selected, premiums will be the responsibility

of developing countries’ national governments, though technical and administrative support may be funded through the UNFCCC. For consumer products, costs of premiums are more likely to play out in the market, though they may fall, at least partly, to national governments under many microinsurance program designs. Most of these instruments will also need to access re-insurance from the international markets.

2. Information Management

Insurance requires accurate data and technical modeling in order to price risks. Normally a private company would carry out these tasks but would keep them proprietary. Given that markets have largely failed to provide the types of insurance under discussion here, however, governments or the UNFCCC may need to be engaged in the development and dissemination of risk assessments, weather data, and pricing models. This need is likely, regardless of the instrument selected.

3. Building technical capacity and enabling environments

Insurance requires considerable technical capacity to design and operate local, national, and international schemes. The UNFCCC can support the building of such capacity in countries, and may wish to draw upon emerging experience in other multilateral institutions (see Box 6). However, much of the needed technical skill lies with the private sector, and it remains to be seen whether private sector players can be engaged via the UNFCCC, or whether national governments will need to play the central role in forming public-private partnerships. Likewise, the global community can work together on models of enabling environments (regulations, data, and policies) for making insurance effective, but ultimately, only national governments have the power to make the necessary changes.

Box 6 | Risk Transfer and Insurance by Multilateral Institutions

The Global Index Insurance Facility (GIIF)

A newly launched insurance facility under the World Bank³ is designed to:

- Provide technical assistance and infrastructure

³The World Bank is now considering a partnership with PartnerRE. Although the facility has not yet been set up, it was approved by the World Bank Group board in November 2007.

- support to develop index insurance.
- Aggregate and pool risk from different developing countries to improve pricing and risk transfer into the global reinsurance and capital markets.
- Cofinance certain insurance products on a bilateral basis

A new and dedicated re-insurance company with capital of \$100 million would also be created. The private sector would cover 50 percent of the costs; the European Investment Bank (EIB) and the International Finance Corporation (IFC) would cover 20 percent each; and the balance would be covered by other multilateral and bilateral donors. The facility's commercial functions would include market intermediation, risk pooling, limited holding of risk (risk warehousing), and market development.

UNDP Climate Risk-financing Facility

UNDP is exploring ways to open a climate risk-financing facility to aid development efforts generally. The facility would assist public authorities in implementing development and risk reduction-oriented climate change risk transfer mechanisms at the local and regional levels.

The new facility's objectives include

- Providing technical assistance to design and implement required policy and institutional infrastructure to develop risk-sharing instruments.
- Linking national and regional actors with national/international insurers and reinsurers.
- Facilitating financial flows to risk products through innovative financing schemes.

C. Benefits to the Most Vulnerable

As discussed in Section II, poor and marginalized populations are frequently those most vulnerable to the effects of climatic events. Many of them live in countries where insurance is not available, or when it is, is not designed to meet their needs at a price they can afford. Although proposals to the UNFCCC all cite the need for insurance programs to service poor and vulnerable populations, they do not explain in any detail how they would extend access to insurance in the developing world or how they would design smart insurance programs that aid in reducing vulnerabilities.

Whether and how a UNFCCC insurance mechanism benefits the most vulnerable will depend upon a range of decisions, few of which have yet been addressed in any detail through the negotiations. Many key decisions, in fact, are unlikely to be made in the negotiations, but will fall to decision-makers within participating countries. For example, if the UNFCCC supports a subsidized global risk pool or a sovereign risk pool,

insurance pay-outs are likely to go directly into government budgets. The benefit of insurance pay-outs to vulnerable populations will then depend largely on whether national governments choose to use the funds to support the needs of the poor. Such decisions, in turn, depend upon the effectiveness of the channels through which the interests of the poor are represented in government decision-making.

In the case of catastrophic risk insurance, the UNFCCC could design incentives or eligibility requirements to focus on assessment of social drivers of vulnerability and planning for service to the poor. This could be accomplished by designing pro-poor elements into risk reduction options identified in section A above.

Commercial insurance products often do not serve low-income, vulnerable populations very effectively, and typically require government intervention if the market barriers to serving these populations are to be overcome. Microinsurance is a form of commercial insurance product specifically designed for and targeted at the poor, and it usually is delivered through a public-private partnership. Smartly designed microinsurance programs that are tailored to local conditions can help build resilience to climate shocks. The UNFCCC could support such designs through technical assistance and information provision. However, even microinsurance requires policy holders to have a minimum level of productivity, and is unlikely to reach those people who have no insurable assets.

D. Incentives to Adapt

Improving the insurance coverage of low-income people can help them build resilience to the effects of extreme climatic events. This resilience-building is itself an important adaptation, given that climate change is projected to increase the frequency and/or severity of extreme events in many parts of the world.

However, by shielding policy holders from future risks, insurance also provides incentives for behavioral change. Such incentives can work in two opposing ways. On the one hand, access to insurance can cause maladaptive actions if such incentives promote behaviors that lock policy holders in a development pathway that does not account for the future

impacts from climate change. Alternatively, insurance can incentivize policy holders to take new actions that can help them adapt to future climatic changes.

For example, insurance can help encourage countries to develop better building codes and better zoning practices that steer development away from vulnerable areas. It can also incentivize farmers in developing countries to plant more drought tolerant seeds. Conversely, availability of insurance to home owners in flood plains can lead to more development in areas that will be more vulnerable to climate change impacts and eventually lead to land degradation and destruction of ecosystem services.

Ultimately, the design of an insurance instrument, and other management activities coupled with it, will determine whether incentives help or hinder adaptation. Taking account of likely climatic changes in the insurance design can help to ensure that insurance incentivizes risk reduction activities that remain effective over time, as the climate changes. Moreover, if insurance itself can be made adaptive – so that key provisions can easily change if the climate reaches an important threshold or if existing provisions are found to undermine adaptation – it can account for the many unknowns associated with risk reduction under a changing climate.

VI. CONCLUSION: WHAT SHOULD THE NEGOTIATIONS PRIORITIZE?

In reviewing a diverse set of options for insurance under the UNFCCC, this paper has highlighted a number of considerations that will shape a) the objectives of an insurance mechanism and b) how effectively it achieves its objectives. Foremost among these considerations is the question of what type – or types -- of insurance the UNFCCC can and should support. The proposals currently on the table each cover similar sets of insurance types (Table 2); as a result, Parties have not been called upon to discuss the relative merits of the different approaches. As the negotiations move forward, however, Parties will need to identify more concretely the objectives they seek to achieve through insurance and which type(s) of insurance meet which needs. Without such concretization, insurance proposals will be challenging to include among the trade-offs that negotiators will need to

make as the climate talks enter their final stages.

As Parties further develop their ideas around insurance, priorities should include:

- program elements that promote effective risk reduction;
- clear, realistic roles for the UNFCCC, national governments and the private sector;
- mechanisms for assuring that the poorest and most vulnerable benefit from insurance; and
- safeguards to prevent maladaptation.

Section V suggests several options for elaborating current proposals to address these key elements. Each of the proposals currently under discussion has the potential to address these effectively if further developed. Without further development, however, Parties cannot be assured that any of the proposals will form the basis of an effective insurance mechanism.

VII. ANNEX: CASE STUDIES

A. The Caribbean Catastrophic Risk Insurance Facility

On average, one hurricane hits a Caribbean country every year, often causing catastrophic damage. Until 2004, most of these countries depended on “ex -post” donor funding to finance their recovery. After Hurricane Ivan, eighteen Caribbean countries decided to pool their risks to form a regional insurance center that would give them short-term liquidity in the event of a catastrophic weather or natural disaster.⁴ Under a program initiated by the World Bank, these countries designed a facility to which they pay insurance premiums, and it in turn offers payouts after certain physical thresholds related to hurricane intensity are crossed. The government of the Turks and Caicos Islands received the first payout of US\$6.3 million after Hurricane Ike in September 2008 from this facility.

⁴ Members of this facility are 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, and the Turks and Caicos.

The Caribbean Catastrophic Risk Insurance Facility (CCRIF), managed by an independent insurance facilities manager, essentially allows Caribbean countries exposed to natural disasters to pool their risk in order to lower the cost of coverage. Participating countries determine the level of coverage they wish to purchase, based on both their exposure to risk and their capacity to pay. Their annual premium is proportionate to their specific exposure to risk, from US\$200,000 to US\$2 million for payouts from US\$10 million to US\$50 million. The facility acts as a risk aggregator, allowing participating countries to pool their country-specific risks into one, better-diversified portfolio. The costs represent a substantially lower premium compared with what each country would pay independently for a similar contract.

The facility would not have been possible, however, without donor funding. Japan, Canada, the United Kingdom, France, the World Bank, and the European Union, among other donors, have contributed to a reserve fund to support the facility. The reserve fund ensures commercial viability and less dependence on reinsurance. A catastrophic risk modeling study for the Caribbean funded by the World Bank also helped the facility estimate the probability of natural disasters and the extent of each of the participating country's financial exposure.

B. Microinsurance for Groundnut Farmers in Malawi

Ground nut farmers in Malawi who wanted to plant high yielding seeds were unable to find the financing needed to purchase them. These seeds had a low drought tolerance and the risk of loan defaults was pushing banks away from offering more credit. A 2004-2005 drought had already pushed default rates up to 40-50% and had caused lenders to stop providing credit to farmers (Mapfumo, 2007). An insurance

pilot was launched in the growing season of 2005 coupling micro-lending with mandatory crop insurance. The Opportunity International Bank of Malawi (OBIM) and Malawi Rural Finance Corporation (MRFC) started offering loans and insurance products to groundnut farmers organized by the National Smallholder Farmers (NASFAM). The farmers entered into a loan agreement with a substantially higher interest rate (which included the insurance premium).

The bank then transferred the premium to the insurance provider, the Insurance Association of Malawi, who administered the scheme. Measured against rainfall levels, the borrower only needed to pay back a fraction of the loan due in the event of a drought, the insurance company would pay the rest to the bank. Premiums and payouts were tied to rainfall levels during critical periods of groundnut production and payouts were made according to relative importance of rainfall at each state of growing. With the insurance, there is less of a risk to the bank which gives out the micro-credit loans and lesser risk of default for the loan takers. Farmers who buy the insurance agree to sell their yields to NASFAM and it acts as the delivery channel for loan and insurance payouts.

The pilot started in four regions and from 892 buyers in 2005/2006, it expanded to 1710 groundnut and 826 maize farmers the following year (Skeel et al. 2007). Good groundnut harvest in 2006 might have prevented further growth of the product. Farmer's yields went up by an almost 140% and unfortunately pushed down groundnut prices to the point that paying premiums was difficult (Mapfumo, 2007). Nevertheless, the government of Malawi wants to expand the program to other sectors and is looking to develop regulatory frameworks.

Table 3 | Roles of the UNFCCC, National Governments and the Private Sector in Providing Insurance

| Instrument Category | Specific Instrument | UNFCCC's Role | National Governments' Role | Private Sector's Role |
|-----------------------------|---|--|---|---|
| Global fund | Solidarity fund, compensation mechanism | <ul style="list-style-type: none"> Set up governance structure of fund. Mandate Annex 1 parties to pay into fund Create mechanisms to disburse funding. Decide eligibility of recipient countries. | <ul style="list-style-type: none"> Annex I parties provide funds. Non-Annex I parties receive funds and decide how to spend them. | <ul style="list-style-type: none"> None. The fund would be comprised of public money and flow directly to public institutions. |
| Catastrophic risk insurance | Subsidized global risk pool | <ul style="list-style-type: none"> Set up global risk-pooling facility, including governance structure and facility operator (likely from the private sector). Provide for gathering and management of data and information necessary to determine premiums, including comprehensive global risk assessments Agree architecture through which Annex I parties pay premiums. Decide eligibility of participating vulnerable countries Decide what risks are covered. | <ul style="list-style-type: none"> Plan and implement comprehensive risk management frameworks. Decide how they will take part in this scheme. Complete prevention activities as part of eligibility criteria. | <ul style="list-style-type: none"> Decide on price for climate risks. Build risk models incorporating risk data. Operate insurance scheme either independently or under a public-private partnership. |
| | Sovereign risk pool | <ul style="list-style-type: none"> Help set up risk pooling facilities. Provide technical support and financing support for backstopping (if losses are very high). Provide data and risk models. | <ul style="list-style-type: none"> Join regional insurance mechanisms. Pay premiums to an insurance facility. Decide how much insurance coverage to purchase. Decide how to spend insurance payouts. Provide data. Improve and standardize insurance market regulations. | <ul style="list-style-type: none"> Operate mechanism through the private sector or a public-private partnership. Reinsure through capital markets. Determine (private sector) prices for risks and premiums. Build risk models. Sell insurance coverage. |
| Consumer insurance products | Commercial life and property insurance | <ul style="list-style-type: none"> Provide technical support, incentives, and help in removing market barriers. | <ul style="list-style-type: none"> Form and improve regulatory frameworks for insurance. Safeguard contract enforcement and other legal rights. | <ul style="list-style-type: none"> Provide insurance through private commercial entities. Provide reinsurance through global insurers and capital markets. |
| | Microinsurance | <ul style="list-style-type: none"> Offer technical support (program and policy design, funding for research, sharing best practice, support for data gathering) Financial support for insurance pilots | <ul style="list-style-type: none"> Establish national regulatory frameworks. Obtain valuable local data through meteorological and agricultural extension services. Offer research and education on insurance and risk management. Decide whether to set up stand-alone or integrated insurance programs. | <ul style="list-style-type: none"> Determine price and model risks. Operate insurance programs. Provide reinsurance of microinsurance portfolios. |

VIII. REFERENCES

- AOSIS. 2008. Multiwindow Mechanism to Address Loss and Damage from Climate Change Impacts. Alliance of Small Island States. Proposal to the Ad-hoc Working Group on Long-term Cooperative Action of the United Nations Framework Convention on Climate Change.
- Barnett, Barry J., Barrett, Christopher B. and Skees, Jerry R., Poverty Traps and Index Based Risk Transfer Products (July 2006). Available at SSRN: <http://ssrn.com/abstract=999399>
- Churchill, C. 2006. Protecting the Poor: A Microinsurance Compendium., Geneva: International Labor Organization
- Dercon, S. 2004. Growth and Shocks: Evidence from Rural Ethiopia. *Journal of Development Economics* 74.2:309-329.
- Freeman P. and Scott, K. 2005. Comparative analysis of large scale catastrophic compensation schemes. In: *Catastrophic Risks and Insurance*. OECD Vol 8. OECD Publishing.
- Hoeppe, Peter and Gurenko, Eugene N. 2006. Scientific and economic rationales for innovative climate insurance solutions. In *Climate Change and insurance: Disaster Risk Financing in Developing Countries*. Eds: Eugene N. Gurenko. *Climate Policy*. Vol. 6. Issue 6.
- Holzmann, R; Jorgensen, S. 2000. Social Risk Management: A new conceptual framework for Social Protection, and beyond. *Social Protection Discussion Paper 0006*. The World Bank
- IPCC. 2007. *Climate Change 2007: Synthesis Report*. R.K. Pachauri and A. Reisinger (eds). Geneva: Intergovernmental Panel on Climate Change.
- Linnerooth-Bayer, J; Mechler, R. 2006. Insurance for assisting adaptation to climate change in developing countries: a proposed strategy. In: *Climate Change and Insurance: Disaster Risk Financing in Developing Countries*. Eds: Eugene N. Gurenko. *Climate Policy*. Vol 6. Issue 6.
- Mace, MJ. 2008. AOSIS Presentation. Presentation held at the 4th AWG-LCA 4 workshop in Poznan, Poland December 2008.
- Mapfumo, S. 2007. Micro-insurance Coverage for Agricultural Losses: Malawi. Presentation at the Risk for Rural Communities Conference. Swiss Re Centre for Global Dialogue. Rueschlikon, Switzerland, October 8–10.
- MCII 2008. Insurance Instruments for Adapting to Climate Risks: A proposal for the Bali Action Plan, Version 1.0. 3rd Session of the Ad Hoc Working Group on Long-Term Cooperative Action under the Convention. Accra 21-27, 2008.
- MCII. 2009. Frequently Asked Questions about an International Insurance Mechanism for Climate Adaptation: Responses to Party Questions posed to MCII at Poznan COP 14, Version 4.0. Submission by the Munich Climate Insurance Initiative to the 5th session of the Ad Hoc Working Group on Long-Term Cooperative Action under the Convention (AWG-LCA 3). Bonn 29 March-8 April 2009.
- Mechler, R; Linnerooth-Bayer, J.; and Peppiatt, D. 2006. *Disaster Insurance for the Poor? A Review of Microinsurance for National Disaster Risks in Developing Countries*. Geneva: ProVention Consortium and Laxenburg: International Institute for Applied Systems Analysis.
- Mills, Evan. 2007. From Risk to Opportunity: Insurer responses to climate change. CERES.
- Morduch, J. 1994. Poverty and Vulnerability. *American Economic Review* 84, May: 221-225.
- Munich Re Group. 2008. *Natural Catastrophes 2008: Analyses, assessments, positions*. Knowledge series: Topic Geo. Accessed on May 11, 2009 at http://www.munichre.com/publications/302-06026_en.pdf
- Skeel et al. 2007. *Scaling up Index Insurance: What is needed for the next big step forward?* Microinsurance Centre, LLC and Globalagrisk, Inc.
- UNEP. 2007. *Insuring for Sustainability: Why and how the leaders are doing it*. Insurance Working Group of the United National Environmental Program Finance Initiative.
- UNFCCC. 2008a. Integrating practices, tools and systems for climate risk assessment and management and strategies for disaster risk reduction into national policies and programmes. Technical paper presented to the Ad-hoc Working Group for Long-term Cooperative Action of the United Nations Framework Convention on Climate Change.
- UNFCCC. 2008b. *Mechanisms to manage financial risks from direct impacts of climate change in developing countries*. Technical Paper presented to the Ad-hoc Working Group for Long-term Cooperative Action of the United Nations Framework Convention on Climate Change.
- WRI. 2008. *Roots to Resilience: Growing the Wealth of the Poor*. Washington DC. UNDP, UNEP, World Bank, WRI.

ABOUT THE AUTHORS

Aarjan Dixit is a Research Assistant with the Vulnerability and Adaptation Project in WRI's Climate and Energy Program.

Heather McGray is a Senior Associate leading the Vulnerability and Adaptation Project in WRI's Climate and Energy Program.

Please direct any feedback or inquiries about this paper to adixit@wri.org and hmcgray@wri.org.

ACKNOWLEDGEMENTS

The authors are grateful to Janet Ranganathan, Manish Bapna, Jake Werksman, Hilary McMahon, Polly Ghazi, Jennifer Layke and Shally Venugopal whose ideas and feedback helped shape this paper. Hyacinth Billings and Casey Freeman helped with the production, design and layout.

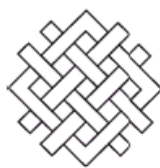
About WRI

The World Resources Institute is an environmental think tank that goes beyond research to create practical ways to protect the Earth and improve people's lives. Our mission is to move human society to live in ways that protect Earth's environment for current and future generations.

Our programs meet global challenges by using knowledge to catalyze public and private action:

- *To reverse damage to ecosystems.* We protect the capacity of ecosystems to sustain life and prosperity.
- *To expand participation in environmental decisions.* We collaborate with partners worldwide to increase people's access to information and influence over decisions about natural resources.
- *To avert dangerous climate change.* We promote public and private action to ensure a safe climate and sound world economy.
- *To increase prosperity while improving the environment.* We challenge the private sector to grow by improving environmental and community well-being.

In all of our policy research and work with institutions, WRI tries to build bridges between ideas and actions, meshing the insights of scientific research, economic and institutional analyses, and practical experiences with the need for open and participatory decision-making.



WORLD
RESOURCES
INSTITUTE

10 G Street, NE
Washington, DC 20002
www.wri.org