5.4 Financial and economic tools

Financing disaster risk reduction has become a critically important issue in view of the increasing need for investment in disaster mitigation and preparedness at national and local levels. The mounting costs of disasters, the huge losses that have to be covered by insurance companies, and the fiscal pressure on governments in undertaking post-disaster recovery and reconstruction have called for sustainable financing arrangements to address disaster risks. While many governments have sought external assistance and credit for reconstruction, communities and households continue to need access to more resources for protecting their income and consumption.

Insurance is a well-established mechanism for risk transfer, but less than one fourth of all losses resulting from natural disasters around the world are insured. The distribution of natural disaster insurance is heavily in favour of developed countries. The United States, United Kingdom and Japan amount to about 55 per cent of the total coverage.

By contrast, Asia, with many developing countries, and which represented half of all the damages caused by natural catastrophes and two thirds of all the casualties from catastrophic events in the last years, accounted for only 8 per cent of the insurance coverage for catastrophes purchased in the world market. This lack of insurance coverage and more limited social safety nets in countries imply a high level of vulnerability, which is only exacerbated by risks of natural disasters.

Reducing vulnerability requires investment in preparedness and risk reduction and access to financial resources. These resources are provided through official development assistance, multilateral development banks, governments' budgetary resources, and market- and community-based institutions. Utilization of these resources depends upon the availability of facilities and instruments, and necessary institutional support.

This section presents a brief survey of different sources of funding, as they strongly influence the development of specific financial instruments and services. It further discusses how specific financial instruments and services help governments, communities and households in managing disaster risks, focusing on:

- *international assistance;*
- *national financing for disaster risk reduction; and*
- *market based instruments for risk reduction.*

International assistance

Official development assistance

An important source of funding for disaster reduction is the official development assistance from member countries of the Organization for Economic Co-operation and Development (OECD). It is often difficult to determine the precise amount of assistance provided for reducing disasters impacts as official assistance data for natural disasters often incorporates data on complex emergencies, such as conflict also affecting the area in question. Funding for disaster risk reduction historically has tended to come from humanitarian assistance, which typically responds to emergency assistance and relief needs at the time of a disaster or crisis situation. Recent developments have encouraged it to become embedded in development projects, particularly as risks assessments and disaster risk reduction are taken into account.

According to the UN Office of the Coordination of Humanitarian Affairs (OCHA) the total donor contribution for all kinds of humanitarian

"Development and relief workers are seeking ways to use available relief funds to meet the emergency needs of disaster victims and, at the same time, support fundamental change towards long-term development. These two motivations—an urgent need to deal with the causes of disasters rather than only with the symptoms, and the necessity of getting the best possible short-term and long-term outcomes from aid funds—are forcing policy makers to take a harder look at the tools that are available for effective planning and programming. One such tool, which can contribute significantly to addressing root causes and which can support effective, efficient, and equitable long-term development, is gender analysis."

Source: Mary Anderson, 1994.

assistance was US$ 4.2 billion and US$ 4.5 billion in 2001 and 2002, respectively. Out of this assistance to support emergency and disaster response activities, natural disasters accounted for a small percentage: US$ 331 million in 2001 and US$ 238 million in 2002. The yearly breakdown of official assistance for natural disaster response is given below.

Table 5.1
Official development assistance in response to natural disasters

Year	Contribution for natural disasters (US$ millions)
1992	257.44
1993	77.66
1994	113.47
1995	104.67
1996	84.14
1997	302.69
1998	1,151.87
1999	296.41
2000*	
2001	331.51
2002	238.27

* Data for the year 2000 unavailable.
Source: OCHA <http://www.reliefweb.int/arfts/>.

The incorporation of risk reduction measures in development portfolios and projects is less obvious, but nevertheless is being increasingly recognized. No consolidated statistics are yet developed to show the trend.

Development banks promoting investment in disaster reduction

The World Bank and multilateral development banks such as the Inter-American, Asian, and Caribbean development banks have emerged as primary sources of funding for recovery and reconstruction following a major disaster. For example, after the Bhuj earthquake in India in 2001, the World Bank provided US$ 400 million by restructuring existing loans.

Many governments in the developing world find themselves fiscally constrained to reallocate their own resources for emergency needs following a large-scale disaster and turn to international financial institutions for immediate assistance. However, investment data on disaster mitigation are rare as only a small number of countries have approached multilateral development banks to ask them to finance disaster mitigation programmes.

These institutions, are also in a stronger situation to support sustainable disaster risk reduction strategies through their large-scale lending. In recent years, they have come to recognize the strategic importance of projects for implementing disaster risk reduction as part of their portfolios.

The World Bank

The World Bank has supported reconstruction projects across all regions in 56 countries.

Table 5.2
World Bank approved natural disaster reconstruction projects (1980-2000)

Region	Number of disaster projects	Percentage of all active projects
Africa	19	21
East Asia	13	58
East Europe/ Central Asia	9	44
Latin America	36	36
Middle East/ North Africa	9	22
South Asia	16	19
Total	102	33

Source: Gilbert and Kreimer, 1999.

In addition to reconstruction, the World Bank has also invested in disaster mitigation projects as well, albeit indirectly. Most of the mitigation projects seek to achieve a number of objectives

Box 5.27
Lack of ownership a reason for low-priority risk reduction

Tearfund is a British relief and development NGO. During 2003, it completed a research project that assessed nine institutional donors' policies and practices on natural disaster risk reduction.

The research identified that a key obstacle preventing greater integration of risk reduction into development interventions is a lack of ownership of the subject by development departments. Neither relief nor development sectors within donor agencies fully identify risk reduction as an area of their specific responsibility. Consequently, the issue falls between relief and development processes. Consequently, a lack of ownership results due to:

- The relief-development cultural divide: development specialists often do not perceive disasters as their remit, but rather an unfortunate detour on the developmental path.
- The unreliable assumption of development professionals that poverty reduction development work, by its very nature, reduces the risk of disaster. Hence the entire development community already addresses the problem.
- The broad range of disciplines involved in preventing disasters. This only adds to the confusion regarding whose responsibility it actually is.

There are several strategies to improve and integrate ownership:

- Engage development staff through risk reduction training initiatives, workshops, seminars and presentations.
- Use practical tools such as checklists to assist development professionals consider a project in light of the disaster risks it faces, and the ways in which it can withstand and help mitigate these risks. Any checklists should be developed with the as broad participation as possible. In this way they will view it as a useful aid to incorporating the risk dimension and not as more unnecessary rules.
- Establish a monitoring process to ensure checklists are used and to evaluate the impact of policy on the practice of the organization.

Tearfund's research joined the findings of UN/ISDR, the development banks, the International Red Cross and Red Crescent Movement and others in highlighting the need for more concrete evidence of the cost effectiveness of risk reduction.

It is vital that development sectors are convinced that investing in disaster preventive action is worthwhile. Considering the current weak economic rationale for risk reduction, development specialists and, more crucially, economists (including those working on poverty reduction strategy papers in developing countries) need to be convinced that risk reduction pays.

Source: *Natural Disaster Risk Reduction: The Policy and Practice of Selected Institutional Donors*, Tearfund, 2003.

other than natural disaster mitigation such as those involving the construction of dams or water resource management. Very few countries have approached the World Bank to finance a disaster mitigation programme exclusively.

Latin America and the Caribbean

While expanded economic and financial investment in disaster reduction is proceeding at different paces reflecting different levels of commitment throughout the world, Latin American and Caribbean countries have taken the lead.

The relationships between disaster vulnerability reduction and economic development have been encouraged by influential regional institutions. These include the UN Economic Commission for Latin America and the Caribbean (ECLAC), the Central American Bank for Economic Integration (CABEI), the Caribbean Development Bank (CDB), the Andean Development Corporation (CAF), the Inter-American Development Bank (IADB) and the World Bank's Disaster Management Facility (DMF). These organizations have recognized the value of disaster mitigation measures in reducing and alleviating serious economic disruptions and thus in determining a country's path towards economic growth.

IADB is a very active lending institution in the field of disaster reduction with well-defined policies and activities. Since 1990, the IADB has lent more than US$ 2 billion in the region to help countries undertake disaster-related programmes.

One third of the loans have been directed to prevention and mitigation investments, often as

components in sustainable development projects. The main part of the financing following disasters has concentrated on rebuilding physical infrastructure. This has included water, sewage, electricity and road systems (65 per cent of all reconstruction loans). The re-establishment of social services including health, education and housing amounts to 25 per cent of the loans. Additional credit lines and support for productive activities such as micro enterprises account for another 10 per cent.

Over two thirds of IADB loans related to post-disaster funding represent new monies extended to the affected countries. Less than one third of the reconstruction resources came from modifications of loans already approved under implementation. There is a special accelerated disbursement mechanism for emergency situations for amounts up to US$ 20 million per project. Eight such programmes have been approved since 1999. IADB strategies to incorporate disaster reduction in development are outlined in *Facing the Challenge of Natural Disasters in Latin America and the Caribbean: An IADB Action Plan*, published in 2000.

In March 2001, IADB approved a new financial mechanism, the Sector Facility for the Prevention of Natural Disasters, to support pilot programmes in disaster prevention and risk management. The facility provides reimbursable resources of up to US$ 5 million per project for activities that strengthen disaster prevention and risk management systems.

It covers many areas, including policy and institutional development, adaptation of innovative financial instruments, early warning systems and mitigation investments. A number of countries in the region are seeking financial resources through this facility.

The Bank has been funding a Regional Disaster Policy Dialogue among the borrowing member countries since 2001. It also has established special programmes to improve the availability and use of risk information in the region with ECLAC, and to elaborate disaster indicators with the help of the National University of Colombia and in coordination with UNDP. A set of criteria and checklists to manage risk within the project cycle for loans is under development.

CDB has adopted strategic and operational guidelines for assessing natural disaster management programmes. These initiatives seek to assist member countries in developing disaster management capabilities while ensuring that disaster management principles are integrated into CDB operations. OFDA/USAID and CDB member states made it possible for CDB to launch the Caribbean Disaster Emergency Relief Fund, a disaster management facility set up to provide greater assistance for disaster mitigation and preparedness.

ECLAC has reviewed its socio-economic damage assessment methodology to promote investment in risk reduction as part of rehabilitation and reconstruction following disasters. The review is carried out in collaboration with several other UN agencies, the World Bank and IADB. A new manual includes additional components on environmental assessment and gender focus.

Asia

The World Bank and the Asian Development Bank (ADB) have, between them, provided financial support of up to US$ 2 billion to numerous projects for disaster recovery and reconstruction in Asia. These projects relate to emergency financial assistance, earthquake reconstruction, flood recovery and restoration, and cyclone reconstruction, among others.

Operating in a region very much beset by natural disaster, ADB is keenly aware of the risks associated with development and its investments. Nonetheless, a review in 2000 indicated that the bank's experience with quantitative risk analysis was limited to a handful of applications aimed at estimating the development project risk of certain facilities such as a port, power projects or a rural productivity scheme.

ADB is beginning to place greater emphasis on early warning, prevention, preparedness and mitigation. This bodes well for future support for increased use of disaster risk analysis and estimation procedures aimed at making risk and vulnerability assessments a standard part of country strategies and programmes under its new Emergency Assistance Policy. With the

establishment of a new Regional and Sustainable Development Department, ADB is poised to expand its support to risk reduction activities.

However, there are limitations of this emerging practice in risk analysis:

- They express standard application of risk in project analysis and not analysis of the risk of natural hazards.
- The cases adopt quantitative risk determination through estimates of probability; there is little evidence of the use of multi-stakeholder processes.

There are a large number of post-disaster recovery and reconstruction programmes in Bangladesh, Cambodia, China, India, the Islamic Republic of Iran and other countries in the region. ADB has also supported a number of technical assistance projects for capacity-building in many countries. In India, ADB initiated a programme which goes beyond its traditional role of extending reconstruction loans after disasters to support long-term risk management.

A technical assistance programme was supported by ADB and implemented by the Asian Disaster Preparedness Center (ADPC) in two Indian states, Uttar Pradesh and Uttaranchal. The project was launched in the wake of the 1999 Chamoli earthquake and focused on advising the two state governments on existing institutional arrangements for disaster management. It also provided training workshops on earthquake engineering and the use of local building centres to promote earthquake-resistant buildings. <http://www.adpc.net/technical/ADBproject.html>

Africa

The African Development Bank (AfDB) has provided emergency assistance to member countries since 1979 specifically directed at repairing infrastructure and public utilities damaged by both natural disasters and complex emergencies. According to available statistics, about 33 per cent of all natural disasters in the world, 16 per cent of disaster-caused deaths and 5 per cent of all persons totally affected by natural disasters in the year 2002, occurred in Africa. Hence, disaster impacts have been one of the major obstacles on the path of poverty reduction and development in Africa.

AfDB has focused its development interventions on poverty reduction, but has recently taken steps to broaden its support for disaster management. It has instituted a disaster management financing mechanism emphasizing proactive commitments to mitigate disaster risk and is financing projects to improve disaster preparedness. It sought to provide a more coherent response to disasters by adopting policy guidelines in December 1998 for short-term relief operations and long-term reconstruction and rehabilitation projects. A special relief fund has also been established to provide grants to countries subjected to natural and technological disasters, as well as complex emergencies.

Currently, AfDB and UN/ISDR are jointly carrying out an initiative to break the vicious circle of poverty and disaster vulnerability by mitigating the impact of disasters to sustain development gains. There are four objectives:

- provide a better understanding of the economic impact of disasters, and of the importance of disaster risk management in development planning and activities;
- promote disaster-resilient development activities through integration of disaster risk assessment into development undertakings;
- provide a tool which will guide the steps of disaster risk assessment prior to formulation of development projects; and
- reverse past risky unsustainable development by analysing the disaster risk exposure of development undertakings, so that scarce economic investment, especially from the poor, can be used in an efficient manner.

The ongoing initiative between AfDB and UN/ISDR will result in an initial report and disaster risk assessment guidelines.

The World Bank and disaster reduction

The World Bank has invested US$ 7.5 million in 102 natural disaster reconstruction operations since 1980, but has now, along with other borrowers, begun to be more attentive of the need

to mitigate the effects of natural disasters before they strike. There is a growing trend of bank approval of mitigation projects with 55 approved in the 1990s against only 40 in the 1980s. However, a review of the bank's disaster-related projects since 1980 found that in most projects, the full loan amount was not dedicated to mitigation and prevention measures.

Four countries alone – Bangladesh, Brazil, China and India – accounted for 40 per cent of the World Bank's mitigation portfolio. Moreover, it is a concern that half of the top client countries for reconstruction projects do not appear among the main borrowers for these mitigation projects. There is scope for greater bank mitigation assistance to these countries that may help reduce demand for reconstruction.

The World Bank has provided more than US$ 14 million to both Honduras and Nicaragua in support of projects to improve municipal capabilities in risk management. Activities will focus on improving land-use and planning procedures based on hazard analysis and strengthening national risk and disaster management systems. The scheme works through umbrella municipal organizations, national disaster organizations and scientific and technical institutions such as the Nicaraguan Institute of Territorial Studies.

The World Bank is continuing to commit resources to the Organization of Eastern Caribbean States (OECS), mainly through subregional programmes which offer risk reduction loans to five countries to support capacity-building, institutional strengthening, community preparedness and greater protection for key infrastructure. The number of bank-financed OECS projects has almost tripled since 1997 and commitments have doubled to US$ 71.2 million. <http://www.oecs.org/>

International Monetary Fund balance of payment support

Since 1962, the International Monetary Fund (IMF) has provided emergency assistance to member countries afflicted by natural disasters. IMF loans are intended to maintain balance of payments position, enabling countries to offset resulting shortfalls in export earnings or from increased imports for recovery and reconstruction.

The IMF uses quick disbursal loans, and does not involve adherence to performance criteria. Assistance is usually limited to 25 per cent of the member's quota in the IMF, although amounts up to 50 per cent have been provided in certain circumstances. The loan is advance at a standard rate of charge, and repayment is required within 3 to 5 years. <http://www.imf.org/external/np/exr/facts/conflict.htm>

To date, 24 countries have received financial assistance related to natural disasters on 26 different occasions. Countries that have received IMF assistance for natural disasters since 1998 are shown in the following table.

Table 5.3
IMF Emergency assistance related to natural disasters (1998-2003)

Country	Year	Event	Amount (US$ million)	Per cent of quota
Bangladesh	1998	Floods	138.2	25
Dominican Republic	1998	Hurricane	55.9	25
Haiti	1998	Hurricane	21.0	25
Honduras	1998	Hurricane	65.6	50
Saint Kitts and Nevis	1998	Hurricane	2.3	25
Turkey	1999	Earthquake	501.0	37.5
Malawi	2002	Food shortage	23.0	25
Grenada	2003	Hurricane	4.0	25

Source: International Monetary Fund, 2003.

National financing for disaster risk reduction

Official development assistance and multilateral lending for reconstruction and rehabilitation have followed major disasters, yet these resources are generally insufficient to meet reconstruction needs. In addition, as governments also require resources to deal with small and medium disasters, they have to depend upon domestic resources for financing disaster risk management.

Domestic financing for disaster risk management has been slow to develop owing to both

Box 5.28
European Union Solidarity Fund for national recovery

A regional disaster reduction fund, the European Solidarity Fund, capitalized to 1 billion Euros annually, was established following the floods that occurred in central Europe during the summer of 2002. The fund will provide assistance to a member state or a country affected by a major disaster.

This is defined as having damages estimated as greater than 3 billion Euros or more than 0.6 per cent of a country's gross national income. However, exceptions can be made in case of extraordinary regional disasters resulting in damage inferior to this threshold and for remote and isolated regions.

Assistance from the fund can be used for:

- restoration to working order of infrastructure and plant in the fields of energy, water and waste water, telecommunications, transport, health and education;
- provision of accommodation and funding for rescue services to meet the needs of the population concerned;
- securing preventive infrastructure and measures for immediate protection of cultural heritage; and
- cleaning disaster-stricken areas, including natural zones.

Assistance from the fund takes the form of a single comprehensive grant, with no necessary co-financing, complementing the public efforts of the beneficiary state. The fund has released 444 million Euros to Germany; 134 million Euros to Austria; 129 million Euros to the Czech Republic; and 21 million Euros to France.

Source: <http://www.ibeurope.com/Database/Factsheets/> and <http://europa.eu.int/abc/doc/off/bull/en/200209/p104030.htm>.

institutional and informational weaknesses in addressing disaster risks. Though national budgets make provisions for disasters, it is generally for relief and emergency response activities.

Prevention and mitigation have not yet become integral to public finance, nor have institutional channels for mitigation investments yet been developed. A number of special funds now being set up in many countries for financing disaster risk reduction are discussed below.

Calamity funds

The objective of calamity funds is to provide resources to meet emergency needs immediately following a disaster. By using resources accumulated before a disaster occurs, these funds offset government expenditures at the municipal, local, national and even regional levels during a crisis. A number of countries, such as Colombia, India, Philippines and Fiji have set up contingent calamity funds.

Reconstruction, mitigation and vulnerability reduction funds

Another set of funds addresses more long-term objectives. The funding, legal structure and operating principles of these funds derive from their intended objectives. Like calamity funds, safeguards against misuse, autonomy of operations, and sustainability are critical issues for the effective use of these funds.

In Germany, a special disaster relief and reconstruction fund, *Sonderfonds Aufbauhilfe*, was set up after the Elbe floods of 2002. It is a large fund, with 7.1 billion Euros of tax revenues regulated by a special flood solidarity law, the *Fluthilfesolidaritätsgesetz*.

In 1996, the government of Mexico established a Fund for Natural Disasters (FONDEN) composed of three separate funds. The infrastructure fund provides for the repair of uninsured infrastructure. The agriculture fund provides immediate assistance to restore the productivity of low-income farmers. The assistance fund provides relief to low-income victims of disasters. FONDEN has, however, not been capitalized sufficiently to cover all of its obligations. The World Bank provided US$ 404 million in 2002 to recapitalize FONDEN and to support wide-ranging activities related to disaster management.

In Latin America and the Caribbean there are other municipal development and environmental funds that can allocate resources for the prevention and mitigation of catastrophe events in addition to their normal activities.

In Andhra Pradesh, India, a Vulnerability Reduction Fund, financially supported by the World Bank, was created as part of a cyclone reconstruction project. The objective of the fund was to provide matching funds to districts for encouraging communities to undertake hazard reduction activities at the local level.

Social funds

Social funds have become important instruments for social protection in many parts of the developing world, particularly in Latin America and Sub-Saharan Africa. Such funds are generally used to make investments in social infrastructure, particularly in health, education, water supply and sanitation. They have recently begun to be used additionally in disaster risk management and to respond to specific emergencies such as Hurricane Mitch in Central America and drought in Zambia.

These funds are guided by their specific objectives. They may not be sufficiently broad to cover a large number of risk reduction measures, and their viability is also dependent on public sector resources. Further, most of these funds cover a particular segment of the society. These examples represent an increasingly strong advocacy of market-based mechanisms of risk management as a response to inadequacies of public policies for risk management.

Public works programmes

Public works programmes are not specifically financial instruments, but are nonetheless useful means to provide employment to poor households affected by a crisis or disaster. Typically, such programmes focus on infrastructure projects and target poor households. Providing households with income following a crisis helps them avoid costly and damaging strategies such as having to sell their belongings or go hungry.

One of the best-known examples of a large-scale public works programme to improve household conditions at the time of crisis is the Maharashtra Employment Guarantee Scheme. Launched during the severe drought of 1970-1973 in India, the scheme expanded rapidly to assist some 500,000 workers monthly.

Argentina set up Trabajar II Programme in the 1990s to cope with sharply rising unemployment, which reached 18 per cent in 1996-1997 and was concentrated among poor people.

Although public works programmes are often expensive to support, their cost-effectiveness needs to be compared with alternative transfer programmes. Public works programmes have been

Box 5.29
Social funds and post Hurricane Mitch reconstruction

In both Honduras and Nicaragua, social funds played a key role in helping communities cope and rebuild after Hurricane Mitch, in October 1998. The Honduran Social Investment Fund (SIF) was decentralized to the most heavily damaged areas in order to work closely with communities and municipalities to assess immediate needs for shelter, water, sanitation systems, road access and bridge rehabilitation.

Special authority and procedures granted to the SIF regional offices enabled SIF emergency response teams to act on location, enhancing their capacity for rapid, effective project placement. Within 100 days, 2,100 projects were executed, with a total value of US $40 million, and another 2,500 projects were identified or appraised with a total value of US$ 57 million.

In Nicaragua too, SIF teams were quickly decentralized, setting up offices in four regions. A 72-person task force of architects and engineers was deployed to the affected areas. There, they worked to settle the homeless, to provide water and sanitation systems, to open rural roads and rehabilitate bridges. The SIF technical team guided local government units in contracting community firms, hiring 200 local architects and engineers to locate sites to settle the homeless, installing water supply and sanitation systems in the settlement camps, and tackling extensive infrastructure rehabilitation. Within three months, about 1,300 projects were executed with a total value of US$ 12 million.

more effectively used with droughts or famine, while their suitability for other crises such as floods and earthquakes remains to be tested.

Market-based instruments of risk management

Insurance is the most widespread existing risk transfer mechanisms offered by private sector companies. Other market-based mechanisms such as catastrophe bonds and weather derivates have emerged more recently and can be classified as alternative risk transfer mechanisms. Microfinance institutions have also provided a range of financial services which offer promise for reducing risks, particularly for poor households.

Insurance

Major economic shocks such as the one experienced during the Asian financial crisis can weaken existing social safety nets in developing countries. Many developing countries have inadequately funded or limited unemployment benefits, pension schemes, or old age and disability benefits.

In the industrialized world, insurance is a standard practice of transferring risk from one entity or individual to a collective. Insurance is also evident in other countries too, but the lack of insurance for catastrophic risks is in sharp contrast to the use of insurance for other risks.

Insured losses caused by major disasters and mishaps in different regions provide a good idea about the extent of insurance coverage. In 2002, 39 per cent of insured disaster losses were in Europe, caused largely by flooding and storms. A further 39 per cent of insured losses were registered in the United States, most being caused by storms. By contrast, only about 4 per cent of insured losses were incurred in Asia, where Swiss Reinsurance registered more than half of the victims of all catastrophes recorded.

Rich countries also transfer their catastrophic risk from the national insurance systems into worldwide risk-sharing pools. These pools are managed by international reinsurance companies and backed by substantial capital resources. In poor countries, much of the catastrophic risk remains to be borne within the country.

In poor countries, the coverage of catastrophic risk insurance is limited by conditions of both demand and supply. On the demand side, the major obstacle is that governments tend to bail out uninsured parties in the aftermath of a disaster for legal and political reasons, while on the supply side the risk pool is often too small to make insurance viable. Premiums for property insurance are most often unaffordable for households.

Catastrophic risk insurance has become expensive even in richer countries because of several very costly disasters. In a number of countries, notably France, Spain and New Zealand, insurance for catastrophic risks is subsidized by public sector-owned insurance companies.

Table 5.4
Insured losses for different continents and regions

Region/Country	Number of catastrophes	Per cent of all catastrophes	Fatalities	Per cent of all fatalities	Insured loss in US$ millions	Per cent of total insured losses
Europe	40	11.6	1,063	4.5	5,221	38.5
Americas	69	20.1	1,388	5.8	6,338	46.8
United States	30	8.7	140	0.6	5,194	38.3
Asia	154	44.8	14,057	59.1	647	4.8
Africa	65	18.9	6,638	27.9	151	1.1
Oceania	4	1.2	75	0.3	66	0.5
Oceans / Space	12	3.5	574	2.4	1,131	8.3
World total	344	100.0	23,795	100.0	13,553	100.0

Source: SwissRe, Sigma, No. 2/2003.

In the United States, the National Flood Insurance Policy is the largest example of public-funded insurance. In 1991, California set up an insurance pool, which was replaced with California Earthquake Authority (CEA) in 1996. Some 70 per cent of the market for earthquake insurance participates in the CEA. Hawaii created a voluntary homeowner's catastrophe fund in 1993. Florida's 1994 catastrophe fund is a reinsurance fund that reimburses insurance companies when disaster-related losses exceed certain levels. <http://www.raanet.org/policyupdate/natdisaster_state.html>

These new trends in disaster insurance show that catastrophic risk insurance offered by the private sector may only be a partial or limited solution for many of the poorest countries of the world. A more comprehensive approach to insurance is required, which combines both public and private sector resources so that risks my be shared by a very large pool of insurers.

The Turkish Catastrophe Insurance Pool set up after the Maramara earthquake of 1999, supported by the government of Turkey, the World Bank and the private sector reinsurance company Milli Re is a very good example of public-private partnership in providing catastrophic risk transfer and financing facility. <http://www1.worldbank.org/finance/assets/images/tcip_release.pdf>

Alternative risk transfer mechanisms: catastrophe bonds and weather derivatives

Conditions for reinsurance of catastrophic risk exposure tightened following the large insurance losses in the United States following Hurricane Andrew in 1992 and the Northridge, California earthquake in 1994. Insurance companies sought to secure their insurance risk in the global capital market, and began to explore the possibilities offered by alternative risk transfer mechanisms to shift catastrophic risks.

Such a strategy relies upon the tremendous potential of capital markets in absorbing risk. Because global capital markets are so vast – publicly-traded stocks and bonds have a total value of more than US$ 50 trillion – they offer a promising means of funding protection for even the largest potential catastrophes.

Several new risk transfer mechanisms were introduced in the early 1990s to manage catastrophic loss exposures. The Bermuda Commodities Exchange introduced futures and options contracts based on the Guy Carpenter Catastrophe Index. The Chicago Board of Trade opened trading in quarterly futures and options contact based on reported catastrophe losses. The Catastrophic Risk Exchange was established in early 1996 as an Internet-based business-to-business exchange for all types of insurance contracts and related risk management products.

Catastrophe bonds (CAT bonds) were first issued in 1996 and have since gained in importance. They are capital market instruments in which investors receive a premium to compensate for the risk they are taking, and their capital in return if no catastrophe occurs. The yield on these instruments varies depending on the nature of disaster and the severity associated with it. If a catastrophe does occur investors lose the entire principal and the funds are transferred to the insured.

Weather derivatives are another risk transfer instrument that is derived from one or more independently measurable weather parameters. Despite the support of global financial markets, these instruments have not been very successful. A general consensus is emerging in favour of governments playing a central role in furnishing coverage for uninsurable risk. However, there is no agreement as to what the precise role of the government should be and to what extent involvement is required.

Microfinance

Microfinance services are targeted at poor households, who are excluded from the formal banking sector. They started in Bangladesh with the Grameen Bank and expanded to a number of countries with different institutional models. The programme component initially consisted of credit, but subsequently came to include savings and insurance as well. Though microfinance is strongly linked to poverty alleviation efforts for more than a decade, its potential for helping households in crisis or disaster situations has been recognized only recently, in particular after the devastating Bangladesh floods in 1998.

Natural disasters hit women particularly hard. Microcredit programmes, targeted largely to women, can be seriously affected by the impact of a disaster. In India, the Fodder Security System for the women of Banaskantha in Gujarat puts people at the centre of its strategy. It moves away from simple relief measures and provides long-term development solutions for strengthening a community's capacity to prepare for the onset of the disaster and mitigating the effects of drought.

Women who have the responsibility for fodder security and for maintaining the family during drought have benefited from the system in several ways. Fodder provides them food security and increases their opportunities for earning income. Reduction in migration has reduced the pressure of their responsibilities as men begin to remain in the village throughout the dry season.

At a more strategic level, women are participating in the public sphere alongside men in the decision-making processes related to the scheme.

Microfinance institutions can provide both financial and institutional support to their client households by assisting them in reducing their vulnerability to disasters. Financially, they help households by giving them opportunities for income-diversification by source and season. Multiple income earning opportunities and building assets through microfinance help poor households to cope with disasters better.

Microfinance institutions can also provide savings or loan products to encourage clients to move to safer areas and to invest in more durable housing. Some microfinance programmes have begun experimenting with insurance products for

"Misery and hard life are written in my life. They have made me old before my time, but I have not lost hope. Then came the drought of 1985. Both my husband and I started going to work on the relief sites—digging earth. There was drought for four successive years and we dug earth for four years —there was no other way. All my hair fell out and I went bald.

But now I have guaranteed work. I am a member of SEWA and our village group leader. I earn 600 to 700 rupees every month. From my year's savings, I have now bought a buffalo, so that gives me extra income. I am the sole breadwinner; my whole family lives on my income. I also assist the other village women to do high-quality embroidery so that they also get regular work and income. Now, all the men in the village also respect me. They call me a sahib and salute me. The sarpanch (village leader) also consults me when there is a crisis and asks me to present the issue to SEWA."

Source: Profile of Bhachiben Bhurabhai, 45, leader of artisans in Vauva village, quoted in Disaster Mitigation Institute information sheet on women and drought.

Box 5.30
Provision of microinsurance by SEWA, India

Women's high level of self-organization at the local level enables partnerships between women's groups and private or public organizations engaged in risk reduction and disaster response. In India, the Self-Employed Women's Association (SEWA), a trade union registered since 1972 to represent low-income women workers in India's vast informal sector, is a case in point. To protect its membership against risks such as unemployment, poverty, natural disasters, and sickness, SEWA offers its members a variety of microinsurance packages.

Under a basic scheme, members can secure insurance against hospitalization to US$ 43, house and asset insurance to US$ 110, and accidental death insurance for US$ 870. The cost of this package, which also offers benefits against natural death and the accidental death of one's husband, is a fixed deposit of US$ 22 and an annual premium of US$ 1.85. More expensive schemes offer additional protection against natural death, hospitalization and loss of house and assets. Over ten years, 2,000 women have received more than US$ 327,400 in compensation.

In the aftermath of the Gujarat earthquake in 2001, SEWA was instrumental in ensuring that relief supplies reached women equitably, as they maintained lists of member households in some of the worst-affected areas. They immediately conducted village-level needs assessments working closely with surviving family members and with the local Disaster Mitigation Institute.

Recognizing women's urgent need for income following the Gujarat earthquake, SEWA not only helped direct and deliver emergency food, clothing, and water but also provided craft kits to women artisans eager to begin work again even while housed in tents. Within two weeks of the earthquake, SEWA's insurance team had surveyed over 2,500 insured members' claims of damage and losses. Working closely with the local associations in the three worst affected districts, the insurance team carefully documented losses, mainly the destruction of houses.

SEWA's extensive social networks and knowledge of informal leaders, living conditions, and women's livelihood concerns makes them valuable partners in risk reduction. It is also well-positioned to assist women directly but to advocate for their full involvement in participatory and community-based reconstruction emphasizing risk reduction.

Source: <http://www.adb.org/>.

disaster response, in some cases turning to the re-insurance market to spread aggregate risks.

Institutionally, micronfinance endeavours help through their physical proximity, regular contacts, and trust-based relationship with clients. A group- or community-based approach that extends through a wide network of branches in remote areas is conducive to the dissemination of disaster-related information and community preparedness. Related services can also assist in preparing essential medicines, storing food and arranging health-related services.

Many microfinance disaster-related services have not been replicated yet. They require sustained efforts through the design of appropriate microfinance products and services. Investment in these products and services will be mutually beneficial to the well-being of client households and to the strength and solvency of microfinance initiatives.

Future challenges and priorities

The discussion suggests several financial services and instruments exist for disaster risk reduction although each has its respective strengths and limitations. None of the services or instruments can be applied in isolation and a combination of services and approaches will be a more feasible strategy for disaster risk reduction.

In all countries there is a now converging trend of public and private sector resources sharing the financial burden of disaster risk reduction. There are additional challenges which merit further attention.

Forging public-private partnerships will produce new financial instruments and increase the size of the risk pool. It will also give a wider choice to households, communities, and businesses for managing their disaster risks. This also encourages the insurance sector to explore how insurance incentives can support disaster risk reduction measures.

UN agencies and development banks can come together to promote many innovative financial instruments and mechanisms in disaster preparedness, mitigation, recovery and reconstruction. This must include continued encouragement for international development banks and development agencies to require risk assessments and management for new infrastructure development projects.

Development of more specific financial tools for risk management aimed at the very poor is necessary. Insurance schemes need to be complemented by other low-cost risk-sharing mechanisms in poorer communities, such as kinship networks, microfinance and public works programmes to increase coping capacities.

Further systematic documentation and research is needed to quantify the benefits of risk reduction and hazard mitigation. The ProVention Consortium addressed this need by launching a study in 2003 aimed at developing methodologies and guidelines for assessing the net benefits of disaster reduction.

Regional policy dialogue should be supported to facilitate the exchange of experience in areas such as governmental strategies for financing catastrophe losses. This could include losses to government-owned assets, obligations to reimburse losses due to natural disasters, and new financial policy alternatives.

A related area which requires greater understanding is the contrasting influences of the potentially detrimental effects of commercial deregulation and economic privitization, and the beneficial effects associated with trade opportunities and economic competitiveness.