

**Practice Review on
Innovations in Finance for Disaster Risk Management**

**A Contribution to the 2009 ISDR Global Assessment Report on Disaster
Risk Reduction**

ProVention Consortium

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Global Assessment Report – Practice Review on Innovations in Finance for Disaster Risk Management

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Abstract: *There have been a range of recent developments to improve access among poor and vulnerable communities to financing tools that promote resilience and reduce disaster risk. The paper will examine both 1) risk financing tools for providing financial resources post-disaster in exchange for financial commitment pre-disaster (such as insurance, catastrophe bonds, and contingent credit commitments) and 2) broader financial tools to promote savings and investment to strengthen resilience and to protect individual and community assets and resources through pre-disaster prevention and mitigation.*

The paper looks in particular at four tools – microfinance, social funds, micro insurance, and catastrophe pools – which have generated great interest for use in increasing access to financing for disaster risk management either at household, community, or national levels. While there are also other tools that exist, these four tools collectively address significant gaps in the need for access to effective disaster risk management financing across the range of critical stakeholders – including households, small businesses, communities, and governments – in poor and vulnerable countries. Each of these tools has demonstrated some success in addressing gaps at specific levels and together they have the potential to be quite complementary and broad range in their targeting. However, the potential for effectively linking these tools with effective prevention has not yet been fully realized.

Disaster risk management is a critical, if implicit, factor in daily decision-making. For families these decisions include where individuals or families live and work, how they save and invest resources, and what strategies (e.g. education or migration) they adopt for growth and development. Businesses, communities, and governments, face similar decisions as to which risks to avoid and which risks to cope with. Instead of a black and white world of either complete risk avoidance or complete risk apathy, for most of us risk management means maximizing protection against the greatest risks and coping with others. For those living in poor and vulnerable communities however, these choices are often severely limited and coping strategies restricted to informal mechanisms that may not offer enough protection against significant disaster shocks.

A variety of risk financing and other financial tools have been developed to facilitate management of risks. However they primarily benefit upper and middle income families, large businesses, and wealthy governments for whom the markets are ready to provide such tools. Those living in poor communities and in at-risk, developing countries typically have little access to formal financing options for disaster risk management due to a range of market gaps and failures of formal market products to meet the needs of the poor, particularly those working in the informal economy and with irregular cash flows. Combined with greater exposure to risks, this lack of access to effective risk management tools is a significant factor in what makes many poor communities and particular groups vulnerable in the first place. For example, the Inter-American Development Bank estimates that only 10% of the population in South and Central America has access to credit and even fewer to insurance and other financial services [Moreno 2007].

Instead individuals, communities, and even countries at risk to disasters are left with limited sets of coping mechanisms which often involve dramatic increases in high-interest debt, sales of assets, delay of development opportunities, or the adoption of low-risk, low-yield livelihood strategies in efforts to smooth exposure to risks. In particular these types of informal coping strategies do not stand up well against series of shocks [Churchill 2006]. Post-disaster assistance from governments or humanitarian agencies may stem the impacts of the most drastic emergencies, but this assistance is too often ad-hoc, poorly targeted and fails to reach or assist the most vulnerable.

Robust financing tools can help the poor to break the poverty cycle by protecting their development gains, reducing impacts and losses of disaster shocks, and providing resources for disaster prevention and risk management. As illustrated in Figure 1, with robust coping mechanisms, the development loop is a positive spiral of increased investment and access to resources. Without, the loop becomes a negative spiral that threatens development gains and local buffers.

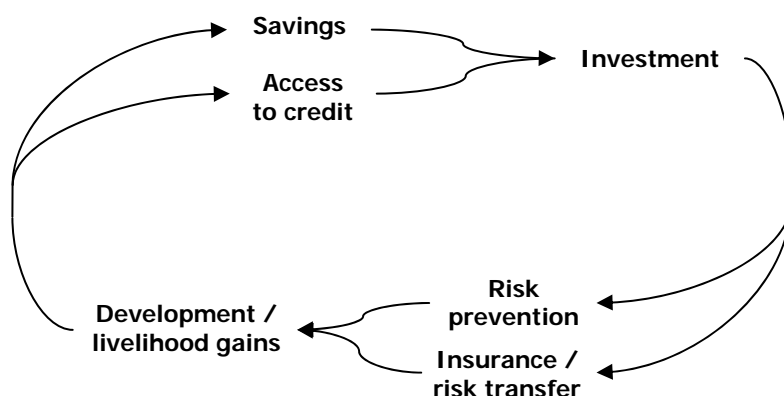


Figure 1. Disaster risk management as an integral part of the development loop.

This practice review will look at a number of tools and approaches that are being developed and refined to address these needs and resolve associated market failures. Through the application of such tools finance and insurance markets are increasingly recognizing that the poor are real clients with real demand [Warner 2007], although for the very poor affordability is often still a barrier.

However as Figure 1 also shows, these tools need to be combined in a comprehensive approach to disaster risk management that also includes pre-disaster prevention and mitigation.

This paper starts with an overview of the four tools and then includes a brief discussion of targeting. The each of the four tools are discussed in more detail with examples, highlights of key features, and suggestions for further references. Ultimately the emphasis is on how to use such tools to empower vulnerable individuals, communities, and countries to create greater development value and higher levels of resilience to natural hazards and other threats.

The tools

This paper focuses on four innovative financing tools to facilitate management of risks, and explores how they work and how they have been used in practice. As illustrated in Figure 2 each addresses the needs of different constituencies and leverages different financing modes.

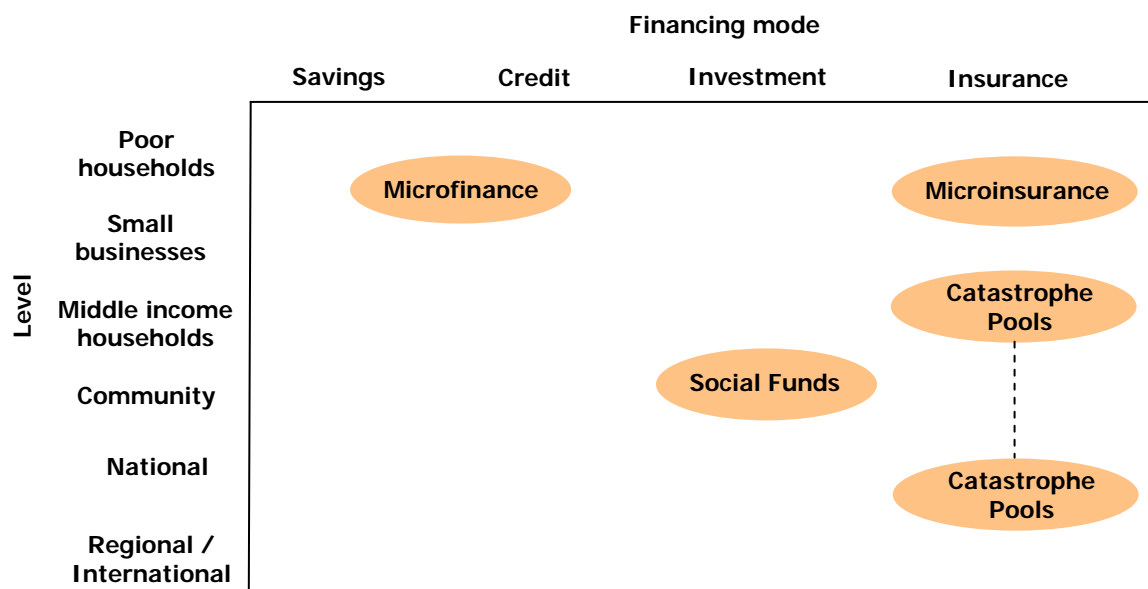


Figure 2. Mapping of key risk financing tools by social/geographic relevance and targeted financing modes.

These four tools are ones that have generated great interest in the last few years. As shown in Figure 2 they are representative in terms of covering a broad range of both social levels and financial services needs. Yet certainly there are a variety of other tools that are also being explored. Some additional tools are mentioned briefly at the end of this paper.

While these four tools are treated below in separate sections, in many situations they might be used in concert with one another. It is often the case that microfinance and microinsurance have been combined in packages of bundled financial services to poor communities. Such programs often target the same communities and can benefit from economies of scale in distribution and administration networks at local levels. Microfinance and microinsurance can also be quite complementary in meeting the financing needs of the poor for effective disaster risk management. While insurance can be effective for covering less frequent, larger shocks, other forms of financing such as savings and credit may be more flexible and efficient for addressing smaller shocks that occur on a more frequent and regular basis [Churchill 2006].

Social funds are not a risk financing mechanism per se but a grant funding mechanism for supporting community driven development that can and have been used to finance risk management measures. Social funds have been used for a variety of purposes to strengthen local infrastructure and services, including the establishment of microfinance and microinsurance initiatives. By supporting community decision-making, social funds offer enhanced opportunities to link risk governance and development, market activity, and individual initiative at local levels. However social fund investments in infrastructure and community facilities must also be protected by appropriate levels of insurance to ensure ongoing delivery of services.

Catastrophe pools tend to operate at national levels oftentimes through public private partnerships that bring together state interests and private sector insurance and reinsurance companies. While they may provide coverage to households and small businesses or to governments directly, the pools are designed to effectively pool risks at national or regional levels to reduce the cost of coverage for their ultimate beneficiaries.

Targeting

This paper examines how the following constituencies are targeted by innovations in finance for disaster risk management:

- ◆ Poor households Poor households are vulnerable to disasters and other shocks not just because of a lack of financial assets but also as a result of social and political exclusion (based on caste, ethnic identification, or gender). Often marginalized from the formal economy, they are the ones with the least access to effective and efficient financing tools. Even when innovative solutions are developed in poor communities, it is important to look at which segments of the community are really benefiting and which are not. Frequently the poorest of the poor are left out and the innovative programs serve only to broaden market access a little without really addressing the market gaps themselves.
- ◆ Small businesses Small businesses are particularly vulnerable to disaster risks and are often overlooked in programs oriented mainly toward households and families. Effective financing for risk management is intimately tied to the promotion of strong, resilient livelihoods and healthy local economies, and the resiliency of small businesses is critical for each of these.
- ◆ Communities Communities themselves represent an important part of risk decision-making that operates between the level of individual families and that of government. Many aspects of risk management (e.g. ensuring that collective water and sanitation systems are protected and able to provide services even after disaster) need to be planned and maintained at the community level in order to be sustainable.
- ◆ National governments Poor communities also depend on effective regulatory guidance and financial assistance from their national governments for both pre-disaster risk reduction and post-disaster relief and recovery assistance. To do this, national governments need to protect their own investments and maintain access to sufficient and readily available financial resources. Yet too often governments themselves lack access to effective risk financing.

Microfinance

Risks from injury, sickness, or disaster are a critical dimension of poverty and can easily threaten the small savings and fragile livelihoods of poor families. Over the past 30 years microfinance has emerged as an effective means for strengthening access to credit, savings, and other financial services in poor and vulnerable communities and changed perceptions of the poor, and women in particular, as uncreditworthy and 'unbankable' [Chatterjee 2005].

Microfinance now reaches more than 93 million poor clients¹ and has helped poor families in vulnerable communities around the world to strengthen their livelihoods and increase growth, development, and their resilience to disasters [Doocy 2004]. Much of this success is due to the efforts of microfinance institutions (MFIs) such as the Grameen Bank, BRAC, and now literally thousands of others in both developing and developed countries. This success has been helped by the development of innovative structures such as self-help groups, small groups of 5-10 members living in the same community agreeing to share liability for individual loans. This reduces the risk to the MFI that loans will not be repaid and reduces the need for collateral.

Microfinance has been used for many purposes -- including livelihoods investments and the repair of houses -- that can have a significant impact on communities' vulnerabilities or resilience to disasters.

Microfinance has also been integrated in post-disaster recovery contexts, where MFIs are often already active among vulnerable populations affected by disasters. MFIs' own activities, and the microenterprise activities of their existing clients, may be significantly affected by disasters. Physical damage to MFI offices and impacts on electricity, communication, and transport systems can impede access by MFI staff to client communities and make the continuation of normal business activities much more difficult. Impacts on clients' microenterprises -- from direct damage or indirect losses due to reduced cash flows or market activity -- may also make it hard for those clients to continue repaying their loans, making their recovery a concern for the MFI's own business operations.

To mitigate against such impacts, a number of resources have been developed to help MFIs limit the impacts of disasters on their own business operations and their ability to effectively serve their clients. Typical actions recommended to pro-actively address risks to MFIs and their clients from disasters include assessment of risks, institutional preparedness and contingency planning, promoting client preparedness, and planning for both emergency response and recovery activities, especially to streamline activities to provide additional credit or to restructure existing loans [Katalysis 2001, World Bank 2005, Fonkoze 2006, Woodworth 2006]. Microinsurance has also been introduced to protect microcredit loans to ensure that clients are not stuck with loans even if they lose the very assets that the loans have been used to procure.

Once their own business operations are secure, MFIs themselves can be well placed to use their existing distribution systems to channel additional assistance and longer-term credit for economic and livelihood recovery to affected communities. By providing ready access to regulated lending, microfinance can increase resources for recovery and recatalyze local economic enterprise. In reality only a small portion of recovery needs are met by external humanitarian assistance, often not exceeding even 10% of total economic losses [Cummings and Mahul, 2009]. As recovery proceeds, the range of needs in vulnerable communities also evolves and with it the demand for sustained financing mechanisms beyond relief assistance.

Existing clients of MFIs may also need further support for their own recovery, including additional credit as well as other services to meet shelter, health, education, and psycho-social support needs. There are many examples -- in Bangladesh, El Salvador, India, and Nicaragua -- where MFIs have integrated loans for housing repair or reconstruction, in particular, into their portfolios. With their long-term relationship with clients, MFIs are seen as strong networks for delivering additional services to promote resilience and reduce vulnerability to disasters.

Key implications for DRR

Microfinance can increase financial resilience by providing access to credit and other financial services to

- ◆ enable investment in higher yield livelihood strategies
- ◆ diversify livelihood strategies
- ◆ enable investment in risk reduction measures to limit exposure of livelihoods to disaster shocks

¹ As of the end of December 2006. [Microcredit Summit Campaign 2007]

However, MFIs' effectiveness in this latter role is often overestimated as there is a lack of understanding of both the potential and limitations of microfinance among international NGOs and humanitarian donors. Efforts to expand MFI programs too quickly introduce formidable challenges to operate efficiently and manage risks adequately, particularly with the greater costs of MFI work in post-disaster situations due to steeper travel costs and the potential need for higher compensation for staff. Additionally, the failure to separate microcredit from relief activities may lead to confusion among clients between assistance provided as loans or grants and may undermine the viability of existing microcredit programs. [Woodworth 2006]

Disasters also often bring a disruption to social networks essential for transacting business, and recovery itself may bring a development limbo as recovery plans and rebuilding regulations are often slow to evolve in chaotic post-disaster environments. New clients may need other types of development assistance before they are ready to take on loans that require effective investment in order to enable timely repayment. Otherwise debt may only increase the poverty cycle.

To face these challenges MFIs need to develop strong business operations by building a skilled staff, streamlining processes in order to ensure sustainability, and maintaining portfolio quality. In order to ensure long-term viability many MFIs also charge market rates for interest to reduce the need for subsidies and move closer to for-profit business models. However, examples such as the Compartamos IPO in 2007, which stirred considerable debate about the high profits the Mexican bank has gained from microlending to the poor, have raised questions about efforts to transition from not-for-profit to for-profit institutional forms and implications for governance incentives in balancing shareholder interests and pro-poor commitments [CGAP 2007].

Case example: Microfinance in disaster recovery in Sri Lanka

Sri Lanka has a long tradition of microfinance and wide diversity in providers including the national government, commercial banks and finance companies, cooperatives, NGOs, and informal providers such as money lenders and shopkeepers. The CGAP Country-Level Effectiveness and Accountability Review (CLEAR) in Sri Lanka in October 2005 found that MFIs in Sri Lanka had achieved impressive outreach with more 15 million deposit accounts and 2 million outstanding microloans among a population of 20 million.

The Indian Ocean Tsunami significantly impacted MFIs operating in the affected coastal areas as many lost staff and clients in addition to critical materials such as client records. Many clients had lost livelihood assets and income sources and most transactions involved withdrawals rather than deposits. However despite the early setbacks MFIs ultimately proved to be a very valuable resource to bolster the resilience and speed the recovery of both existing and new clients. Early on in the response many MFIs supported their clients by helping to distribute relief items, and there was tremendous interest from many donors to build on the distribution networks that MFIs had previously established in the affected communities. However this often led to confusion among clients between humanitarian grants and normal financial services which risked undermining the MFIs' efforts to sustainably provide market-based financial services over the long-term. The high level of donor interest also led to imbalances between the supply of capital funds and the funding available for capacity building and ultimately to an over-funding of poor-performing credit institutions. Other MFIs avoided the call to involve themselves directly in relief activities and instead sought to maintain their focus on income generation and rebuilding.

One of the first priorities for MFIs was to understand how their clients had been impacted, looking at whether the borrower or primary income earner had died or was disabled, whether business assets were lost, whether the client's house was damaged, and whether the market for the business was significantly affected. The MFIs then restructured loans on a case-by-case basis for clients, generally only writing off loans in the case where the borrower had been killed or permanently disabled.

Since the tsunami a number of MFIs have instituted reforms to offer their clients more protection in future disasters, including revamping group-lending structures to reduce situations where one person's default can pull the entire group into default and developing new products such as emergency loans or reconstruction loans to help clients cope.

Source: Aheeyar 2006, CGAP 2006, Women's World Banking 2005

Yet, a number of critiques have been raised of microfinance, including the following:

- ◆ Much of the evidence in favor of microfinance is based on lenders' perspectives (e.g. statistics on rates of repayment and financial viability) and not from that of the borrowers, who may make less progress out of poverty than is commonly assumed. There are indications that some borrowers become locked into debt cycles, especially when the loans must be used to cover daily expenses rather than for investments for the future. High interest rates (often more than 25%) justified in terms of cost recovery can significantly limit the ability of the poor to move beyond basic repayment of the loan, shifting short-term coping challenges to longer-term debt.
- ◆ Often the primary focus is on addressing the lack of assets rather than underlying issues such as the lack of capacity and working or social capital.
- ◆ Many of the businesses that are started with microfinance loans are easy-entry & subsistence-level businesses with little long-term growth potential and high attrition rates.
- ◆ Microfinance organizations with subsidized operations may negatively crowd out the development and growth of local banking services. [Ellerman 2008]

There is also a general critique that microfinance is only effective in serving the entrepreneurial poor and not the very poor [Microcredit Summit Campaign 2007].

However from a risk reduction perspective, microfinance may be most effective in promoting resilience by helping families that are moderately poor to protect themselves from having to relinquish development gains and fall back into poverty and increased vulnerability as a result of disaster shocks [de Janvry et al 2006]. Just as self-help groups emerged as an innovation to provide incentives for repaying loans, so innovative efforts at savings-led microfinance are using savings approaches to create personal incentives to repay loans. Linking savings and credit in this way can facilitate the development of broader resilience strategies in vulnerable communities. Gaining experience with savings and credit buffers, clients of these programs are empowered to think and act more proactively on long-term financial risk management.

Microfinance also offers significant opportunities to bundle savings and credit services with other types of development assistance. FINCA uses its weekly repayment meetings of village banking groups to enable health NGOs to conduct AIDS prevention education [Woodworth 2006]. Similar initiatives are being developed with risk reduction, e.g. holding workshops on disaster preparedness or linking microcredit for housing to safe-building technical assistance. However, generally these programs are still too new to effectively judge their effectiveness.

Case example: Self-Employed Women's Association (SEWA) in India

Since 1972 SEWA's work as a trade union of women workers in the informal sector and providing financial products for the poor has been well known. SEWA was serving over 950,000 members as of the end of 2006. Less well known are the ways in which these programs have been expanded to support pre- and post-disaster services. In its housing upgrade program SEWA now supports individual loans for pre-disaster monsoon-proofing of homes and post-disaster loans to repair roofs, walls or doors damaged by disasters. Through the Mahila Housing SEWA Trust, SEWA also supports community financing in urban slums to protect against future flooding by improving drainage and sewage systems.

SEWA has also made use of innovative partnerships to increase its access and services in vulnerable communities. After the community riots in Gujarat in February 2002, SEWA partnered with the Kheda Association and All India Disaster Mitigation Institute (AIDMI) to provide interest free loans to women in the affected communities to repair their houses, re-establish their livelihoods, and resettle in their villages. Housing is crucial to livelihoods in many areas. With loans to reconstruct their houses, members of the loan groups were able to start earning again and support their own recovery. However, initial assessments by SEWA showed that, due to the tense environment after the riots, few organisations were able to work directly with the affected communities. Based on this finding SEWA partnered with Kheda Association, which had long-established relations with the communities and was also able to use the program's group structure to bring members from the two religious communities together, increasing cooperation and peace in the affected communities.

Source: www.sewahousing.org, AIDMI 2006, Woodworth 2006

In addition to better matching products to clients' needs – in terms of loan size, household financial flows, and repayment cycles [Cohen 2002] – efforts to measure the social performance of microfinance activities hope to better encourage and capture the additional benefits that microfinance programs may be able to bring. Efforts to track efficiency in microfinance in terms of operating expense ratios and staff productivity levels often run counter to pro-poor objectives given that it is more expensive to deliver many small loans than to deliver a few larger ones. To better target poor clients a number of organizations have developed social performance ratings that track additional factors such as cost per borrower, the number and poverty level of clients being served, marginal increases or decreases in standards of living attributable to access to financial services, and whether market imperfections are being redressed. Some of these ratings already take into account whether the MFI proposes specific measures in case of natural disaster, such as rescheduling of the loans, as an indication of social responsibility to clients [Zeller et al. 2003].

To specifically measure performance toward disaster risk reduction goals, these ratings could be further extended to include measures of the impact of microfinance participation on household investments in risk reduction activities. Research for BASIS/USAID in Guatemala showed that microfinance loans for enterprise expansion is likely to exhibit significant, positive effects on dwelling upgrades to improve walls and floors. This study was conducted using a cross-sectional survey to track discrete changes in the history of households against the timeline of each household's participation in the microfinance program [McIntosh 2007]. The impact of microfinance participation on increased or decreased levels of household resilience similarly could be demonstrated by comparing client savings levels and access to credit, debt burdens and ability to serve their financial obligations before and after disasters.

Key features

Enabling environment	Accessing formal credit often requires lengthy procedures, paperwork and approval times, which means it might not be available when needed and may incur additional costs such as transport costs and loss of labor time. Improving the enabling environment for micro-enterprise thus often means simplifying application and administration processes and increasing participation by organizations to provide education and credit closer to clients' own communities [Aheeyar 2006].
Empowerment of women	Many microfinance programs have specifically targeted women as a client base and have demonstrated that serving women is a profitable business. Designing gender sensitive products and providing access for women to a broader range of financial services have added to the development bottom line. However as regulation and commercialization have propelled MFIs closer to the regular financial sector, many MFIs face pressures to reduce costs and serve more profitable segments of the market, challenging pro-poor and gender empowerment commitments. [Mutalima 2006]
Differentiation of products	Whereas many MFIs target the entrepreneurial poor in order to maintain their own viability, some like Fonkoze in Haiti have been able to design different products for different client groups. In addition to its standard self-help group programs, Fonkoze also offers programs for clients with no access to credit (often those with no land and no productive assets), those with little access to credit, and those who have viable and growing businesses and are ready for larger loans [Fonkoze 2006].
Private sector investment tools	In addition to enhancing participation at community levels, many MFIs are interested to develop systems that adhere to business standards and are able to attract greater private sector interest. To respond to this interest in May 2008 IFC announced that it is investing US\$45 million in microfinance backed notes to be issued by

	<p>Microfinance Institutional Loans for Asia and Africa (MILAA), a special purpose vehicle set up by Standard Chartered to facilitate microfinance lending [MicroFinance Gateway].</p> <p>There has also been considerable interest around the engagement of capital markets, particular to access funds for expansion. However the Compartamos IPO example highlights the difficulty of balancing commitments to return high-yields to shareholders and to address the needs of broad segments of the poor.</p>
New technologies	<p>Web sites like Kiva.org and MicroPlace.com allow individuals to directly lend money to micro-entrepreneurs in the developing world. Already Kiva has begun to partner with organizations like CHF International to seek loan capital for members of existing microfinance networks. Bankless banking, for example through the use of mobile phones, also offers significant opportunities to extend coverage areas while minimizing distribution costs. [CGAP 2008]</p>
Links to remittances	<p>By integrating remittance services, some MFIs have been able to encourage their clients to become more sophisticated consumers of financial services such as savings accounts to further strengthen their resilience and long-term financial planning [Fonkoze 2006].</p>
Post-disaster assessments	<p>Client assessment and market research are critical tools to help MFIs understand the impact of disasters on their clients and to evaluate measures to better help their existing clients and others in disaster-affected communities to recover and continue their investments in development and growth.</p> <p>Assessments can also help loan programs to target specific interruptions in supply chains to help revive local markets and small enterprise as engines for recovery. Fonkoze was able to use a program like this very effectively after Tropical Storm Jeanne hit Haiti in 2004 [Fonkoze 2006]. Such an approach could also be used to ensure sufficient stocks of materials needed for safe construction.</p>

Social funds

Social funds are programs that provide block grants for projects to build up community assets such as community facilities, infrastructure or improved services, including microfinance and microinsurance services to build livelihood security and resilience for poor and vulnerable households. While many humanitarian assistance or disaster recovery programs target either individual households or national governments, there is also a need to match such assistance with processes to restore physical, social and economic infrastructure at community levels. Social funds represent an innovative approach to community-driven development, allowing local stakeholders to prioritize activities and guide implementation decision-making. Such funds are typically set-up and coordinated as autonomous government agencies and may serve as a channel for financial support coming from international financial institutions or other donors. However it is the community role that distinguishes social funds from other approaches. The communities themselves submit proposals and the localized administration allows quite specific geographic and poverty targeting and encourages proposals directly from poor and vulnerable communities.

Key implications for DRR

Social funds provide a critical mechanism for supporting communities to invest in

- ◆ development of community facilities and services that contribute to community risk reduction
- ◆ strengthening access to credit for households and small businesses, which can help spur economic development and strengthen buffers against disaster shocks

The use of social funds has grown tremendously over the past several years. Social funds and other community driven development programs now represent a portfolio of US\$ 14 billion for the World Bank [de Silva 2008] and similar programs have been implemented by a variety of other agencies (sometimes under the name of *community grants* or *block grants*).

While most often used for development projects, social funds can also provide a critical mechanism for post-disaster community level financing for disaster risk management. The International Rescue Committee has coined the term *community-driven reconstruction* to describe this use of social funds [HPN 2008]. After Hurricane Mitch, the Honduras Social Investment Fund (HSIF) was used as the foundation for responding to “requests from both local and central levels to help rebuild the country’s critical local infrastructure”. By simplifying the application procedure and increasing the use of standardized subprojects, the HSIF was able to leverage “the operational flexibility afforded by its legal framework and relatively lean structure” to respond to the crisis very quickly [Warren 2003]. Similarly the Kecamatan Development Program in Indonesia was adapted to support a variety of community infrastructure reconstruction and rehabilitation projects building on the established KDP network of 600 village facilitators and 35,000 village volunteers [Campeau 2004, World Bank 2005].

Case example: Kecamatan Development Program (KDP), Indonesia

The Kecamatan Development Program (KDP), implemented by the government of Indonesia with support from the World Bank, provides block grants directly to kecamatan (administrative sub-districts) and villages for small-scale infrastructure, social and economic activities. The Urban Poverty Project (UPP) is a similar program for urban areas.

Prior to the Indian Ocean Tsunami the KDP had been initiated as part of post-conflict reconstruction efforts in Aceh. After the tsunami this program was scaled-up and redirected to respond to recovery needs, taking advantage of the capacity building efforts and program infrastructure that had already been developed.

Initially assessment information gathered by KDP program facilitators and community leaders helped to inform local recovery planning as well as to develop priorities for additional KDP and UPP projects specifically to support recovery. Additional KDP and UPP funds were brought “on-budget” within the government recovery program approved in June 2005. Many villages emphasized capacity building and local employment generation rather than using outside labor for infrastructure development. While both of these steps delayed implementation, they benefited communities through increased employment and an increased sense of ownership necessary to maintain the investments in infrastructure facilities. Overall implementation proceeded more quickly than in many similar projects undertaken in other recovery programs. By 2007 more than 1,500 projects have been initiated through the KDP and UPP as part of the recovery in Aceh and Nias, including reconstruction or new development of roads, bridges, schools, houses, water/sanitation systems, street lights, health clinics and waste disposal systems.

Scaling up the program introduced a number of challenges. Campeau points out that there was insufficient coordination between community planning and priority-setting within the process of “village visioning” within KDP and the establishment of broader government priorities for reconstruction. In Aceh, there were also challenges in scaling up the existing program, particularly in developing systems to monitor the wide range of project activities across numerous villages that were now being implemented under the program.

Source: Campeau 2007

Social funds provide a flexible mechanism that can be adapted to undertaking a variety of projects. The funds are typically guided by project management committees which bring together different stakeholders in the community and have the potential to play longer term roles in providing a community voice in local development decision-making. The Tanzania Social Action Fund (TASAF) has even made this role permanent through the establishment of community foundations which are formally registered and function as partnerships of local civil society organizations, the business community, and local governmental agencies. By engaging a range of constituencies within the community it is thought that the community foundations will also help to mobilize additional local resources. [World Bank 2008]

Case example: Honduras Social Investment Fund (FHIS), Honduras

The FHIS was created in 1990 to support the creation of short-term employment opportunities and over time increasingly focused on developing social infrastructure and expanding access to social services. Throughout the 1990s the fund developed effective models for participatory planning at community and municipal levels to improve municipal development, rural water and sanitation, and social assistance and to reach out specifically to ethnic minorities and other marginalized groups.

By 1998, the fund was financing 800 projects annually in the education, health, water and sanitation, municipal and community infrastructure sectors. When Hurricane Mitch arrived that year, the fund was able to play a pivotal role in responding to requests from both local and central levels to help rebuild the country's critical local infrastructure. By setting up 11 new temporary regional offices, empowering staff in those offices to make rapid decisions, and simplifying the grant application process, FHIS was able to rapidly scale up its activities in those areas most affected by the hurricane. In the first 100 days, the FHIS approved 2,100 projects with a total value of \$40 million and by the end of 1999 had increased the total number of projects to 3,400. Focusing initially on labor-intensive clean-up and early recovery activities, FHIS was able to generate significant temporary employment to counter-act in the immediate-term the disruption to livelihoods due to the hurricane as well as to support needs for both urgent infrastructure construction and social services support.

Source: Warren 2003

As shown by these case examples there has been a significant use of social funds post-disaster and many of the activities currently being undertaken contribute to risk reduction in a broad sense. By generating new sources of income and enhancing social capital, social funds can reduce the vulnerability of the poor to disasters. Yet to date few programs have specifically targeted risk reduction measures.

There are also areas where social funds may not be well suited, such as projects that require broader action above local levels to address externalities or meet economies of scale and where decision-making must be made at meso levels [World Bank 2002].

Key features

Appraisal of proposals	The review of proposals put forth by communities offers an opportunity to look in more detail at issues of disaster vulnerability and opportunities for risk reduction within the proposals. However to do this effectively requires a proactive focus on prevention and mitigation strategies within the overall program and a general awareness and understanding of risk reduction measures within the community.
Innovative partnering structures	Many social fund agencies have been established as partnerships among government agencies, the private sector and other stakeholders. With a high degree of independence from government ministries, these agencies typically have more latitude to support a broad portfolio of projects crossing over the boundaries of specific government sectoral ministries [World Bank 2002]. At local levels such partnering has also been used between NGOs and local government organizations to facilitate joint contracting when communities lack legal status [de Silva 2000].
Revolving funds	When social funds have been used to provide assistance directly to individuals, in many cases they have been developed as revolving funds, where the funds are given as loans. Once repaid the funds can then be lent to others and repeated on an ongoing basis.

'Local shopping'	Many social funds put a premium on local shopping, the purchase of goods and services in local markets, which helps to further strengthen the local economy and provides greater leverage for maintenance and sustainability, although it may reduce economies of scale that could be afforded by more centralized procurement [de Silva 2000].
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Microinsurance

Insurance and other forms of risk transfer are an integral part of comprehensive risk management. Yet insurance markets in the majority of developing countries often fail to adequately reach or serve poor communities in those countries. It is estimated that globally only 5% of disaster-related losses are insured in developing countries [Hoppe and Gurenko 2007].

Insurance is one of the most difficult financial services to provide as it involves issues of accurate risk pricing, protection against fraud, moral hazard and adverse selection [Barbin et al.]. Where coverage exists, it is usually limited to large businesses, commercial properties, and wealthier households.

With little or no access to formal insurance services, the poor are forced to self-insure. When disasters occur, they often must resort to short-term coping strategies including depleting their savings, taking emergency loans at high interest rates, selling assets, foregoing expenses for education and other needs, or pursuing conservative lower risk / lower yield livelihoods strategies – all adversely affecting livelihoods and development gains and locking them further into the poverty cycle. Even when humanitarian assistance is forthcoming from governments, NGOs, or other organizations, this assistance is often slow to arrive and poorly targeted.

A number of issues constrain the availability of insurance and other risk transfer mechanisms, including

- ◆ Market gaps
- ◆ Complexity of managing insured catastrophe risk
- ◆ Lack of regulatory frameworks
- ◆ Lack of data on disaster risks
- ◆ Lack of a culture of risk financing which can lead to misunderstanding and/or mistrust of insurance
- ◆ Wide-spread expectation of forthcoming government financial assistance following disasters

Microinsurance has emerged as a potential solution for extending insurance coverage in poor communities – providing access to post-disaster financial resources in a relatively fast, reliable and predictable manner and allowing the poor to protect their investment and retain their financial gains in the face of disasters. By providing immediate liquidity to the poor, microinsurance is also seen as promoting dignity and self-reliance.

Microinsurance schemes have existed for a number of years, oftentimes building on informal cooperative or mutual models and insuring against funeral expenses, unemployment, accidents,

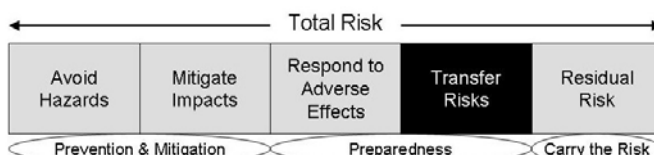


Figure 3. Risk transfer in comprehensive risk management.

Source: ProVentum Consortium, 2007 adapted from SDC, 2006

Key implications for DRR

Microinsurance can promote increased levels of resilience by

- ◆ increasing access to finances after shocks thus strengthening coping and reducing the likelihood of disastrous impacts
- ◆ providing greater discretion to households and small businesses in pursuing coping and recovery strategies
- ◆ serving as an incentive for DRR (although this requires differentiation in premium levels which may be difficult while keeping policies as affordable as possible)

and loss of life. Existing schemes have also used a wide variety of distribution channels including community-based mutual savings, microfinance institutions, credit unions, commercial insurance companies, and government social protection services.

Over the last several years a number microinsurance schemes have also been developed or extended to cover disaster risks. As a starting point many MFIs have begun to offer insurance on microcredit loans so that borrowers (and the MFIs) will not be stuck with the debt if their business is damaged by a disaster. There are also examples of bundling with savings programs, such as SEWA's microinsurance program in India which allows its members to save for insurance through fixed deposits in savings accounts [McCord et al. 2001].

However experience in using microinsurance to protect against disaster risk has been limited and significant questions still remain about the long-term viability of such schemes and their ability to benefit wide segments of the poor. Even the low costs of existing microinsurance programs are often still too high to be affordable to very low-income households, which must trade-off the costs of insurance against other needs from their scarce incomes.

There are also concerns that microinsurance programs may not be economically viable for the MFIs or NGOs that support them without the provision of significant subsidies, particularly when the insurance includes broader coverage for livelihood impacts and not just loan default. Many MFIs and NGOs may the lack of capacity and technical sophistication to manage their catastrophe risk accumulations and stay solvent in the long-run.

Insurance may also introduce moral hazard in which the presence of the insurance serves as a disincentive for households or small businesses to take precautionary and preventive measures. However oftentimes such moral hazard already exists when individuals too easily count on government assistance and governments count on international assistance.

To spread the costs of risk management among different stakeholders and over time, microinsurance can offer opportunities to provide incentives for disaster risk reduction. Microinsurance in the health sector is often tied to related programs to minimize risks – such as immunization programs, training for clinic staff and birth attendants, or additional benefits to cover the costs of transportation to hospitals [Churchill 2006]. Some organizations like the All India Disaster Mitigation Institute have tried to develop schemes that link microinsurance to disaster prevention and mitigation measures, however thus far efforts to establish discounts in insurance premiums as incentives for risk reduction measures have not been viably demonstrated in ways that preserve the base affordability of the microinsurance.

Case example: Client impact study of microinsurance schemes in South Asia

The All India Disaster Mitigation Institute (AIDMI), International Institute for Applied Systems Analysis (IIASA), and the ProVention Consortium are currently facilitating a multi-partner review of existing micro-insurance schemes to examine the performance of micro-insurance in enabling and catalyzing effective disaster risk management in poor communities. The review involves eight microinsurance organizations in Asia who are conducting client impact surveys in the communities where they have been active to identify how the insurance may or may not have affected their client's resilience to disasters in terms of savings levels, debt loads, perceptions of risk, and undertaking of prevention or mitigation measures. The review also includes an analysis of the enabling environment in which the eight microinsurance organizations operate.

The review will be completed in mid-2009.

While most microinsurance schemes have used traditional *indemnity insurance*, which pays insurance claims in responses to specific losses, new *index-based* schemes have also emerged. So far these most often cover weather risks for crops, using precipitation levels (as measured in rain gauges at local meteorological stations) as a physical trigger. This type of insurance is also called *parametric insurance*. In this case farmers collect an insurance payout if the index reaches a certain measure or "trigger", regardless of the actual losses. This has simplified the administration of insurance programs and reduced the need for costly claims and adjustment procedures. However, for index insurance to be successful the trigger must be transparent, easily understood, and well correlated with the losses experienced. If the trigger is not

sufficiently correlated (a situation described as *basis risk*), even if an individual farmer's losses are substantial, the index may not reach the trigger level and there will be no payout.

Index-based schemes are potentially more transparent than traditional insurance and eliminate the lengthy settlement of claims. Low transaction costs can substantially reduce the premium, and other people besides farmers (like fishermen and herdsman) can join the scheme. However, current experience shows that such insurance schemes may not be appropriate for poor farmers that face a multitude or chronic levels of risk, or where agricultural services, supply chains, markets, and infrastructure are weak. Basis risk and "perceived" basis risk can make this tool unsustainable for the very poor, just as a lack of social capital (e.g. trust or informal incentives) can strongly interfere with the viability of these schemes. To make index-based microinsurance more relevant to local, vulnerable communities, a better understanding is required of 1) the poor's expectations of benefits from the insurance and their feedback on its implementation and 2) the effects on people with different levels of vulnerability, including people unable to join the scheme. [Christian Aid 2008]

Weather derivative crop insurance schemes have now been used in Ethiopia, India, Malawi, Nicaragua, Peru, and Ukraine and have been used in variations to protect against both severe rainfall and lack of rainfall. Generally the contracts are written by insurance companies and sold by rural development banks, farm cooperatives or microfinance organizations.

Index-based insurance can also provide greater incentives for risk reduction than indemnity insurance. Since the insurance pays out based on the index measure and not based on actual losses to the individual policyholders, the policyholders have an incentive to minimize their potential losses through risk mitigation since they will still collect the payout. [Arnold 2008]

While crop insurance continues to spread around the world, the biggest constraint has been the availability of data from local or regional weather stations. Recently there have been a number of efforts to develop new indexing methods to enable creation of additional types of insurance coverage. The World Bank has worked with the government of Mongolia to develop a scheme to track regional livestock death statistics as an index for insurance against the *dzud* winter freezes [Mahul and Skees 2002]. The World Bank is also working with partners in Thailand to test use of satellite data on flooding to develop an index-based flood insurance that would payout based on the percentage of land inundated and the duration of the flooding in specific districts [Lotsch 2007]. The box below highlights another innovative program in Bolivia that uses production on specified reference plots of farmland as an index.

Case example: Fondo de Mitigación del Riesgo Agrícola (FMRA), Bolivia

Fundación PROFIN has developed an innovative index-based insurance scheme that is being piloted in four provinces in the North and Central Altiplano regions of Bolivia. The scheme combines incentives for pro-active risk reduction and a flexible, people-centered index mechanism. In this scheme the trigger is based on the production levels of reference plots of farmland in areas which are geographically similar in terms of temperature, precipitation, humidity, and type of soil.

The reference plots are farmed by farmers who have been identified as good practitioners by their peers. The yields on their plots serve as an indicator of whether production levels have been adversely affected by environmental factors, thus triggering an insurance payout, or by other factors within a farmer's control. Moral hazard in the scheme – if the reference farmers were to intentionally underperform – is limited by the reputational risks to the farmers in their own communities. The reference farmers also serve as technical assistance agents to promote ideas for increasing yields and reducing disaster impacts.

The system encourages other farmers to match the reference farmers in implementing mitigation efforts to reduce the effects of drought, excess rains, hailstorms and frost, because those farmers run the risk that their own plots will be significantly affected while the reference farmers' plots will be less affected.

Source: <http://www.fundacion-profin.org/fmra.html>

Regulatory requirements and other aspects of the enabling environment can have a significant influence on the viability of microinsurance schemes, affecting registration and licensing

requirements, incentives for partnering, and accounting and reporting requirements. Governments such as the Philippines and South Africa have initiated efforts to change regulations and policies to remove barriers to entry and facilitate broader participation in providing microinsurance in general [National Treasury, Republic of South Africa 2008]. However, with the potential for large covariant losses microinsurance for disaster risk often requires additional partnership with reinsurers to ensure adequate protection. Currently India hosts the greatest number of microinsurance schemes for disaster risk in large part as a result of the adoption in 2002 of a new regulatory framework which requires insurance companies to increase their coverage in the "rural and social sectors", basically low-income communities, on an annual basis [Churchill 2006]. Taking a pro-poor stance has helped to shape the market and encourage private sector interest. While some criticize the creation of cross-subsidies between wealthier clients who must now cover additional operating costs, others applaud the government's efforts to address market failures to serve the needs of poor clients.

Increasingly the private sector is taking an interest in microinsurance. In the past few years a number of reinsurance companies have launched initiatives to pilot microinsurance schemes together with NGOs or MFIs and primary insurers. These companies include Munich Re, Swiss Re, and Zurich Financial Services, and the hope is that successful pilots could be scaled up through the reinsurers' own networks. Organizations like the MicroInsurance Agency (MIA) of Opportunity International have also begun to establish themselves as brokers in helping to catalyze microinsurance activities. MIA now functions as a for-profit subsidiary of Opportunity International with an intent to promote standard business approaches to product development, distribution, and back office support in order to further advance and scale-up microinsurance activities in poor communities.

Key features

Bundling	Bundling refers to the integration of insurance for disaster risk with other types of insurance or with other financial services. For example, crop insurance is often bundled with loans for the purchase of seeds. Other schemes bundle together disaster, life, health and employment insurance.
Risk assessment	Collecting or accessing appropriate risk analysis information is often very hard in developing countries. However without it proper risk identification/exclusion and proper risk layering (spreading layers of risk among insurers and reinsurers) cannot be done.
Gender	The irregular and low income of women in many poor communities can be an additional obstacle to participation in microinsurance schemes. Some microinsurers have responded by using "women friendly" distribution channels (for example through microfinance institutions) and offering a range of premium payments and flexible payment schedules that allow for payment in smaller amounts. Others have increased commissions for renewals to help ensure that those who are illiterate are reminded to renew their policies once they expire. Many organizations have also developed standard family coverage for their life insurance policies to ensure that women also benefit if their husbands are killed in a disaster or accident [Ahmed and Ramm 2006].
Subsidies	Subsidies are frequently mentioned as a means for reducing the costs of insurance premiums. However such subsidies must be smartly targeted to address market gaps and to ensure movement toward market-based strategies; otherwise subsidies will distort responses to risk and undermine efficiencies and incentives within the insurance structure.

Micro-payments	As mentioned above in the point on Gender, allowing small payments at frequent intervals can help to make insurance affordable for those with irregular and low incomes. Allowing payment through local kiosks or through mobile phone billing services can also facilitate the use of micro-payments.
Innovative distribution channels	<p>While it is critical for enhancing penetration, distribution can also have “a huge impact on profitability, product design, and most importantly the cost of the insurance (premium levels)” [Kelkar et al. 2003]. Particularly in rural areas which lack distribution infrastructure for insurance, post offices, banks, and neighborhood stores are being explored as new distribution points for microinsurance. Many microinsurance schemes have been established through partnerships of MFIs or community organizations and commercial insurers. Such partnerships allow the MFI to use its existing distribution network to market the insurance, manage client relations, and bundle aggregated sets of insurance policies. The insurer then absorbs the bundled risk either itself or through reinsurance.</p> <p>Technologies like kiosks and mobile phones also offer new distribution channels with the potential to make insurance accessible to a wider range of clients. For example, in Andhra Pradesh and Madhya Pradesh, India Megatop is using community IT kiosks to sell insurance to farmers [DfID].</p>
Culture of insurance	One of the key challenges for many microinsurance programs is the need to introduce or promote a culture of insurance among community members who may not be familiar with how insurance works and the specific benefits it may or may not bring. Linking microinsurance to microcredit loans has been used as a way to protect both lenders and borrowers from disaster risk and as a means for introducing microcredit clients to insurance services. To jump-start acceptance of insurance, compulsory coverage is often used in insurance at all levels to broaden participation and is typically a feature for these microcredit-linked schemes.
Climate change	In many places there has been tremendous interest in the application of microinsurance to smooth out adverse financial consequences of climate change for households and businesses. Results with weather insurance have been promising, however maintaining affordability will be challenging as climate risk impacts increase in frequency and become less insurable [Kelkar et al. 2008]. With increased levels of uncertainty coming with climate change, higher risks to insurers ultimately mean higher premiums for clients.

Catastrophe pools and catastrophe bonds

While microinsurance provides a tool for extending insurance coverage to poor households and small businesses, catastrophe pools have been targeted toward protecting government fiscal budgets by increasing post-disaster liquidity, or access to funds, to allow them to initiate and support relief and recovery activities. In some schemes, they have also been used to protect the assets of middle-class homeowners, reducing those homeowners' reliance on the state for reconstruction assistance and protecting them from shocks which could threaten their economic security and move them closer to poverty.

Catastrophe pools provide a mechanism for catalyzing the provision of insurance in markets where there have been impediments to private insurers offering disaster coverage, often due to ambiguity about the probabilities of loss, fear of large correlated losses, inadequate premiums, and/or lack of ready demand for existing insurance products. Without access to insurance,

homeowners run the risk of losing their life-time savings tied up in the value of their homes while governments are typically exposed to tremendous budgetary uncertainty due to the unpredictability of disaster relief and recovery expenditures.

When there is limited assistance coming from governments, affected communities have had to rely on their own resources and unpredictable assistance from humanitarian organizations. Even when external assistance comes – either to those directly affected or to their governments – it may take a long time to be disbursed, delaying recovery and full resumption of social and economic activity.

Insurance schemes can help to promote risk sharing both over time and among different stakeholders, including external markets. Insurance can also be relatively quick to disburse payouts. Yet purely private sector approaches to insurance often lead to attempts by insurers to underwrite only “good” risks resulting in market gaps and lack of access for significant portions of at-risk communities particularly among the poor [World Bank 2006].

Catastrophe pools typically combine a range of governmental, private sector and donor support – often focused on addressing distinct layers of risk – to engage market interest and establish a viable insurance fund. The pooling can be either among citizens in a particular country or set of countries or among governments to limit their own exposure to disaster risks.

Key implications for DRR

Catastrophe pools can promote increased levels of resilience by

- ◆ increasing access to financial liquidity after disaster shocks (for both individuals and governments)
- ◆ serving as an incentive for DRR (although this requires suitable differentiation in premium costs which may be difficult while keeping policies as affordable as possible)
- ◆ transferring a portion of the risk to external and/or capital markets

Case example: Addressing private risks – the Turkey Catastrophe Insurance Pool (TCIP)

The TCIP is an insurance pool which seeks to provide affordable insurance to homeowners, especially those in urban residential areas, and to reduce the fiscal exposure of the Turkish government by accumulating funds for future disasters, sharing portions of risk within the country, and transferring other portions of the risk to international reinsurance and capital markets. The scheme is modelled on the California Earthquake Authority and the New Zealand Earthquake Commission, although adapted to local circumstances. Proof of participation in the scheme is compulsory for land registry transactions such as when houses are sold; however additional intended sanctions and incentives have not yet been implemented (in part due to the enabling law's status as a decree law rather than a parliamentary law which would have the possibility of sanctions for non-compliance).

The TCIP started offering policies in September 2000. At that time, the Turkish government also changed sections of its disaster law to remove the government's commitment to provide post-disaster reconstruction assistance for housing lost to natural disasters, thus putting much of the responsibility back on homeowners.

The TCIP is managed as a private insurance company under the strategic guidance of the Turkish Treasury and with a major input from private sector insurance companies that distribute TCIP's insurance policies. During the first 5 years of the pool's operations, the World Bank also provided a contingent credit layer that would have provided financial resources to the TCIP to meet claims if needed. Marketing and distribution of policies has been facilitated by a state-of-the-art Internet-based information system that has produced significant cost efficiencies in underwriting new policies. The policies are sold by private insurance companies who are paid a standard commission.

As of July 2008, TCIP covered 2.8 million households, approximately 21% of the target market overall in Turkey and 31% in the Marmara region surrounding Istanbul. While efforts to keep costs low have made the insurance more affordable, uptake of policies in areas outside of Istanbul, Ankara, and the western coast has been hampered by lower awareness of risk and lower levels of household income.

Source: World Bank 2006, www.dask.gov.tr

One of the first steps in developing such risk pools is the collection of hazard and vulnerability data and the development of relevant risk models. The development of open source systems for risk assessment and analysis is seen as one way to make information more available to stakeholders on all sides and promote greater competition in insurance markets. One example of this type of open system approach is the Central American Probabilistic Risk Assessment (CAPRA) which is a collaboration among CEPREDENAC, UN/ISDR, and the World Bank to develop common tools to assess the probability of disaster risk in Central America.

Subsidies may also be necessary to help spur private sector engagement when start-up costs are high due to a lack of relevant hazard data or high reserve requirements. However, much the same for microinsurance, such subsidies must be smartly targeted to address market gaps and to ensure movement toward market-based strategies; otherwise subsidies will distort responses to risk and undermine efficiencies and incentives within the insurance structure.

Although catastrophe pools are seen by many as effective mechanisms for bolstering national coping capacities, others question whose risks are being protected by such schemes and whether the vulnerability of the poor is really being substantively reduced. In many ways insurance is a very expensive means for transferring financial resources from the rich to the poor if designed as a subsidy conduit.

Case example: Addressing public/sovereign risks – the Caribbean Catastrophe Risk Insurance Facility (CCRIF)

The CCRIF is a regional insurance facility owned and operated by 16 Caribbean governments. The facility insures the governments against the impacts of catastrophic hurricanes and earthquakes and allows them to access liquidity on short notice using parametric triggers. For earthquakes the triggers are based on USGS data on the location, intensity, and likelihood of damage to the member countries. For hurricanes the triggers are based on data from the U.S National Hurricane Center on hurricane paths and wind intensity.

Start-up activities have been supported by the World Bank and the Caribbean Development Bank and the governments of Canada, France, and the UK. By pooling their risk the governments have managed to reduce their individual insurance premium by up to 40%.

As of the end of 2008 the CCRIF made two payouts of US\$ 418,976 to the St. Lucian government and US\$ 528,021 to the Dominican government as a result of the magnitude 7.4 earthquake close to Martinique in November 2007 and US \$6.3 million to the government of the Turks and Caicos Islands after Hurricane Ike in September 2008.

Source: www.ccrif.org

If properly tuned, insurance can be a critical tool for helping to manage uncertainty, even potentially in helping to manage the residual climate risks that climate change mitigation and adaptation will not be able to eliminate. For instance, insurance has been mentioned as a possible mechanism for facilitating transfers between carbon emitters and those affected by high carbon emissions, for example in some type of third-party indemnity insurance. Yet in situations where the incidence of adverse impacts is likely to increase, insurance premiums tend to be high and transfers in this manner would then be quite costly.

At the same time, interest in capital and bond markets to hedge disaster risks as a means for diversifying portfolios continues to grow. In the early 1990s in the aftermath of Hurricane Andrew, as concern grew about the capacities of the reinsurance market and the high price of reinsurance, new financial instruments to transfer catastrophe risk exposure to capital markets were developed. Catastrophe bonds (cat bonds) are one such investment instrument in which investors receive a high return when a specific catastrophe does not occur but forfeit the principal and share in the losses if it does occur. The bonds allow both governments or insurance companies and the individual investors to diversify their investments.

Case example: Mexico's Cat Bond

The Government of Mexico has pioneered the transfer of risk to international capital markets through its FONDEN program, placing the first sovereign disaster risk *cat bond* in 2006. This bond covers the period 2007-2009 and serves as reinsurance for the FONDEN program which insures expenditures for public relief and emergency infrastructure reconstruction due to earthquakes. The bond is intended to smooth the expenditures paid from the FONDEN fund on a yearly basis which otherwise have been quite volatile.

The bond required a US\$ 26 million premium and provides cover of US\$ 450 million over the duration of the contract period.

The bond is parametric and has two basic criteria as triggers:

- ◆ An earthquake in excess of a specified magnitude and depth occurs with its epicentre location within the boundary of a zone specified in the bond documentation.
- ◆ Official declaration of the disaster by the Ministry of the Interior of Mexico.

This program has demonstrated that securitizing government risk is possible and that there is a demand in financial markets for such risk. However challenges include the limitation of the coverage to only earthquakes – and not hurricanes or climate risks – and the extensive and costly requirement for risk analysis data to initiate the bond.

Source: Linnerooth-Bayer and Mechler 2007

Ultimately there are things that insurance can and cannot do. The expectations for insurance to address the needs of the poor, increase post-disaster liquidity to national governments and entice the private sector are not always fully compatible.

While catastrophe pools and cat bonds may increase liquidity for governments after disasters, they do not influence how government funds are used to support relief and recovery. According to a scoping study by Christian Aid, current experience often shows mixed outcomes in transparency and accountability, particularly in terms of the targeting process and the representation of local voices. In order for national and multi-country insurance schemes to benefit vulnerable communities, such tools should contribute to government accountability to local populations and transparency in disaster risk management and support the institutionalization and scaling up of DRR initiatives at local levels where risk reduction ultimately needs to take place. Community-based DRR initiatives have proven to be effective and efficient, and civil society and communities need to be involved and made key stakeholders in the planning, implementation and monitoring of public-private partnerships for national and regional risk pooling schemes. [Christian Aid 2008]

Case example: Ethiopia drought insurance

During the 2006 agricultural season in Ethiopia, the World Food Programme (WFP), World Bank, and Government of Ethiopia piloted an index-based insurance scheme with Axa Re to protect farmers against the impacts of severe drought. In the event of rainfall significantly below historic averages, pointing to the likelihood of widespread crop failure, payment would be made to WFP, who would then transfer the funds to the government's Productive Safety Net Programme for distribution as cash assistance to individual households. As it turned out rainfall in 2006 was above average, so no payout was triggered.

However the pilot did demonstrate the feasibility of developing 1) market mechanisms to finance drought risk; 2) objective, timely and accurate indicators for triggering drought assistance; and 3) incentive for governments and donors to put contingency plans in place, allowing earlier response to shocks.

WFP is currently developing further plans for the application of similar index-based insurance facilities, combining the use of contingency funds to cover smaller losses, contingent grant or debt to finance medium losses, and weather index-based insurance to cover major catastrophes.

Source: ProVention website (Risk Transfer resource section)

Overall insurance can play an important role in sharing some critical types of risk and in pricing broader levels of risk that will often need to be addressed and reduced through other means in the long-term.

Key features

Public private partnerships (PPPs)	PPPs have been key to the development of catastrophe pools thus far. Initially PPPs have been used to gather the wide range of detailed research and analysis necessary to design the schemes. PPPs have also been used for ongoing management and oversight of the pools which require active engagement from both private sector reinsurance partners and government regulators, often as well as additional credit-backing and advisory roles by International Financial Institutions or donor governments.
Index-based insurance	As is the case with micro-insurance, the use of parametric triggers has greatly facilitated the creation of workable business models for insuring catastrophic risk. The parametric triggers reduce the need for expensive claims adjustment processes and greatly reduce administrative and disbursement costs.
Regional pooling	Regional pooling has emerged as a mechanism for increasing the number of policies under coverage which can both lower the costs for policies and eliminate the need for compulsory country schemes.
Risk layers	The viability of catastrophe pools is often based on their ability to transfer a part of their risk to third parties through risk layering be it private insurers, reinsurers, government, or donor community. This allows the pools to transfer some portion of the risk to reinsurance and capital markets even if commercial markets would not be willing to take on the whole risk.

Conclusions

Most often the financing tools discussed in this review have been targeted more generally at supporting resilience and recovery and less directly at providing incentives for investing in pre-disaster risk reduction. Even when risk reduction is mentioned as a goal, it is often in an ancillary manner as a secondary effect. This can make it quite difficult to measure the contribution of these tools toward risk reduction. To be truly effective these tools also need to be tied to other efforts and incentives for investments in risk reduction.

Microfinance has already demonstrated considerable success in promoting livelihood and development gains and protecting those gains from future shocks due to natural hazards or other threats. MFIs and other financial institutions can play an important role in reducing disaster risk and microfinance needs to be promoted in the disaster and risk management communities as a critical tool to help strengthen resilience and reduce the vulnerability of hazard-prone communities [Srinivas].

One initiative that may advance practice in this area is a collaborative effort led by the SEEP Network and other partners to develop Economic Recovery Standards addressing 'strategies and interventions designed to promote enterprises, employment, and cash flow and asset management among affected enterprises and livelihoods in environments affected by conflict or disaster' – <http://communities.seepnetwork.org/econrecovery>.

Social funds have the potential to provide a bridge between individual livelihoods development and broader governmental development initiatives. Such funds have proven to be a significant tool for using community-driven development to strengthen community assets and infrastructure to enable and promote local economic growth. Integrating a risk reduction and

catastrophe insurance agenda into social funds' goals and objectives should be feasible, although there are few specific case examples of this yet.

Social funds are less effective if they cannot build on pre-existing programs and must be started from scratch after a disaster. Such programs are human resource-intensive and require large amounts of technical assistance. When such programs do exist however, they also have established outreach and disbursement mechanisms that can be very difficult to reproduce in a post-disaster environment.

Insurance and other forms of risk transfer are an integral part of comprehensive risk management in developed countries and among the wealthy and large businesses in developing countries as well. Microinsurance has offered the promise of extending the benefits of insurance to poor communities. However so far successful microinsurance models for addressing disaster risk have, for the most part, only been developed in select settings where there is adequate data available to enable index-based systems.

The need for reliable data and the affordability of insurance in poor communities will likely be significantly challenged with increasing changes in climate risk. While improved access to seasonal forecasts may allow farmers and other businesses to better plan investments and tailor insurance coverage to maximize yields over time, insurance schemes that would provide broader "cover for livelihoods (beyond loan-default risk) and for very poor regions would likely require significant donor assistance" and subsidies [IIASA 2007].

At national level, interest continues to increase in catastrophe pools as a means for ensuring access to adequate response funding by reducing fiscal exposure and smoothing expenditures. Currently both the Romanian and the Bulgarian governments, with support from the World Bank and private sector partners, are considering the establishment of such pools. In Bulgaria preliminary research and advocacy have been facilitated by the Bulgaria Catastrophe Insurance Initiative, an NGO created to bring together a variety of stakeholders including government, private sector companies, and academic institutions [ProVention Consortium website]. The World Bank is also considering the establishment of a regional pool for catastrophe insurance in Southeastern and Central Europe that would reduce the need for national compulsory schemes by attracting sufficient number of policy-holders on a regional basis.

The drought risk insurance developed by WFP and the government of Ethiopia in 2006 and covered by AXA Re demonstrated that such insurance approaches can also be used to cover expenditures for social protection schemes to strengthen resilience at community and household levels. However the fact that the scheme was in place for only one season highlights the significant level of concerted effort needed among multiple partners to bring such schemes forward in a sustained manner.

Overall the tools that have been discussed in this paper offer a promising set of resources for financing and supporting effective risk management. Yet significant challenges for scaling up, ensuring ready access in poor communities, and providing tangible incentives for risk reduction remain before their potential can be fully realized.

Other financing tools for disaster risk management

In addition to the tools discussed in this paper there are also a number of other financing tools that can be applied toward disaster risk management. These include:

- ◆ Conditional cash transfers

Cash transfers and public works have also been used to effectively bolster safety nets and promote holistic social risk management. By providing assistance in the form of cash grants, agencies have supported local choice and self-management in driving recovery and prioritizing investments for livelihoods development and resilience.

There has been considerable interest over the last several years in conditional cash transfers which have been used in particular to protect children's school enrollment from being affected by adverse risk coping when their families are hit by disasters or other shocks. The income guarantees underlying these programs can help poor households to avoid risk coping strategies that may have irreversible consequences, such as the sale of assets, foregoing of health expenditures, or withdrawal of children from school [Vakis 2006, de Janvry 2006]. Similarly public works programs have been used to strengthen labor markets to protect against the risk of unemployment and also to support public investments that can link to prevention strategies.

Cash for Work programs are also often used post-disaster. These are basic employment programs with the work targeted toward social or community objectives. Such programs help to restore earning capacity and livelihoods, repair and reconstruct disaster damage, and contribute to long-term development [AIDMI 2005].

After the Indian Ocean Tsunami in 2004, a number of agencies established cash grant programs to support the housing reconstruction. In Sri Lanka the government-organized owner-driven housing recovery program played an instrumental role in requiring that houses reconstructed under the program be built on reinforced concrete pillars to reduce damage in future tsunamis. Many organizations also provided further technical assistance for reconstruction and provided grants in tranches to ensure that houses are being reconstructed according to safe standards. This combination of technical assistance and cash grants was used effectively for the transitional shelter program organized by the IFRC in Yogyakarta after the earthquake in 2006.

- ◆ Alternative currencies

Complementary or local currencies have been used in a number of locations to stimulate local economic activity by issuing a scrip currency to facilitate the exchange of local services in areas where availability of the national currency is limited (as it might be in poor communities). These types of alternative currencies have been used to support local development, including in post-disaster recovery contexts. For more information see <http://www.appropriate-economics.org/>.

- ◆ Venture capital

CARE Canada has initiated an innovative Social Venture Fund to incubate and catalyze small and medium sized social enterprises. "Through the provision of patient investment capital and business advisory support, the Fund helps enterprises generate both economic and social value for the underserved in the developing countries." [<http://www.care.ca/main/?en&homeSVF>]

- ◆ Insurance for disaster reserves for private companies

The United Nations Environment Programme Finance Initiative (UNEP FI) is currently exploring a program that would offer insurance to companies in lieu of maintaining reserves for responding to disaster events, thus allowing those companies to invest much of the funds that would have been put in these reserves in other ways.

- ◆ Contingent credit

In contingent credit arrangements, governments or private sector companies obtain the right to take out a pre-specified post-disaster loan that is repaid on fixed terms, providing immediate liquidity after a disaster. Such credit might be offered as part of a development aid package to governments or in exchange for an annual fee.

Web resources

Microfinance

- ◆ Microfinance Gateway -- www.microfinancegateway.org
- ◆ CGAP website -- www.cgap.org
- ◆ MIXMarket website which provides a variety of performance indicators for microfinance institutions worldwide -- <http://www.mixmarket.org>

Social funds

- ◆ The World Bank Social Protection & Labor Sector website -- www.worldbank.org/sp

Microinsurance

- ◆ ILO's *Protecting the poor: A microinsurance compendium* -- www.microinsurancecompendium.org

Catastrophe pools

- ◆ Earthquake Insurance in Turkey: History of the Turkish Catastrophe Insurance Pool -- http://www.worldbankinfoshop.org/ecommerce/catalog/product?item_id=5550414

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