Introduction

In recent years there have been more and more indicators that climatic change is already influencing the frequency and intensity of natural catastrophes. According to the World Meteorological Organisation (WMO), the years 2001 to 2004 were among the five warmest recorded worldwide since 1861. A study from MIT showed that, since the 1970s, major tropical storms both in the Atlantic and the Pacific region have increased in duration and intensity by about 50 percent (Emanuel 2005). If the scientific global climate models are accurate, the present problems will be magnified in the near future.

Changes in many atmospheric processes will profoundly impact the lives, health, and property of millions of people. Of special concern, the impact of climate change will be most acutely felt among the world’s poorest people at the community level.

Attention has focused in recent years on the role that financial services can play in managing disaster and climate-related risks. With climate change expected to bring more frequent and intense weather events, financial services will have a significant role to play.
in managing the risks related to climate change (IPCC 2001). Financial services can help to absorb and redistribute the costs of hazard-related losses, and may shape incentives to encourage disaster risk reduction.

In extreme weather events, communities are vulnerable to costs resulting from sickness, loss of income and affected harvests. When disasters strike, the risk and impact of sickness multiplies (PAHO, 1999), loss of income can drive an exposed population into poverty, and droughts can bring on famine and hunger (Ribot et al., 1996). Financial services, accessible credit and risk-spreading through insurance mechanisms provide potential ways to reduce community vulnerability to such weather-related risks (Vellinga et al., 2001).

Efforts to use financial services in climate risk management remain scattered. Providers of financial services lack sufficient understanding of community-level needs to design appropriate financial tools for adaptation to climate change and disaster risk. Documentation of local-level experiences by climate scientists, disaster risk managers and financial services is limited. Supply of financial services poorly matches local demand. The public and private sectors require clear direction on ways to improve finance alternatives for extreme weather events at the community level. Financial services should be an active part of adaptation to climate change and disaster risk reduction.

**Financial services for communities**

A spectrum of actors currently provides financial services for community-level climate adaptation and disaster risk reduction activities. In developing countries, households provide most resources for disaster risk reduction and adaptation activities (see Figure 1). Governments and NGO-led initiatives often flow from a development perspective, rather than disaster- or climate risk management. Micro-finance institutions (MFIs) and the private sector provide financial services on a commercial basis.

Households consume the resources and savings that are available to them, and borrow from local lenders at interest rates that vary from 30 to 120 per cent (Hess, 2003). Saving money, although the primary way for poor households to cope with crises, provides less than optimal risk coverage especially when income flow is erratic. Another common coping strategy is to share risk with extended family or neighbours, but a natural disaster could simultaneously affect members of the group.
The ranking of household-level risk finance is revealing: A survey in Latin American countries suggested that household disaster finance was the most costly and least efficient means of paying for disaster risk and adaptation activities (Warner et al., 2004). Actors suited to managing and financing disaster risk and climate adaptation activities must overcome obstacles to providing affordable and appropriate financial services at the local level. Appendix A provides an analysis of financial services models.

The following examples illustrate innovative schemes by different actors to help communities pay for disaster risk reduction and climate adaptation.

**A federal government: Social Protection Funds, El Salvador**
The federal government in El Salvador has provided social investment funds (SIFs) to offer rapid assistance to poor communities through resources for small construction works, retrofitting or adapting structures for extreme weather. The funds for damage prevention activities and financial schemes aimed at risk reduction served to mobilize and disburse government resources, expand operations rapidly at local level, and maintain direct contact with poor communities. They operated in a decentralized way and closely involved civil society organizations and local governments. They also reduced vulnerability by creating employment, generating social services for the poor, and widening community-based civic action. The programme owed its efficiency and effectiveness to clear definitions of responsibilities for all parties involved, and transparent monitoring and reporting systems which ensured that recipient communities accounted for the use of all funds received.

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**Figure 1:** percentages of financial services provided by different actors in seven Latin American countries; as estimated by local, regional and national level policy makers.
A local government: risk pooling and insurance in Manizales, Colombia

City authorities in Manizales, Colombia, have used a risk pool and insurance mechanism to pay for losses, as well as for disaster risk reduction against hazards such as landslides, flooding, earthquakes and extreme climate variability. The pool was established after authorities conducted a detailed parcel-by-parcel city-wide inventory of building types, allowing estimates of probable losses and paving the way for planning to cover the potential costs and financing for risk reduction. The scheme owed its success to a combination of ex ante (before the event) risk reduction, the existence of an accompanying financial plan, and the key role played by the mayor’s office in championing the scheme. Successful risk pooling schemes require robust estimates of probable losses as well as strong advocacy to prioritize risk reduction and adaptation.

An NGO: DHAN Foundation, India

The DHAN Foundation, a local NGO in India, has helped disadvantaged people to organize community groups for risk management purposes. DHAN’s relationships with communities enabled it to set up widespread risk management schemes; it oversees almost 15,000 community groups with smaller units of a dozen or more poor women, and can reach over 250,000 families. DHAN approached the reinsurer Interpolis Re to negotiate with local insurers and enable them to provide policies for such a large scheme. DHAN and Interpolis Re then offered clients a variety of financial service products, technical support for claims administration, training programmes to develop local insurance capacity, and community education programmes. DHAN developed street plays that served to increase understanding and demand for micro-insurance products for disaster management. This shows that NGOs can help private financial services companies overcome low client awareness, illiteracy, and non-articulation of product demand.

A Micro-Finance Institution: Opportunity International

Micro-Finance Institutions (MFIs) like Opportunity International provide a variety of financial services in developing countries to communities through clients that form groups, enabling them to share responsibility for paying interest and principle on small loans. First, micro-insurance products offered by Opportunity International help groups to manage risks and benefit micro-credit operations by preventing loan default in the case of an unexpected event. Second, MFIs who have strong links to local clients can efficiently administrate group policies, and help private companies to overcome challenges. MFIs may not be experts in designing and providing insurance services and may lack the actuarial basis for computing premiums and contributions, but may still offer products by attempting to adapt them from formal insurance firms. Third, MFIs may not be able to provide micro-insurance because they have a smaller or more homogenous risk pool, and lack reserves and reinsurance. They face high covariate risk when disasters affect all of the community groups with outstanding loans. To successfully provide insurance, therefore, MFIs must achieve sufficient scale in number of policies and clients to reduce
variability in the portfolio. MFIs can then better transfer risk by seeking formal insurance and reinsurance partners.

The issues

**Attitudes and incentives**
The current approach to risk management and financing climate adaptation favours ‘ex post’ (after the event) solutions, such as waiting for international donors and federal governments to provide resources for an emergency response. Crisis management usually receives operational priority and commands greater financial resources than risk reduction. Ex ante (before the event) financial services, proactive risk management and risk reduction are undermined by difficulties in obtaining resources before a catastrophic event, lack of information about financial services, and a lack of consensus on alternatives. Governments could reconsider their policy of providing generous support following a disaster, in favour of supporting ex ante action, and perhaps link them to social products. Cost-benefit analyses can provide guidance, and describe the role for financial services in transferring risk and risk reduction. Greater promotion and public awareness of financial service products could reduce disincentives for ex ante disaster risk finance.

**Legal and regulatory frameworks**
Much can be done to strengthen legal and regulatory frameworks to facilitate risk reduction and adaptation through financial services. First, countries that lack legal and regulatory frameworks for formal financial services to operate lawfully deprive communities of an important source of finance and risk transfer capacity. Mutual benefit groups may still provide financial services locally. Second, countries with a variety of legal and regulatory frameworks are complex for companies wishing to provide financial services for disaster risk reduction on an appropriate scale. While the Basel Convention provides guidelines for worldwide banking services, no such international coordination exists for insurance. National differences offer opportunities for general financial services, but complicate multi-country disaster risk management schemes that transfer risk across regions to diversify portfolios and manage risk. Third, taxes can make up a large share of financial service costs. Favourable tax treatment and other incentives for products that encourage risk reduction could facilitate wider use of financial services products.

**Partner roles**
The impetus to move forward lies with governments, the international humanitarian community and international organizations. Provision of financial services could be expanded across the spectrum if the financing of risk shifts towards parties best able to absorb or transfer it: probably to the commercial sector. Involving partners with strong ties to recipient communities, meanwhile, reduces the risk of adverse selection, moral hazards and other obstacles to formal sector products. But responsibilities and roles
must be clearly defined so that each partner contributes according to its comparative advantage.

Community groups can raise awareness among potential clients about using insurance products to reduce disaster risk and lower product marketing costs. They can also aggregate risk and facilitate administration of services like premium and claims payments. Strong community ties strengthen the ability of partners to understand the product demands of potential clients.

Partnerships provide one means for private sector participation. While private companies have sometimes been involved as a partner, they have not initiated schemes to serve communities. The private sector may be reluctant to lead initiatives because many of the factors required for formal financial services are not in place at the local level in developing countries.

Governments and international organizations can help to overcome obstacles that discourage engagement of the private sector, such as information asymmetry at the community level, monitoring, and targeting.

**Products**

Much knowledge exists about demand for risk management products. The willingness of clients to pay for financial services is proportional to income: poor households may use approximately five per cent of income for financial services. Demand in developing countries also appears to follow a specific order: clients first need life and accident insurance, then income security (such as crop insurance, livelihood protection) and access to credit for investment, and then health insurance. As incomes rise, property insurance and credit become more important.

Designing products for the local level in developing countries depends on aggregating, diversifying and administrating risk-management products. Products may be bundled: some MFIs provide loans with a compulsory insurance component, its premium added to the loan’s interest rate. Such product bundling reduces the risks of loan default in the event of a disaster, and the risk that clients may take on another loan to cover loss of assets and principle on the original loan. Products should also be structured simply and easy to administrate. Another challenge is to build geographical spread and differentiation between types of climate-related risks into the financial services portfolios. Involvement of private sector partners can facilitate further aggregation of risk from local to global levels, thus spreading risk to wider markets.

**The way forward**

The next steps to build on momentum from the workshop should include:

- **Carrying out a survey** of local-level financial service customers, to gauge perception...
of benefits and costs of schemes for disaster risk reduction and climate adaptation.

- **Exploring** the development of financial products, with two proposals
  - Risk swaps between regions (flooding and drought)
  - Simple product for farmers (water scarcity or abundance) with global applicability


- **Exploring** risk pool and layer schemes among partners from local to global levels, to present at the thematic session on climate insurance at the UNFCCC Conference of the Parties in November/December 2005.

- **Conducting** a comparative cost benefit analysis over five years with a community that used a disaster risk finance scheme and another community.

- **Working with** the Disaster Risk Finance Group to facilitate partnerships, documentation, dialogue and pilot projects in disaster risk finance.

- **Organizing a follow-up** workshop at the Munich Re Foundation International Symposium (16-17 November 2005).

**Additional reading and resources**


Disaster Risk Finance Group [www.slf.ch/drf](http://www.slf.ch/drf).

**References**


Vellinga, P., Mills, E., Berz, G., Bouwer, L.M., Huq, S., Kozak, L.A., Palutikof,


**APPENDIX A – Analysis of financial services models**

![Diagram of financial services models](image)

**Figure 2**: Costs and benefits of financial services, by type of provision model

**Quadrant I**: Services in this quadrant carry higher premiums/interest rates and offer more extensive coverage. Financial services quadrant I benefit from larger risk pools and optimization of actuarially feasible benefits. Micro-finance institutions that provide financial services operate in the lower left part of quadrant I. MFIs use the actuarial and financial services technology of formal sector companies and reach the informal sector with low transaction and marketing costs by working closely with community groups.

**Quadrant II**: Services in quadrant II are often smaller-scale operations. NGOs and mutual benefit/cooperative organizations offer lower costs and benefits for clients than formal sector products. Like MFIs, NGOs and mutual benefit organizations keep administration costs low by working with community groups. These groups have sufficient social capital to experiment with financial products: group ownership of the risk substi-
tutes for the high reserves needed to buffer against design flaws during the experimental stage of product development. They may also receive government subsidies. Financial services in this quadrant have smaller and possibly more homogenous risk pools, and may lack reserves and financial capacity.

**Quadrant III:** Services in quadrant III are often subsidized or provided directly at no cost by the government. Mandatory financial schemes may be poorly tailored to client needs (low benefits). Programmes provide services with social components (such as poverty reduction, safe housing, infrastructure, and clean water). Strong links to communities are needed to prevent misuse of funds (targeting and monitoring key). Programmes may be subject to periodic changes in government budgets.

**Quadrant IV:** The majority of current disaster and adaptation practices in communities cluster in quadrant IV: ex post financial services through informal services. These services include foregoing current and future consumption, and relying on high-interest local lenders (loan sharks). This high-cost, low-benefit strategy can increase future vulnerability to extreme events and prevent wealth accumulation and economic development by households and communities.

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1 Figure 2 is an “evolutionary analysis,” a collection of practitioner observations not a statement of reality. The relative positioning of financial services schemes in each quadrant is hypothetical. We welcome your comments about the underlying factors that affect the costs and benefits of various financial schemes at the community level.