

EAP DRM KnowledgeNotes

Disaster Risk Management in East Asia and the Pacific



IMPROVING THE RESILIENCE OF LIVELIHOODS TO NATURAL DISASTERS

By Sandeep Poundrik

INTRODUCTION

Earthquakes, floods, cyclones, and such other hazards each year affect approximately 200 million people. Developing countries absorbed 98 percent of these disasters and accounted for nine out of ten disaster-related deaths in the period 1991–2005. In fact, low and middle income countries suffer more severe and widespread degradation than do wealthy countries, whose insurance market covers highly valued property and where sophisticated tools report absolute economic loss. To make the obvious apparent, the US\$40 million losses caused by Hurricane Andrew in the United States represented 0.3 percent of GDP, while one tsunami in the

Maldives decimated 66 percent of GDP. Natural disasters, in terms of sheer loss, disproportionately impact low and middle income countries.⁷

How Do We Define Risk, Hazard, and Vulnerability?

This note uses the disaster management definitions agreed in the 1979 United Nations Workshop:

Risk—the effect of disaster

Hazard—the external cause, such as potentially damaging natural phenomenon like floods

Vulnerability—the internal cause, the internal factors, which affect susceptibility to harm like the internal strength of a bridge.¹⁰

Experience shows that the poor are the most affected by natural disasters. The reasons for this are manifold and inter-related:

- Dwelling sites more prone to the effects of disasters like floods and hurricanes
- Houses less-well constructed, thus pre-disposed to destruction
- Few assets and savings compounded by lack or paucity of insurance

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- Low education and skill base impeding post disaster livelihood recovery, and limiting alternative employment options
- More likely to suffer from malnutrition and ill health
- Politically marginalized in general, therefore little say in disaster protection policies and expenditures.¹⁸

The East Asia and Pacific region is highly vulnerable to the impacts of natural disasters from earthquakes to floods and droughts. Since 1990 the region has experienced more than US\$473 billion in damage from natural disasters and over 2 billion people have been affected. The World Bank provided approximately US\$1.5 billion for post disaster interventions between 2004 and 2007.

These hazards affect the livelihoods of the vulnerable population, both in terms of assets and income. Households in disaster-prone areas can be ex ante equipped to prepare for the disasters so that they recover quickly afterward. Similarly, steps can be taken ex post to help the vulnerable recover their livelihoods. *This note focuses on ex ante strategies to make livelihoods more resilient to disasters.*

Which Factors Affect the Resilience of the Target Population? Many factors affect the vulnerability of households to exogenous shocks such as natural disasters and should be taken into account while devising programs for livelihood restoration. Issues like gender, age, and disability are increasingly being recognized as important parameters to consider when disaster risk management strategies are designed or implemented.

Population Profile: Factors such as gender, age group, and disability affect the vulnerability of households to a large extent. Older people are generally more affected and are more prone to health risks, isolation from families, lack of mobility, and nutrition losses during disasters. Children, and particularly poor children, bear the brunt of disasters. Nutritional deficiencies, lack of strength, lack of education and knowledge to cope with disasters, and abuse and exploitation make them particularly vulnerable. Persons with disability face lack of services and information, especially in countries with poor infrastructure. Natural disasters are also disproportionately deadly for women. In the Southeast Asian Tsunami of 2004, three to four times more women than

men died.⁵ These groups also find it much more difficult to recover their livelihoods after disasters.

Rural vs. Urban: Urban households may face more health risks due to the denser populace, lower social bonding and support systems leading to more individualistic behavior, and low disposable assets, especially in slums. Rural households face difficulties in communications, lack of reach of the government and financial institutions, and fewer opportunities to diversify economic activities. Livelihood planning needs to be modified accordingly.

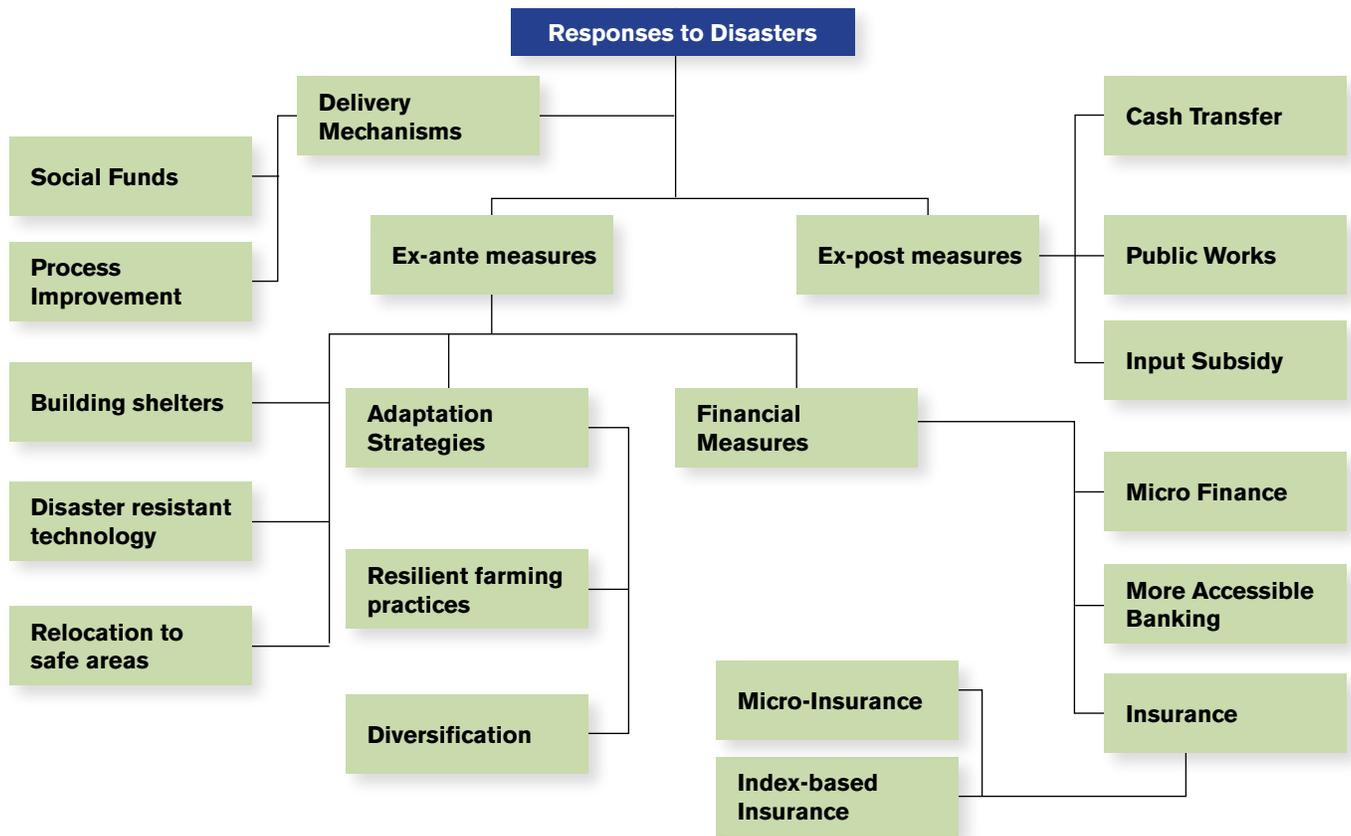
Spatial: Populations may be displaced or may remain in their homes after a disaster depending on the extent of damage to homes or severity of water levels, etc. Restoration of livelihoods is dependent on the duration of displacement and what can be done in the displaced locations. It is more difficult for the affected people to sustain and recover their livelihoods, if they are displaced and they need more support in such situations.

What can be done to prepare households in advance? Improving emergency preparedness for disasters includes many things like building shelters, relocating people to safer areas, using disaster-resistant construction technologies, retrofitting buildings, etc. Ex ante activities and, in particular, those related to sustaining livelihoods are the focus of this report. See figure 1 for more details.

Although poor people have limited incomes, they have assets and capabilities that can be used to reduce their vulnerability to disasters. These assets can be applied in variety of ways to manage risks. Ex ante risk management includes:

- Prevention or risk reduction: actions to reduce the probability of high risk events (e.g., relocation from a disaster prone area)
- Risk exposure and sensitivity reduction: actions to reduce the exposure of households to given risks or increase adaptation strategies (e.g., asset and livelihood diversification)
- Risk compensation or risk mitigation: ex ante actions to provide compensation in case of a risk-generated loss or financial measures (e.g., formal insurance, holding of savings, social networks).¹⁶

Figure 1: Types of Responses to Disasters and Delivery Mechanisms



Why Ex Ante Measures?

While relief operations after disasters have been the norm, focus is shifting to ex-ante strategies to prepare households for impending disasters, especially in disaster-prone areas. A DFID study contends that \$1 spent on mitigation results in savings of \$2–\$4 in disaster impacts.¹ Even considering these estimates to be approximate, ex ante strategies can lessen the impact of disasters and prepare communities to cope better.

Disaster responses are likely to be more effective if they are based on programs and mechanisms in place before a crisis occurs. During a crisis, constraints multiply due to lack of fiscal resources and instruments, information problems, and weak institutional capacity. The disaster impact on households was found to be significantly mitigated by such actions as the accumulation of human capital.¹²

Bangladesh and Myanmar: Why Does Disaster Preparedness Matter?

How are the measures being proposed here different from normal development practice? Shouldn't the concentration be on normal development programs for the poor without bothering with this disaster preparedness angle? In other words, wouldn't development leading to economic prosperity automatically lead to better disaster preparedness? Not necessarily.

First, recent experiences show that even people above the poverty line may be more vulnerable to disasters for lack of diversification and inability to cope with difficult situations. Second, life and asset losses in countries with similar development indicators diverge widely depending on their disaster preparedness.

In Bangladesh, ex ante measures to cope with disasters, like building cyclone shelters, had positive outcomes. In 2009 Cyclone Aila caused only about 200 casualties, because about 600,000 people were evacuated to cyclone shelters. Conversely, Cyclone Nargis caused about 138,000 fatalities in Myanmar.

Poverty is, thus, not the only or indeed necessarily the primary factor contributing to vulnerability.¹⁴

ADAPTATION STRATEGIES

Climate change is expected to increase the vulnerability and risks of the poor in developing countries. Poor households are likely to be more at risk due to increased weather-related events and poor urban development practices that could lead to increased flood impacts.⁵ Households may find their traditional asset and income base eroded and more at risk from disasters. By adapting to increasing and regular natural disasters like floods and droughts, they can spread their risks and reduce losses.

While poor communities are increasingly becoming aware of these changes and trying to adapt, they are constrained by a lack of resources, knowledge, and skills. The respective vulnerability and adaptive capacity are influenced largely by factors like ability of households to diversify their livelihoods or migrate, flow of information and goods, access to social capital, physical infrastructure, and natural resource conditions.¹⁴ Adaptation includes many channels like changing natural resource management, raising awareness, technology change, and early warning systems. Of particular import for the poor to make their livelihoods more resilient to disasters, nevertheless, are two main strategies.

Resilient Crops and Farming Practices

Farmers can change agriculture practices to make them more resilient to frequent droughts and floods. This can include measures like using more resilient seeds, crop diversification, water and soil conservation, or similar improved farming practices.

Advantages: Adopting flood- or drought-resilient crops will reduce the risk and ensure income even in the aftermath of disasters.

Requirements: Poor households may need support in terms of knowledge and technology. They also need financial resources to implement resilient technologies, as well as equal access to institutions and infrastructure to carry out these activities.

What needs to be done? Government agencies and social funds/community-driven operations can support the communities to implement effective diversification and adaptation strategies. This may include information and knowledge sharing, technology transfer, and mak-

ing credit available, for example. An important thing to consider is that all the adaptation strategies are very site and context specific, precluding generic solutions. Local communities with the support of development organizations and other agencies can devise optimal solutions for the specific area.

CASE STUDY

Global Initiatives to Improve Adaptive Capacities

In Senegal and Burkina Faso, locals have improved their adaptive capacity by using traditional pruning and fertilizing techniques to double tree densities in semi-arid areas. Similar practices in Madagascar and Zimbabwe have helped in holding soils together and reversing desertification. In other African countries, measures for adaptation to droughts, heat waves, and sea-level rise have been taken such as drought-resistant varieties of crops, reduction in herd and farm sizes, and crop and animal diversification (Nigeria, Mali, and Sudan).⁵

In Maharashtra, India, farmers are coping with increased exposure to drought by investing in watershed development and small-scale water-harvesting facilities to collect and conserve rainwater. And, in Bangladesh, women farmers are building “floating gardens,” vegetable gardens grown on hyacinth rafts in flood-prone areas.¹⁵

Diversification of Livelihoods to Non-Farm Sectors

Diversification of income sources away from agriculture to other non-farm activities can reduce the impact of natural disasters. It can be in the form of establishment of a business, participating in the local labor market, or securing a job in cities or abroad.

Advantages: Income diversification, particularly the development of non-farm sources of income, can put households in a much better position to cope with disasters. Diversification provides access to secure income streams that can be used to avoid debt, maintain consumption, and retain or rebuild assets.¹⁴

Requirements: Support in terms of information sharing, capacity building, market access, training for jobs, equitable access to social capital, and financial and in-

infrastructure resources is required for the poor to diversify their livelihood activities.

What needs to be done? Heltberg et al.¹⁶ proposed a multi-sectoral approach to support diversification among communities and protect their livelihood sources. This includes access to skills/knowledge, policies to stabilize consumption by market interventions, improved disaster preparedness, and other measures. More immediate action can be taken by supporting local government agencies and development organizations, which can then educate and support communities for adaptation and diversification in vulnerable areas.

Migration and Remittances

Another very important coping mechanism for households in case of disasters is remittances. Migrant remittance flows increase in the aftermath of natural disasters or other difficult times like economic crisis and act as safety nets for households. In a study of Bangladesh, Burkina Faso, Ethiopia and Ghana, it was found that households receiving remittances had higher post disaster consumption, concrete instead of mud houses, and better communication access. They also relied on remittances rather than selling productive assets.¹¹

CASE STUDY

India: Diamond Cutting and Polishing

A case study of farmers in the drought-prone areas in Gujarat and Rajasthan, India found that the key strategies adopted to cope with drought were an intensified focus on animal husbandry, a further dependence on wage labor, increased migration, and the development of non-agricultural livelihood sources. A good example of a non-farm livelihood source is the diamond cutting and polishing industry, where the average daily earning (Rs.300) is four times the normal manual labor rate.

India has approximately 800,000 workers in the industry and earns Rs.100 billion per year in foreign exchange through diamond processing.¹⁴ While the development of the diamond cutting and polishing industries is attributed to many factors, it presents the case for the potential of labor intensive activities as alternative income sources for the poor.

FINANCIAL RISK MITIGATION STRATEGIES

Another mechanism to strengthen the resilience of livelihoods is to ensure the flow of income, replacement of assets, and availability of cash in the face of disasters. A few key ways to mitigate financial risk are discussed below.

Micro Finance Institutions

The emergence of micro finance institutions (MFI) has made an impact on the availability of credit in many developing countries. One of the main requirements of poor households during and after disasters is credit for sustaining them until their normal incomes are restored. Informal institutions like relatives or local moneylenders are unreliable and often very expensive; formal institutions (banks) are difficult for the poor to approach. In contrast, MFIs act to supply the required funds in times of need. Though the number of borrowers varies from 30 million served by 675 organizations as per the Microfinance Information Exchange (MIX-2004) to 152 million borrowers served by 3,000 institutions as per CGAP's estimates for 2004, the numbers are substantial. The disadvantage of MFIs is the liquidity crunch they face when the number of members needing credit increases exponentially due to disasters.

Advantages: Micro finance institutions bridge the gap between formal and informal institutions to some extent by flexibility, approachability, and moderate interest rates. MFIs and self-help groups can be of great help to households when they need funds during and after disaster. Informal institutions like friends and relatives may themselves be victims of disasters and formal banking facilities may not be available in such situations.

Requirements: MFIs with adequate coverage, a focus on the poor, lending experience, database and financial management systems. Even sound MFIs will face liquidity crunches during a disaster, as most of their clients will need money. For example, in 1998, flooding in Bangladesh caused extensive damage and loss among members of savings and credit programs. The loan recovery rate in Bangladesh fell to 43 percent from 92 percent, and the program itself was in great difficulty.⁵ Funding sources for emergency lending should be available to support the MFIs in times of disasters.

What needs to be done?

- i. MFIs will face liquidity crunches after disasters due to very high demand for money. Governments and agencies can help increase their liquidity during times of need by making additional funds available. Pre-qualification of NGOs can be done using reputed credit agencies to avoid delays during disasters. Agreements can be signed for a fixed period with pre-determined credit limits, procedures for fund use, and repayment requirements.
- ii. Money can be put in emergency reserves in areas with recurrent disasters (e.g., monsoon floods) by the MFIs or by savings and credit groups. There should be clear guidelines on ownership and operation of these emergency funds.
- iii. MFIs can buy insurance or form insurance funds. In India, a federation of self-help groups encouraged by the micro finance institute PRADAN operates its own disaster insurance fund linked to a state insurance scheme.
- iv. Clients of MFIs can be asked to prepare contingency plans to deal with disasters, as has been carried out successfully in Burkina Faso.
- v. MFIs can be helped to increase their product range with a focus on disaster-specific credit in vulnerable areas. Help can be given to increase the coverage with better database management, awareness generation, and ICT support.

CASE STUDIES

Latin America: Emergency Liquidity Facility

The Emergency Liquidity Fund (ELF) identifies, pre-selects, and lends to well-managed, efficient micro finance institutions (MFI). Primarily supported by the Swiss State Secretariat for Corporate Affairs and the Inter-American Development Bank, the US\$10 million fund is managed by the financial consulting firm Omtrix and grouped with other funds to spread costs.

In times of disaster, EFI is reputed to be fast disbursing—seven to ten days as compared to a six-month evaluation process for the 2004 Asian Tsunami. Furthermore, loans can be taken for six-month terms at lo-

cal pre-hazard interest rates and extended to two years with increasing interest rates. This facilitates a cash-ready lending instrument for clients in times of emergency. For example, the Salvadoran MFI *Apoyo Integral* needed funds due to Hurricane Stan and the eruption of the Ilamatepec Volcano; it was given US\$750,000 as an emergency loan. *Apoyo Integral* was then able to forgive interest, suspend fees, and extend payment terms according to client needs.¹ By April 2007, the Emergency Liquidity Fund had pre-qualified 47 MFIs in 13 Latin American and Caribbean countries.

Mongolia: Micro Finance Development Fund

The purpose of the Micro Finance Development Fund (MFDF) is to help alleviate rural poverty in Mongolia. The MFDF supports micro finance institutions as long as their funds are channeled to poor households in rural areas. It also provides linkages with other programs like index-based livestock insurance.⁵

Insurance

Insurance can be an effective mechanism to protect the poor against hazards. While the formal insurance market in developed countries is advanced, the same cannot be said of developing countries. Currently only 1 percent of households in low and middle income countries have formal insurance coverage against disaster risks, compared with 30 percent in high income countries.⁵ Two types of insurance are discussed: micro insurance and index-based insurance.

Micro Insurance

Micro insurance modifies formal insurance to meet the needs of the poor.. It provides low income households with easy and accessible life and health insurance, and can also be extended to cover livestock, assets, etc. In case of loss of life, micro insurance makes speedy payments, sometimes in installments. In many instances, it uses local self-help groups to verify claims and make initial payments. A network of community organizations is used to publicize the scheme, verify claims, and make payments leading to reduced transaction time and costs.

A Tale of Two Towns: Disaster Reduction Bypassing Growth and Development

In 2005, Hurricane Katrina hit the Gulf Coast of United States, resulting in the Mississippi River breaching levees surrounding the City of New Orleans and taking an estimated 1,570 lives. The most serious damage was felt by the city's poor who lived in vulnerable areas, retained no or low insurance, and depended on the government to be evacuated. This kind of loss in such a wealthy nation with advanced communications and technology was an eye-opener.

In Maharashtra, India, the Village of Darewadi deflected recurrent disaster with local initiative. Until the 1990s, the villagers struggled perpetually with drought and its limiting effects on crop cultivation (3–4 months a year). In the dry season, water was brought by trucks for daily use. Then all changed. With the support of local NGOs and German government funding, the villagers adopted a series of water and soil conservation measures. Now agriculture is possible 9–10 months a year with no trucks required in summer.⁸

Admittedly, the two places cannot be more different. Nonetheless, the long-standing notion of development and higher living standards to offset the impact of a disaster is brought into question. The resilience of low income places to disasters poignantly offsets their wealthy counterparts.

Advantages: Micro insurance makes insurance benefits available to the poor by reducing red tape, decreasing insurance premiums, and improving access and speedy payments in the case of death or disability. This helps households cope with disasters when they face loss in terms of life, health, or assets.

Requirements: Coordination and linkages between insurance companies, development organizations, and government agencies may be required, as social capital generated by development organizations can be used to reduce transaction costs. While insurance companies can use their professional expertise to run the programs, development organizations are better equipped to reach the poor and convince them of the benefits of the schemes. Among poor families, the uptake of insurance on a full premium basis may be low initially. Funding from donor agencies or governments to at least partially cover the premium is likely to increase the coverage. Hence, the role of government is both to be a watchdog

ensuring that the poor are treated equitably and to cover costs in the initial years.

What needs to be done? Coverage of poor families in vulnerable areas can be increased by involving government agencies, insurance companies, development organizations, and donor agencies. Focus on awareness generation for more coverage and speedy payment of claims is required. The scheme should have well-defined eligibility requirements as well as premium and benefit schedules. The services of existing development organizations and self-help groups can be utilized for awareness generation, enrollment in insurance schemes, and verification of claims, among others. The payment procedure should be simple and fast. Payments can be made in installments with two to three stages of verification so that immediate funds are available when the need arises.

CASE STUDIES

India, The Philippines, and Turkey: Life and Catastrophic Insurance Targeting the Poor and Vulnerable

Indira Jeevitha Bima Pathakam (AABY) in the State of Andhra Pradesh in India is a micro insurance program for rural landless agriculture laborers, and household members age 18–69 years. The State and federal government each pay a percentage of the premium (Indian Rs.200 per member, about US\$4.40) to a public sector insurance company, the Life Insurance Corporation. The insurance payments are Rs.30,000 (US\$640) for natural death, Rs.75,000 (US\$1,600) for accidental death or total permanent disability, and Rs.37,500 (US\$800) for partial permanent disability. To encourage higher education, the insured family may receive a scholarship of Rs.300 per quarter for two children studying in 9th to 12th standard. The program is being implemented with the help of women federations and self-help groups, and has covered 3.8 million landless laborers in Andhra Pradesh. Further details and reports of the scheme are available at the program website: <http://www.aaby.ap.gov.in/About-English.aspx>.

In the Philippines, Pioneer Life Inc. provides life insurance to the families of migrant workers with a grant from the International Labor Organization (ILO). Called OFW Family Savers and Welfare Club, it sup-

ports financial literacy, micro insurance, and savings products.¹

The Turkish Catastrophe Insurance Pool (TCIP) was established in the aftermath of 1999 Marmara Earthquake. The government mandate of compulsory catastrophe insurance has resulted in TCIP selling approximately 3 million earthquake insurance policies to homeowners annually at a market-based rate.

Index-Based Insurance

Index-based weather insurance has been successfully implemented in many cases for insuring crops against drought. Now it is being tried for insurance of other assets like livestock. Insurance is based on a publicly observable index such as rainfall or the mortality rate of livestock in a region, and households are compensated on the basis of a predetermined threshold. If the rainfall is below or the mortality rate is above the threshold, households are given payments without requirements like individual verification, which requires lengthy documentation, etc.

Advantages: Transaction costs are lower due to the non-requirement of individual verification, which also means lower premiums for the beneficiaries. There is no incentive for moral hazard, as the payoffs are not linked to the yield of individual farms or the mortality of a particular household's livestock. In addition, an index-based insurance system in a drought-prone area encourages households to opt for riskier but higher yield crops, because the risk is largely covered. This in turn increases productivity. The potential for investment is further complemented by the non-requirement of emergency reserves for crop damage.

Requirements: A reliable index-based measurement system and an efficient database and information management systems. A simple and well-publicized procedure for payments in case of a disaster is also necessary. An absence of efficient database management and clear-cut procedures may lead to delayed payments, creating mistrust among farmers and preventing them from receiving the funding when most needed. If payments are not timely, the farmers or herders will not pay the premiums for future coverage.

What needs to be done? Introduce index-based insurance in countries or areas where it is not available.

Where it is available, take steps to increase coverage, improve database management, and accelerate the reimbursement of claims. Governments, development organizations, and insurance agencies can play an active role in this program. Insurance directly provided to households comes with a wide asymmetry of knowledge and resources.¹⁷ Insurance companies will also face very high transaction costs. Community links to development organizations can help to overcome these difficulties as well as to ensure a proper feedback mechanism for the community.

CASE STUDIES

Mongolia and India: Index-Based Livestock and Weather-Based Crop Insurance

Since 2005, Mongolia has been running an index-based livestock pilot in three provinces, with the government and insurance industry sharing the risk with herders with a US\$7.75 million credit from the World Bank. The project combines social insurance, self-insurance, and market-based insurance. Herders retain small losses, which do not affect the viability of their business (self-insurance); private insurance companies take up the larger losses (market-based insurance); and the government takes the risk of catastrophic losses as the final layer (social insurance). The herders pay a market premium rate for the insurance, and the insurance index is linked to the historical livestock mortality data in the region. Insurance companies pay out to the herders whenever the mortality rate in the region exceeds a specific threshold. The payments are not linked to the individual herder's losses but to the overall mortality rate in the region. This system avoids or at least reduces moral hazard and adverse selection, as individual losses are self-insured and only when the region suffers as a whole do the herders receive compensation from the insurance companies.⁵

In India, the development organization BASIS has implemented a successful weather-based crop insurance product with ICICI Lombard. BASIS used its existing relationship with farmers to promote insurance products; it also developed a comprehensive database and information management system that streamlined database management, administration, and information verification. It also used the marketing strategy of be-

ginning with a local leader, community meetings, and then individual follow-ups to convince farmers. The organization acts as a link between the farmers and insurance company and distributes insurance for the insurance company.¹ As per the BASIX website, 5,199 claims of Indian Rupees 4.36 million had been settled as of December 31, 2009.

More Accessible Banking

For many families in the Maldives, the 2004 Asian Tsunami meant a loss of the lifetime savings kept in their homes (BBC, 2008). This could have been avoided if banking facilities were available in the area, yet making banking services available to the poor in vulnerable and remote areas is a challenge. For this lack of service, the poor are not able to secure their savings, which discourages savings in general. Even if some savings are placed with relatives or friends, they may not be available during disasters as the friends/relatives may also be affected.

While poor households can be encouraged to save through different means, here the discussion focuses on the solution to one of many problems that the poor face: where to keep their savings. Some of the problems of providing banking in remote and rural areas are non-viability of branches, safety concerns, and communication problems. One way of solving this problem is to use technology like mobile phone banking, where customers use their mobile phones to make transactions.

Advantages: Mobile phone banking would not only enable the poor to access funds during an emergency but will also encourage savings by providing a safe option. Transforming the saving habits would equate to the poor having emergency reserves to cope up with disasters. This branchless banking also encourages competition among banks and increases innovation. Largely untapped in developing countries, this sector could provide a large customer base for commercial banks.

Requirements: Coverage of mobile phones in rural areas is already quite good and increasing very fast. For example, a developing country like India, with a population of about 1.2 billion, had a telephone subscriber base of 638.05 million in April 2010, of which 601.22 million are wireless phones, as per the May 2010 release of the Telecom Regulatory Authority of India (TRAI).

The only requirements are technology for mobile banking or similar systems and a regulatory framework to support branchless banking.

What needs to be done? Banks can be supported for launching mobile or branchless banking facilities. While more funding is needed to directly support the testing of new models, indirect support in the form of sharing knowledge and technical assistance could be launched. Development organizations can raise awareness and act as agents for the banks in remote and non-viable areas.

CASE STUDY

The Philippines: Smart Money and Globe G-Cash

Smart Money and Globe G-Cash in the Philippines are some of the early successes in this sector. Smart Money was launched in 2000 by SMART communications. This product has undergone many iterations but essentially it gives the consumer the facility to deposit, withdraw, and transfer money as well as a few other services from their cash account using a mobile phone without having to visit the SMART office or bank. The consumer also has an option to take the associated debit card. All fees are transaction based and an annual fee is charged for the debit card. The product is run by SMART jointly with Banco De Oro, a leading bank of the Philippines. The role of SMART is that of a secure transport system for SMS messages; all banking is transacted by Banco de Oro. SMART money transactions total about US\$100 million per month now.

Another example is G-Cash offered by Globe in the Philippines. The services are similar though a different approach. Globe runs the product on its own and is thus responsible for all financial transactions. G-Cash is said to have 1 million customers.⁹

Similar examples are M-PESA in Kenya and the World Bank-supported US\$7.7 million mobile phone banking project in the Maldives. They make banking services accessible in remote areas using mobile phones.¹

DELIVERY MECHANISMS

How do we implement the measures discussed above for livelihood resilience or ex post measures in case of

disasters? These mechanisms become a key issue for timely and efficient delivery of services. If they are not effective, the best-designed programs may be for naught. This section discusses one option for the delivery of services in detail, as well as steps to make the process efficient and effective.

Social Funds/Community-Driven Development Operations

Social funds are typically managed by local NGOs, government agencies, autonomous bodies, or community groups and are normally established to intervene in the areas of livelihoods, education, health, etc. Their flexibility and simplified procedures are well suited to the disaster context. From the point of view of disaster preparedness, social funds can be very effective tools of pre-disaster preparedness activities like information dissemination, training, community organization, and livelihood diversification, as well as a delivery mechanism for post disaster operations. The combination of social funds and community-driven development operations are the main instruments by which the World Bank provides assistance in developing countries. In fact, US\$14 billion was channeled through social funds over an eight-year period (2000–2007). In an evaluation of its disaster management projects, the World Bank found social funds to be the most flexible and innovative instruments during disasters, in addition to making a significant contribution towards reducing disaster risk.

Advantages: The operational autonomy, simple procedures, and implementation capacity of social funds create a fast-disbursing mechanism when disasters strike. Social fund teams have the capacity to respond rapidly because they not only live in the area and know the local conditions, but also have contacts within the local community and among government agencies. Social funds can be used to channel funds from federal governments or donor agencies. Lastly, the community-based disaster risk management approach establishes long-standing relationships within and among the community, superseding the top-down approaches of the past.

Requirements: Social funds should be given sufficient operational autonomy with simple procedures

and delegated powers. Rigid work processes and government consent run counter to their basic premise of streamlined efficiency. Capacity building of staff is also necessary to ensure quick response in an emergency. Programs should be run on the principles of community empowerment, which links multi-sectoral poverty reduction and income improvement with disaster management. Disaster management should be made an integral component in all activities/programs run by the fund in order to situate the fund and the community in a ready response in case of emergency.

What needs to be done? Social funds established by national governments or donor agencies should be used to cope with disasters employing the community-driven risk management approach. The capacity of social funds needs to be suitably enhanced to respond to disasters by integrating training, simple and flexible procedures, and disaster preparation and response components in all programs. Social funds can also provide linkages to micro finance and micro insurance programs by acting as facilitators and coordinators.

Social Safety Nets

Government-run social safety net programs are instruments for transferring cash or in-kind benefits to beneficiaries. In times of disasters, they can be used to transfer benefits to people who are not normally covered. In addition to their role as a transferring mechanism, they can also act as insurance mechanisms, preventing low consumption and stabilizing asset bases. According to Alderman and Haque²¹ certain conditions need to be fulfilled if Social Safety Net programs are to act as insurance mechanisms. First, they should have counter-cyclical budgets so that they can scale up their operations in times of need and scale back subsequently. Many low income countries do not have the resources to afford public transfers to a significant percentage of their population. They can maintain a core social protection program that is able to expand and respond in times of crisis. Second, they should be able to target transitory needs rather than permanent poverty. Although publicly supported safety nets do not automatically serve an insurance function, their presence in normal years can act as a scaffold to scale up operations in event of excess need. Third, they should have a flexible implementation strategy.²¹

CASE STUDIES

Tanzania, Pakistan, and Madagascar: Social Action, Poverty Alleviation, and Community Development Funds

Tanzania Social Action Fund (TASAF) was established in 2000 by the Government of Tanzania in order to reduce poverty and improve livelihoods. A community-driven development program, TASAF-I had three components: Small-Scale Social and Economic Infrastructure, Social Assistance to Vulnerable Groups, and Capacity Building of Village Councils and Community Committees. The present program, TASAF-II, has two main components: National Village Fund (NVF) and Capacity Enhancement (CE). The NVF targets poor communities for social and market services, food insecure households for livelihood improvement, and vulnerable individuals (orphans, the disabled, the elderly) for improved access to increase incomes. The CE component focuses on the capacity building of local governments and communities. Tanzania suffered around 65 natural disasters between 1980 and 2008, including 26 epidemics, 24 floods, and 6 droughts. Of those affected by disasters, droughts accounted for about 90 percent. The Government of Tanzania with the World Bank has launched a US\$220 million project, of which US\$30 million is allocated to a social protection component through TASAF-II for 42 food insecure local government authorities and islands. The component covers public works programs for the able bodied and community-based conditional cash transfers, livelihood restoration, and income-generating activities for the vulnerable. Communities request and implement subprojects. By end March 2010, the number of beneficiaries covered under public works programs in 172 subprojects was 43,068. A good practice, social funds can be used as a vehicle for rolling out livelihood restoration activities in the aftermath of disasters.⁴

Pakistan Poverty Alleviation Fund (PPAF) was able to respond quickly to the earthquake in 2005. PPAF worked with its partner organizations and after the initial reallocation of US\$5 million, another US\$100 million was given to PPAF by the World Bank to expand its activities in infrastructure, livelihood restoration, and training.⁵

Madagascar Community Development Fund (CDF) was supplemented with additional social protection compo-

nents during the cyclones of 2004. Its procedures were simplified and modified in order to respond to emergencies vis-à-vis allowing higher advances, contracting out services to experienced NGOs, and streamlining procurement rules.⁵

What Can Be Done to Make the Ex Ante Response Quick and Efficient: Steps to Improve Delivery Mechanisms

Rescue and relief operations are launched by government and non-government agencies post disaster, and include immediate relief works as well as rehabilitation and reconstruction. After the initial response to fulfill humanitarian needs like evacuation, food distribution, health camps, and camps for the displaced, the focus shifts to reconstruction and livelihood recovery. A detailed knowledge note on post earthquake measures is already available in this series. The focus here is on a broad overview of the pre-emptive steps that governments can take to put the infrastructure and processes in place and ensure quick response when an emergency actually occurs.

Ethiopia: Livelihoods Integration Unit

The Government of Ethiopia established the Livelihoods Integration Unit (LIU) in 2006 with the objective of moving the Ethiopian early warning system from an indicator- to a systems-based approach. The LIU's working methodology was the Household Economy Approach, which applies the core components of disaster risk reduction—risk, hazard, vulnerability, and capacity—in the context of livelihood security. Operationally, the LIU analysis system has three basic components: Livelihoods Baselines, Hazard Analysis, and Outcome (or Risk) Analysis. The Outcome Analysis is conducted using the tool Livelihoods Impact Assessment Spreadsheets (LIAS), with the priorities of *predict, prevent, and prepare*.¹⁰

Eligibility requirements and preparation of beneficiary lists: Clear-cut guidelines on eligibility for different types of disasters prevent controversies and stave off future discontent. The guidelines should state the income limits, definition of households, and special criterion for the disabled, women-headed households, or other vulnerable groups (the elderly, children, HIV/AIDS). Eligibility requirements should be simple and

easy to verify. Preparation of beneficiary lists after disasters is time-consuming and difficult for reasons of communication and external pressures. It is better to prepare lists of beneficiaries in each village/town in advance, and update them at fixed intervals of approximately six months or a year. Though these lists cannot be prepared for high severity–low frequency disasters (major earthquakes), they are very useful for low severity–high frequency disasters (floods and hurricanes). The pre-approved beneficiary lists may also act as a screening mechanism to finalize lists after disasters.

The lists should be clearly demarcated for small geographical units in order to facilitate precise targeting in the event of disasters. Involvement of local public representatives in the preparation of the lists will make the process more transparent and also reduce the burden on public officials. These lists can be prepared and published at regular intervals so that relief operations can be launched immediately after disasters.

Sanctioning authorities: It should be clearly prescribed who is competent to sanction relief operations in case of disaster. This can be required for sanctioning cash transfers, starting public works, or inputting subsidies. A matrix of sanctioning authorities with financial limits should be prepared with well-defined powers and responsibilities.

Amount and duration: The amount and duration of cash transfers and input subsidies needs to be prescribed and published for public information. The amount can be calculated on the basis of food and other requirements of a family to sustain itself without any additional source of income. The amount and duration can also vary for different types of disasters. These norms should be widely circulated so that people know what to expect in case of disasters.

Delivery process: Delivery of payments in a transparent and quick manner is very important. The availability of cash in remote areas in case of disasters can be a problem. Hence, arrangements with banks have to be made in advance. Giving checks may be easier but may not solve the problem of cash requirements and may delay the actual realization of benefits to the affected families. Distribution of goods like grains presents further difficulties and requires elaborate arrangements

India: Right to Information Act and Jankari Call Center

The Government of India passed the *Right to Information Act* in 2005 to promote transparency in the workings of public authorities, whereby the general public can seek information contained in government records by filing an application and paying a small fee (except information related to national security, etc.). All government offices have designated Information Officers, who are required to provide responses in a prescribed period or face penal consequences. And, an elaborate system of appeals and Information Commissioners was instituted to resolve disputes.

The State of Bihar used technology innovatively to reach people living in rural and remote areas, establishing the call center *Jankari*. When people call, the request for information is converted to an application and transferred to the relevant Information Officer. This service was used extensively in the aftermath of the 2008 Bihar floods to ascertain the actual materials distributed in relief. A good practice, legal provisions can be used to make the administration of disaster-related works more transparent and responsive.²⁰

with such transportation agencies as railways, storage facilities, and local transport. Storage facilities in remote areas should be developed for emergencies.

Identification of projects: Projects for public works programs, especially in case of disasters like droughts, can be identified and prepared in advance. In the absence of these plans, it will take time to identify projects, prepare technical estimates, get sanctions post disaster, and delay public works programs.

Materials banks and procurement: Procurement agreements or rate fixation of input and equipment also can be carried out annually (e.g., before the flood season) to facilitate the speedy delivery of benefits in case of disasters. Another option may be to establish material banks or food storage depots in vulnerable areas, since the logistics of transporting food and materials post disaster can be difficult.

Budget procedures: Financial procedures to make funds available in context of disasters are often cumbersome and delay the ex post operations for relief and rescue. It is crucial to design a new or amend existing financial procedures to meet post disaster needs with fast-disbursing funds.

Measures to ensure transparency and proper feedback mechanisms: Relief and reconstruction work means a wide transaction of funds. It is important to put in place mechanisms to minimize chances of leakages and favoritism. Some basic steps include:

- a. Involve local public representatives, community leaders, and non-government organizations in the screening of beneficiaries and distribution of relief materials; have the respective representatives meet regularly throughout the year.
- b. Make provisions to publish detailed information about the distributed materials and money as frequently as possible.
- c. Make the distribution system simple, and publish the norms and procedure for public information.
- d. Make provisions for a public grievance communication and response center with published phone numbers to receive all complaints; an efficient system to enquire into complaints that seem prima facie genuine and to take action on the reports is necessary.

CONCLUSIONS

With the change in global climate, the severity and frequency of natural disasters is clearly increasing. Experience of recent disasters and work done in this field has shown that ex ante risk reduction programs offer higher returns for the investment in terms of a reduction in the loss of lives as well as assets as compared to ex post programs. While estimates of the ratio of money spent on disaster preparedness to benefits in terms of lower disaster impacts vary from 1:2 to 1:6, it is generally accepted that ex ante measures produce better returns to investment in terms of money and lives saved.

The notion that ex ante measures are part of normal development initiatives and do not need special attention has been negated by disaster preparedness work done in developing countries like Bangladesh and the consequent positive results achieved compared to other more developed countries. For example, a remote and poor village of India applied local conservation initiatives to largely overcome recurrent drought while New Orleans, Louisiana was decimated by Hurricane Katrina, despite the tools available to a highly sophisticated society. The

thousands of lives saved in Bangladesh during Cyclone Aila due to the constructed cyclone shelters sharply contrasts with the loss of an estimated 138,000 lives in Myanmar due to Cyclone Nargis. These examples highlight the importance of ex ante measures for disaster preparedness.

In addition, it is not only the very poor communities but also other middle income households who lose livelihoods due to disasters in the absence of coping mechanisms. More and more evidence supports the contention that middle income families may sometimes be even worse off; they have no alternative safety net and all government-driven relief measures are naturally focused on the very poor. Hence, appropriate targeting mechanisms are of the utmost importance and community involvement may be a channel to identify all vulnerable groups and cover them in the programs.

While ex ante measures are important, delivery mechanisms to implement these programs are equally important, if not more. The best designed programs may not achieve significant results if the delivery mechanisms underperform.

Various ex ante measures and steps to improve the delivery mechanisms discussed in this paper may be a way forward to make communities better prepared to cope with natural disasters and to sustain and recover livelihoods quickly. ■

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