Executive Summary

The impact of natural disasters on economic well-being and human suffering has increased alarmingly. In the past year alone, the earthquake and tsunami in the Indian Ocean killed an estimated 220,000 people and left 1.5 million people homeless, catastrophic flooding and mudslides in Guatemala killed hundreds of people, and a massive earthquake in Kashmir killed tens of thousands more in Pakistan and India.

The death tolls are staggering, and the costs to the human and economic development of the affected countries are huge and rising. Natural disasters are becoming more costly: in constant dollars, disaster costs between 1990 and 1999 were more than 15 times higher ($652 billion in material losses) than they were between 1950 and 1959 ($38 billion at 1998 values). The human cost is also high: over the 1984–2003 period, more than 4.1 billion people were affected by natural disasters. The number affected has grown, from 1.6 billion in the first half of that period (1984–93) to almost 2.6 billion in the second half (1994-2003), and has continued to increase.

Although disasters caused by natural events occur throughout the world, losses to disaster in developing countries are generally much greater than in developed countries in terms of percentage of gross domestic product (GDP) or government revenues. The disproportionate effect on developing countries has many explanations. Lack of development itself contributes to disaster impacts, both because the quality of construction often is low and building codes, land registration processes, and other regulatory mechanisms are lacking, as well as because numerous other development priorities displace attention from the risks presented by natural events.

Most natural disasters are *foreseeable* to the extent that it is possible to predict generally where an event is likely to occur at some time in the near future (but not precisely when or its magnitude). Small island states in the Caribbean and states along the coast of the Gulf of Mexico will undoubtedly be repeatedly hit by hurricanes; Pacific Rim states in the "ring of fire" are highly likely to be hit by earthquakes and volcanic eruptions; low-lying coastal areas on the Bay of Bengal are sure to experience more flooding; and Africa will very likely experience more drought. Therefore, it makes sense to treat the hazards of nature as risks to development, especially where they occur repeatedly.

Disasters dilute hard-won development gains. In Mozambique, for example, Bank lending financed the construction of 487

schools. But the most recent disaster alone, the floods of 2000, damaged or destroyed about 500 primary schools as well as 7 secondary schools. The damage caused can outweigh years of development assistance. The Kashmir earthquake of October 2005 caused an estimated $5 billion in damage in Pakistan, roughly equivalent to the total official development assistance for the preceding 3 years, and equivalent to the amount the World Bank had lent to the country over the preceding 10 years.

There is no private insurance against hazard risks in most developing countries. While about half of these costs of natural disasters are covered by insurance in the United States, less than 2 percent of the costs are covered in the developing world. In addition, the cost of hedging against natural hazard risks in developing countries often exceeds the cost of simply paying for damages when they arise. Further, developing countries can generally count on aid from outside sources, a well-known moral hazard in the disaster field. For poor households, natural hazards are just one of the many risks they face and are unlikely to be a high priority.

When a disaster occurs, the key concerns for the affected country are what to do, how to do it, and how to fund the necessary response. Typically, funds are needed immediately, and are often diverted from long-term development because no contingency funding is available. The financial cost of responding to the most recent events has stimulated particular interest in creating global and regional funding solutions. A proposal has been put forward for a regional funding mechanism in Latin America, and another proposal would expand an existing UN program to provide a global contingency funding mechanism.

The World Bank has been increasingly engaged in helping countries to recover from the disastrous impacts of natural events and to reduce their future vulnerability. When the World Bank responds to a natural disaster it has a wide array of lending and nonlending services from which to choose. And its response spans multiple sectors and themes, including urban, rural, environment, infrastructure, education, health, and social protection.

Its nonlending services can include convening of donor meetings, provision of assistance with post-disaster assessments, study preparation, and technical assistance. Bank lending assistance can consist of funds reallocated from existing projects, redesigns of planned projects, or development of new projects using a variety of lending instruments. In addition to its advisory and analytic services and technical support, since 1984 the Bank has financed 528 projects that addressed natural disasters, representing more than $26 billion in lending.

The Independent Evaluation Group examined the Bank's experience in disaster response over the past 20 years to extract lessons to inform good practice and ensure the achievement of results in Bank-supported activities. The evaluation is also intended to inform an ongoing revision of the Bank's policy statement on emergency assistance.

The Bank Response

The Bank has demonstrated considerable flexibility in its approach to natural disaster assistance and has learned to manage responses to events ranging from those of very large dimensions to smaller, more limited events.

Bank staff have often been innovative in their response to disaster events and have demonstrated the capacity to manage reconstruction on a massive scale. The study identified more than 60 types of activities undertaken in disaster-related projects, ranging from rubble clearance and provision of emergency shelter, to construction of flood shelters and transport infrastructure, to institutional development.

Responses to disaster have included lending and nonlending assistance, the latter including disaster needs assessments, advisory assistance, and other forms of technical assistance. Among the responses that have demonstrated the Bank's flexibility and innovation are the Honduras Social Investment Fund (1999), the Maharashtra Earthquake Project (1997), North China Earthquake Reconstruction (1993), Yemen Emergency Flood Reconstruction (1989), and the drought prevention in Niger (1988), all of which dynamically adjusted to prevailing conditions.

The Bank also has demonstrated its ability to work with donors in a shared response and has adapted policies and procedures to ensure that assistance can be delivered expeditiously.

Donor coordination was particularly strong for Hurricane Mitch in Honduras and Nicaragua (1999); for the Marmara earthquake in Turkey (2000); for drought in Sudan (1989); and for flooding in Bangladesh (1999), Mozambique (2000), and Gujarat (2002). Joint assessments have become an important mechanism for engaging with other donors and ensuring that borrower needs are met without overlaps.

Natural disaster projects financed by the Bank have had higher ratings for outcome and sustainability than the Bank's portfolio as a whole.

Almost 80 percent of the projects that had natural disaster reconstruction or mitigation as a substantial element were rated satisfactory for outcome, compared with the Bankwide average of 72 percent for the same period. These ratings reflect particular effectiveness in rebuilding physical infrastructure and provision of materials and equipment.

Sustainability ratings are similarly better than average, but institutional development ratings are about the same as the average. The sustainability rating (for what is mostly infrastructure) reflects the likelihood that estimated net benefits will be maintained or exceeded over a project's intended useful life. Experience with the creation of disaster management capacity has shown that it often takes more than one project cycle to leave behind a functioning disaster institution where none existed.

But in general, disaster responses have tended toward the reactive and tactical, when a proactive and strategic approach would have had longer-term benefits.

Countries affected by disaster, as well as the donors that try to help them, including the Bank, have generally treated disasters as interruptions in development rather than as a risk that is integral to development. At the country level, few Country Assistance Strategies (CASs) and Poverty Reduction Strategies (PRSPs) mention natural disaster risks, even in countries that have experienced multiple events resulting in major disasters. At the project level, objectives have mainly provided for short-term fixes and rarely addressed the root causes of the disastrous impacts of natural hazards.

The Bank has increasingly used the Emergency Recovery Loan (ERL), the focus of its emergency lending policy, in responding to disaster, even when other instruments may be more appropriate.

The ERL offers accelerated processing and a short implementation period of three years, and therefore has desirable qualities valued by both borrower and Bank staff who respond to disasters. ERLs generally have worked well and have high outcome ratings. But accelerated project processing is not always desirable. For some projects, rushed appraisal has led to long pauses between loan approval and first disbursement, poorly designed interventions, and diminished poverty impacts.

Furthermore, by relying on a three-year lending period, the Bank may end up emphasizing activities that are expected to have short implementation times, while not attending to other activities that more fully address the needs and vulnerabilities. It often happens that activities that might contribute greatly to the recovery effort (and to the borrower's subsequent long-term development) are not included in the ERL projects because they cannot be completed in the three years allotted—and then the project runs long in any event.

The crucial activities for long-term reduction of vulnerability take longer than three years to implement and have weak borrower demand.

Only one of the 60 activities identified in Bank-supported projects—balance of payment assistance—has taken less than three years to implement, on average. The types of activities that can have the greatest impact on reducing vulnerability, such as building code development or revision, development of hazard risk management institutions, and development of insurance

and other mechanisms for laying off risk, are precisely those for which borrowers are least likely to borrow. The Bank needs to find ways to encourage such activities.

Actions taken during the first weeks and months after a disaster have a major impact on the recovery process to follow, and they need to be planned and implemented accordingly.

Choices made immediately following a disaster—regarding shelter, resettlement, debris clearance, distribution of relief, and the like—affect the later choices for longer-term solutions and vulnerability reduction and can have severe consequences for the ability of the poor to recover.

Immediate post-disaster actions also need to include the development of the capacities, knowledge, and skills that will be required for the recovery process. If studies are going to produce knowledge that is critical to fully informed project actions, they need a strong advocate, such as the Bank. Capacity building for procurement and preparation of bidding documents should happen very early. Procurement is among the project activities most frequently cited in project-level evaluations as needing improvement.

The Bank needs to be able to identify when haste is counterproductive, lest funding mechanisms rather than development needs drive its response.

The funding mechanisms themselves need to be rethought: balance of payment lending has been a relatively quick-disbursing mechanism but, on average, it is nowhere near as fast as it was supposed to be, and it has only helped in very limited circumstances. Several Bank-supported attempts to establish mechanisms to lay off risk (insurance and contingency financing) have helped focus government attention on the long-term development issues surrounding disasters, but too few have been completed and evaluated to make an informed judgment about their value. Finally, loan reallocations are used much more frequently than other types of Bank disaster responses in highly vulnerable countries.

Recovery for the poor requires particular attention, but is especially difficult to accomplish in disaster projects, and poverty impacts are generally not well documented.

When Bank projects have targeted the poor, they have often exceeded their expected impact: of 51 projects with documented impacts, 41 met or exceeded the expected impact. However, data are incomplete and documentation of the poverty impacts is thin.

Even in the difficult circumstances of a disaster response, beneficiary participation during the design and implementation stages is essential to success. The benefits of participation were demonstrated in the 1993 Argentina Flood Rehabilitation Project, which involved beneficiaries in all stages of the project. The interaction between beneficiaries and the local authorities resulted in the timely availability of construction materials and the accommodation of local customs in the architectural design of new houses. Bank staff observed that this created ownership among beneficiaries and increased maintenance.

Experience in Turkey and Chile shows that cash transfers and the provision of livelihood opportunities can be especially effective for the poor. Experience also shows that women and other vulnerable groups need special attention following disasters, especially in ensuring equitable treatment.

Reconstructed housing that is built using disaster-resistant techniques and according to the needs of occupants reduces vulnerability.

Building codes can improve the quality of the built environment, but in informal neighborhoods that typically do not comply with code requirements, safer building practices need to be disseminated in different ways. Simplicity of message is essential to the widespread adoption of disaster-resistant technologies, as has been amply demonstrated in India. Because temporary housing is sometimes occupied for long periods of time, some projects have built temporary shelter to slightly higher standards so that it could become another form of housing for the poorer once the new housing is built.

Moreover, if shelters are built using disaster-resistant construction techniques, not only are they safer for the displaced living in them, but such construction also serves as an example that people will see, that will then potentially influence their future construction choices. Simple techniques can be used to ensure resistance in owner- or craftsman-built small houses, more sophisticated techniques may be used in engineer-designed buildings such as high-rises.

Bringing Risk Management into Development Strategy

Natural hazard risks are highly concentrated, so special attention needs to be given to planning ahead for disaster and to reducing long-term vulnerability in countries at highest risk.

Ten countries account for 208 of the 528 disaster projects (39 percent) in the Bank's portfolio. Bank lending also is concentrated in commitment terms—7.5 percent of projects received 32 percent of the financing. Natural hazard risks are foreseeable for many countries, yet those risks are infrequently considered in country programs or in project financing, even in highly vulnerable countries.

When formulating country lending programs and project lending, the Bank needs to elevate the importance of natural hazards, especially for highly vulnerable countries. To do this efficiently, borrowing countries need to be categorized by vulnerability level. This report presents one way to do this, dividing borrowers into three groups according to level of vulnerability (high, medium, and low, based on the percentage of a country's GDP at risk from two or more natural hazards).

The high concentration of risk also suggests that mechanisms are needed to finance those risks or transfer them.

Even if global or regional funds are eventually established, they will likely address only the short-term liquidity needs of disaster-affected countries. The Bank needs to be seen as a part of such regional and global solutions, but it also needs to continue to provide the longer-term activities directed at vulnerability reduction.

The Bank's long-term engagement with client countries needs to ensure continued focus on permanent vulnerability reduction.

The Bank has supported several research initiatives on risk hedging and private sector involvement in reconstruction financing. Financial approaches to mitigating loss that are receiving attention include: reinsurance with catastrophe bonds, national homeowner insurance programs, disaster funds, and microfinance. Additionally, 10 Bank-funded projects are beginning to explore national insurance schemes (5 of which are ongoing and have not been evaluated).

Coordination Inside and Outside the Bank

The Bank has the human resources capacity to both respond to disasters and to address long-term country needs related to hazard risks, but mobilizing them is cumbersome.

The Bank has a cadre of committed and experienced staff, but it lacks an effective way to reliably bring that staff and relevant knowledge to its borrowers, or even to its own task teams. Since 1999 a three-person unit has assisted Bank task managers with natural and technological disasters and helped provide a more strategic and rapid response. This group is supplemented by a thematic group comprising more than 100 staff with disaster-related experience. However, donors and client countries do not know who to contact when they have routine questions about disaster and related coordination. The current arrangement has also effectively reduced the visibility of the natural disaster theme within the Bank. When a disaster strikes it can be difficult to disengage knowledgeable and experienced staff from their ongoing tasks.

Donor coordination is especially critical to disaster relief and recovery, in part because of the dynamic nature of the situation, but also because disasters typically attract the involvement of numerous donors.

Increasingly, borrowers themselves are providing the necessary donor coordination, but they continue to need assistance with coordination, especially in the early stages of relief and recovery.

Project experience shows that the development of a recovery strategy shared by all requires not only an immediate Bank presence in the disaster-affected area, but also a prolonged presence that helps ensure that all reconstruction needs are covered, that the plan is appropriately designed for the available capacity, that stakeholders' needs are met, that there is a reasonable distribution of labor, and that the needs of the poor and vulnerable are considered.

In 1989, for example, Bank negotiators in Sudan worked with other donors to ensure that their interests were met and that there were no unnecessary overlaps in coverage. By keeping the composition of the Bank's contribution flexible, the other donors were helped to make adjustments in their programs. The Bank then financed what was left.

The development community should engage with disaster-stricken borrowers earlier and stay engaged longer.

International experience on the impacts of successful and unsuccessful relief management and on the ability of key stakeholders to participate effectively in the recovery process needs to be brought clearly to governments' attention. The Bank specifically needs to be present during the emergency stage to ensure success of the reconstruction projects it finances. Low-income community groups need support until they develop the capacity to manage the infrastructure that has been placed in their care.

Recommendations

Chapter 6 of the report makes a number of specific suggestions about revisions to the Bank's policy for emergency lending—these are not repeated here in their entirety.

Prepare a Strategy or Action Plan for Natural Disaster Assistance

The Bank's natural disaster assistance would benefit from the development of a strategy or action plan and related guidance that would:

- Help staff to respond to emergencies with quick relief and well-planned reconstruction, and to do so more effectively in a much shorter period.
- Ensure that contingency funds (be it on a country, regional, or global scale) result in all borrowing countries receiving a timely and adequate financial response to major events.
- Help bring natural hazard risk management to the most vulnerable countries.

The strategy or action plan needs to identify a methodology to assess each country's level of disaster risk. It is suggested that countries be divided into high-, medium-, and low-risk groups. The action plan then needs to identify how the Bank will assist borrowers in each category to lower their vulnerabilities and to build on local capacities and leadership.

In highly vulnerable countries, the action plan needs to make provisions to give more attention to natural hazards during the appraisal of investment projects generally, and specifically in the preparation of PRSPs, CASs, and other strategic documents. Where appropriate, these documents need to go beyond a description of the risks, and identify monitorable mitigation and institutional development activities.

For the most vulnerable countries, contingency funding needs to be available, whether as part of another loan, a set-aside in the CAS lending program, or a free-standing catastrophe fund (though these may become unnecessary if regional or global funds are eventually established). Another alternative worth consideration is a special fund under the Bank President's control that can be used to fund a quick start when disaster occurs.

Countries deemed to be at medium to high risk need to include disaster-resilient design in Bank-financed projects. For all countries, disaster risks need to be considered in standard risk assessment documents.

The strategy or action plan should be submitted to the Board for discussion.

Revise Policy to Better Guide Staff and Enhance Flexibility of Bank Responses to Natural Disasters

Emergencies are of many sorts and, although there is some overlap, most differ from the

disasters created by natural events in critical ways. Bank policy needs to reflect these differences by treating conflict and epidemic diseases separately, with provisions that apply only to the relevant topic. There are two ways in which this can be done: natural disasters can either be the subject of a separate Operational Policy (as called for in the 1998 IEG evaluation of the Bank's experience with post-conflict reconstruction); or Operational Policy 8.50 could include specific provisions for natural disasters, for post-conflict situations, and for health and other emergencies, so that each topic is dealt with separately. In whatever form it takes, Bank policy needs to focus more on disaster prevention and vulnerability reduction in all natural disaster operations. Policy prohibitions on relief and the financing of recurring events need to be relaxed.

Accelerated processing and provisions for quick disbursement for ERLs have partially addressed the need for speed in launching short-term activities, though they could be fruitfully complemented by a new mechanism, such as a special central fund managed by the President's office (akin to the one in place in the Inter-American Development Bank) to fund the most urgent needs in the early days of a disaster response.

But the use of ERLs is less appropriate for longer-term activities, such as mitigation, reconstruction, and institution building, which require a longer preparation and appraisal time and need not be exempted from due diligence standards and safeguard compliance.

Similarly, attention to social issues during preparation and implementation generally requires a longer period than has been available under ERLs. Such activities are more suited to standard investment lending but have often been short-changed because of the ERL's three-year implementation time and the loss of borrower interest in a second loan following the ERL.

Increase Bank Capacity to Respond to Disasters and Ensure That It Can Be Mobilized Quickly

Whether or not there is a designated unit to deal with natural disasters and hazard risks, the Bank needs the capacity to quickly gather and disseminate international experience to borrowers in an emergency. In addition, task teams need support while conducting post-disaster assessments and designing emergency interventions tailored to the needs and capacities of each borrower.

Responding to disasters requires multisectoral expertise. Including disaster-knowledgeable people on Bank missions following major crises can be crucial. Being selective in staffing identification for missions in post-disaster settings avoids the problems of design and scale of response that can occur when people are sent who are not used to seeing destruction on a massive scale or who lack country knowledge. The Bank has very few such people, and it currently has no consistent mechanism for mobilizing them to respond to natural disasters. Pulling members of the Hazard Management Thematic Group away from their ongoing responsibilities inevitably has a negative impact on their normal activities. And there are so few knowledgeable staff that the same people tend to be called upon repeatedly.