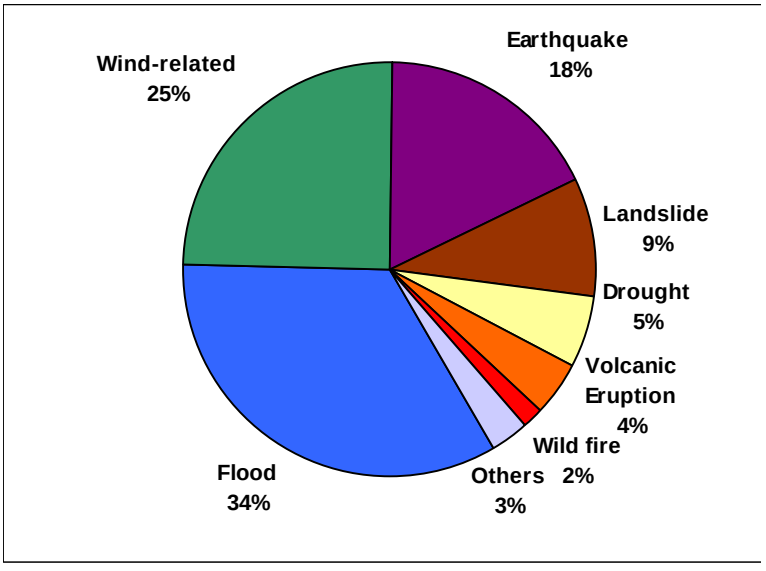
Selected Facts about Natural Disasters in Latin America and the Caribbean

Summary data: Disaster Occurrence and Impact

1900-98
- Total number of registered events: 1,243
- Estimated fatalities: 431,856

1990-98
- Frequency of occurrence: 40.7/year
- Estimated economic damage: US$24.2 billion

Source: OFDA/CRED.1999. EM-DAT International Disaster Database.



Source: OFDA/CRED. 1999. EM-DAT International Disaster Database.

Impact of Selected Natural Disasters in Latin America and the Caribbean

Date	Country	Type of Event	Fatalities	Estimated damages (US$ million, 1998)
1972	Nicaragua	Earthquake	6,000	2,968
1976	Guatemala	Earthquake	23,000	2,147
1982/3	Bolivia, Ecuador, Peru	El Niño	0	5,651
1985	Mexico	Earthquake	8,000	6,216
1985	Colombia	Volcanic Eruption	22,000	465
1987	Ecuador	Earthquake	1,000	1,438
1997	Montserrat	Volcano	32	8
1997/98	Bolivia, Colombia, Ecuador, Peru	El Niño	600	7,694
1998	Central America	Hurricane Mitch	9,214	6,008
1998	Dominican Republic	Hurricane Georges	235	2,193
1999	Colombia	Earthquake	1,185	1,580
1999	Venezuela	Landslides, debris flows	25,000	3,267

Sources: ECLAC, América Latina y El Caribe: El Impacto de los Desastres Naturales en el Desarrollo, 1972-1999, LC/MEX/L.402; OFDA, Venezuela- Floods, Fact Sheet #10, 1/12/ 2000; OFDA/CRED.1999. EM-DAT International Disaster Database.

Note:
In all the charts and graphs in this document, natural disasters are defined as natural events, which have caused at least one of the following: 10 or more people reported killed; 100 or more people reported affected; a call for international assistance; or a declaration of a state of emergency.

Facing the Challenge of Natural Disasters in Latin America and the Caribbean

An IDB Action Plan

Inter-American Development Bank

Washington, D. C.

Sustainable Development Department
Special Report

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March 2000

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Foreword

Recurrent natural disasters have always plagued many countries in Latin America and the Caribbean. The most recent catastrophic events –last year's earthquake in Colombia, El Niño throughout the region, Hurricane Mitch in Central America and landslides and debris flows in Venezuela– have only highlighted the need to be better prepared to deal with these phenomena. The region's social and economic development will be unnecessarily hampered if preventive measures to mitigate the impact of natural disasters do not become a way of life. The time has come for development assistance to take a proactive role in assisting countries to strengthen their capacity to withstand natural disasters.

This report responds to that challenge. Herein is an overview of the current state of affairs regarding capacity to cope with natural disasters in the region, an analysis of what needs to be done, and a plan of action with specific measures that the Bank will put into practice in its operation. The Bank's comprehensive approach to disaster risk management will place top priority on preventing and mitigating natural disasters, while standing ready to assist countries in their reconstruction and rehabilitation efforts whenever disasters strike. This report identifies key strategic areas of action and proposes specific steps to implement them. In addition, the Bank is examining new financial instruments that can serve as vehicles for addressing these new priorities.

The Inter-American Development Bank has always been of service to its member countries in facing the multiple challenges of development. Disaster management is just one more area where the Bank is cooperating in order to improve the safety and standard of living of the people of the region.

Enrique Iglesias, President
Inter-American Development Bank
March 2000

ABBREVIATIONS AND ACRONYMS

CDERA	Caribbean Disaster Emergency Response Agency
CEPREDENAC	Coordination Center for the Prevention of Natural Disasters in Central America
CERESIS	Regional Seismologic Center for South America
CESI	Committee for Environmental and Social Impacts of the IDB
CRED	Center for Research on Epidemiology of Disasters
CRID	Regional Disaster Information Center for Latin America and the Caribbean
ECLAC/CEPAL	Economic Commission for Latin America and the Caribbean
ERF	Emergency Reconstruction Facility
HABITAT	United Nations Center for Human Settlements
IIC	Inter-American Investment Corporation, part of the IDB group
IDB	Inter-American Development Bank
IDNDR	International Decade for Natural Disaster Reduction
IFRC	International Federation of Red Cross and Red Crescent Societies
ISDR	International Strategy for Natural Disaster Reduction
La RED	Red de Estudios Sociales en Prevención de Desastres (Latin American Network for Social Studies in Disaster Prevention)
MIF	Multilateral Investment Fund
Munich Re	Munich Reinsurance Company
NGO	Non Governmental Organization
OAS	Organization of American States
OFDA	US Office of Foreign Disaster Assistance
PAHO	Pan-American Health Organization
RE2	Regional Operations Department 2
SDS	Sustainable Development Department
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNDP	United Nations Development Fund
WMO	World Meteorological Organization

Contents

Overview

The countries of Latin American and Caribbean are no strangers to the devastation brought on by hurricanes, floods, earthquakes, landslides and volcanic eruptions. In the last ten years alone, natural disasters killed more than 45,000 people, affected 40 million people and caused over $20 billion in direct damages. With an average of 40 major disasters a year, the region ranks second only to Asia in terms of the frequency of disaster occurrence.

The response of the international community to disasters in the region has usually been immediate and generous, providing post-disaster emergency relief as well as financing reconstruction efforts. During the past four years, the IDB approved $1.5 billion in new financing to help the affected countries recover from disasters, increasing its average annual disaster-related lending by a factor of 10 compared to the previous 15 years. However, recent disasters have revealed the unsustainable nature of after-the-fact approaches. In addition, the experiences of El Niño and Hurricane Mitch, among others, have shown that the impact of disasters can be irreversible.

The increase in the frequency of disasters and their associated damages in the region is part of a worldwide trend, which results from growing vulnerability and may reflect changing climate patterns. According to the reinsurance company Munich Re, the worldwide occurrence of disasters and reported damages reached a new record in recent years. While global risks seem to be increasing, the overall level of assistance available for emergencies in the world has been shrinking since 1992. These trends make it all the more necessary for the region to break the cycle of destruction and reconstruction and address the root causes of vulnerability, rather than merely treating its symptoms when disasters happen.

A closer analysis of what transforms a natural event into a human and economic disaster reveals that the fundamental problems of development that the region faces are the very same problems that contribute to its vulnerability to the catastrophic effects of natural hazards. The principal causes of vulnerability in the region include rapid and uncontrolled urbanization, the persistence of widespread urban and rural poverty, the degradation of the region's environment resulting from the mismanagement of natural resources, inefficient public policies, and lagging and misguided investments in infrastructure. Development and disaster-related policies have largely focused on emergency response, leaving a serious underinvestment in natural hazards mitigation.

To address the changing development needs of the region, the IDB is defining priority areas of comparative advantage. These priority areas include social investments and urban development (to better address rural poverty, urban living conditions, and social safety nets); modernization of the state (to improve governance, ethics and transparency and to foster strategic alliances among state, civil society and private enterprises)**;** competitiveness (to strengthen financial and infrastructure systems, promote private sector involvement, develop technologies and foster trade and integration); new regional cooperation initiatives (in planning and investments); and environmental and natural resource management (to reduce vulnerability).

A proactive stance to reduce the toll of disasters in the region requires a more comprehensive approach that encompasses both pre-disaster risk reduction and post-disaster recovery. It is framed by new policies and institutional arrangements that support effective action. Such an approach involves the following set of activities: *risk analysis* to identify the kinds of risks faced by people and development investments as well as their magnitude; *prevention and mitigation* to address the structural sources of vulnerability; *risk transfer* to spread financial risks over time and among different actors; *emergency preparedness and response* to enhance a country's readiness to cope quickly and effectively with an emergency; and *post-disaster rehabilitation and reconstruction* to support effective recovery and to safeguard against future disasters.

The Inter-American Development Bank is calling for concerted actions to address the root causes of the region's vulnerability. Its new focus would place disaster prevention and mitigation at the forefront of the region's development agenda. Building on its mandate to promote sustainable development in Latin America and the Caribbean, the Bank will help countries integrate risk reduction in development planning and investments, as well as build a permanent technical and operational capacity to manage risk reduction more effectively in the future.

To meet the challenge of increased risk and losses from natural disasters, the Bank will establish a priority ranking of actions designed to reduce vulnerability. Financing will be directed toward prevention and mitigation of disasters, as well as building risk management capacity. Studies and regional dialogue to identify and increase the understanding of good practices will complement national efforts. Specifically, the Bank will assist countries in adopting comprehensive risk management schemes by focusing on the following strategic areas:

- *National Systems for Disaster Prevention and Response*: Building national legal and regulatory frameworks and programs that bring together the planning agencies, local governments and civil society organizations; developing national strategies for risk reduction, and assessing inter-sectoral priorities, backed by separate budgets.
- *A Culture of Prevention:* Developing and disseminating risk information and empowering citizens and other stakeholders to take risk reduction measures.
- *Reducing the Vulnerability of the Poor:* Supporting poor households and communities in reducing their vulnerability to natural hazards and recovering from disasters through reconstruction assistance.
- *Involving the Private Sector*: Creating conditions for the development of insurance markets; encouraging the use of other risk-spreading financial instruments where appropriate, and designing economic and regulatory incentives for risk reduction behavior.
- *Risk Information for Decision-Making*: Evaluating existing risk assessment methodologies; developing indicators of vulnerability, and stimulating the production and wide dissemination of risk information.
- *Fostering Leadership and Cooperation in the Region*: Stimulate coordinated actions and to mobilize regional resources for investments in risk mitigation.

To effectively promote these strategic areas in the region, the Bank faces the challenge of putting risk management at the forefront of its agenda. A recent change in its Policy on Natural Disasters, which now places greater emphasis on risk reduction, lays the foundation to meet this challenge. The following Plan of Action provides the elements for mainstreaming risk management in the Bank's operations and actions:

- A *Facility for Innovation in Disaster Prevention*: Establishing new financial mechanisms to help countries undertake and strengthen disaster prevention and risk management actions.
- *Risk Reduction as a Component of the Bank's Dialogue with member countries*: Engaging dialogue in areas of risk assessment, risk management strategies, and the use of available IDB instruments for financing investments related to natural disasters.
- *Risk Reduction in the Project Cycle*: Including risk analysis and reduction in programming and in project identification, design, implementation and evaluation.
- *Focal Points for Disaster Management*: Supporting countries in preparing risk reduction programs and coordinating prevention and response activities among the Bank's sector divisions and country offices.
- *Partnerships*: Building an integrated information and response network that includes coordinating the preparation of pre-investment studies; funding prevention and reconstruction investments, and establishing interagency response protocols.

This report analyzes development and disaster prevention in four areas: Part 1 presents an overview of the region relative to the natural hazards it

faces and the factors contributing to its vulnerability. It also highlights the region's assets and capabilities to effectively reduce the devastating loss of lives, property, and sustainable development in general. Part 2 introduces the Bank's new policy framework, which articulates its strategic development vision and new disaster policy, as well as its focused approach to helping countries build their risk management capacities. Part 3 highlights the elements of this new approach for supporting risk reduction and disaster recovery, providing examples of Bank operations to date. Finally, Part 4 lays out the strategic areas of action for promoting risk reduction management in the region, and highlights the Bank's Plan of Action to incorporate these strategic areas into its own activities.

Part 1: Natural Disasters in Latin America and the Caribbean

Latin America is one of the most hazard-prone regions of the world. The region lies atop four major active tectonic plates and is part of the Pacific ring of fire where a significant portion of the earth's seismic and volcanic activity takes place. Landslides and flooding are common in a region with mountainous terrain and complex river basin systems. Tropical storms and hurricanes, born in both the Pacific and Atlantic Oceans, are frequent throughout the region, especially in the Caribbean hurricane belt, which includes Central America at its western extreme. Climatic variability in the form of severe droughts, floods and high winds throughout the hemisphere have been exacerbated by the recurrent El Niño phenomenon. By altering rainfall patterns, these phenomena regularly lead to drought and wildfires in some areas and torrential rains, landslides and floods in others. In addition, many experts now believe that due to climate change, heavy rainfall is likely to increase in intensity and droughts may be more frequent in dry areas in the future.

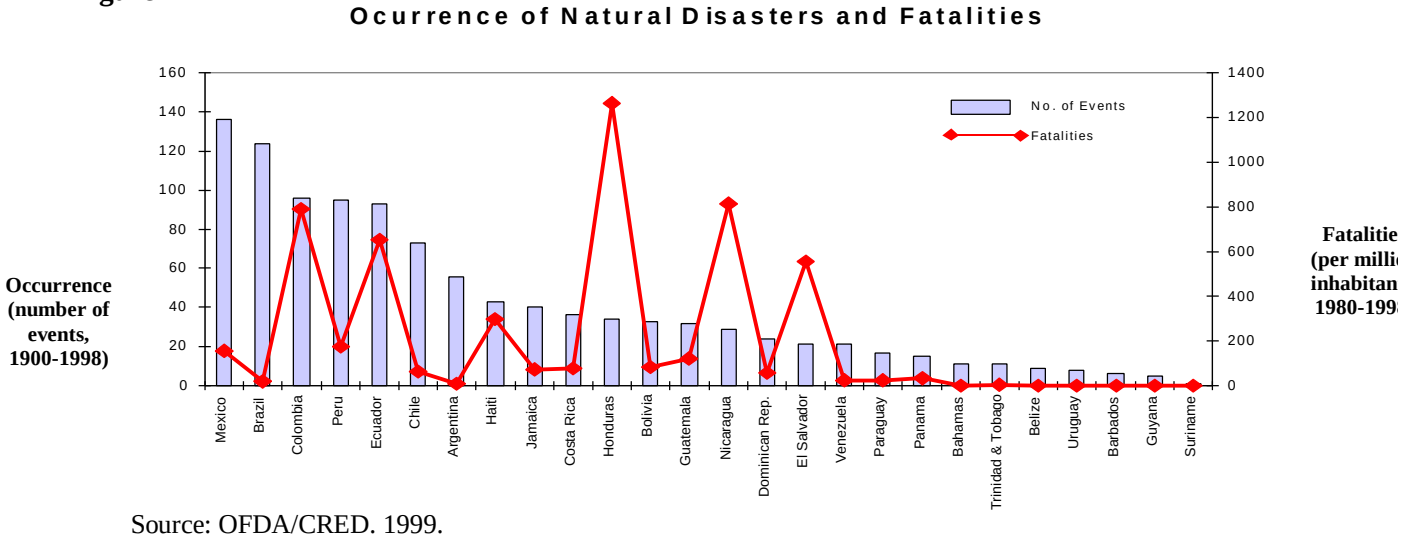
Staggering Human, Economic and Social Toll

Natural hazards have had a lethal and destructive impact in the region. Over the last 100 years, reported fatalities due to disasters have totalled more than 400,000. Millions of people have been directly affected as their housing, income-generating assets and communities are damaged or destroyed. In the worst cases, floods, earthquakes, hurricanes and landslides have resulted in the loss of more than 20,000 people at a time.

While larger countries have been affected by more disasters, and therefore may register the largest number of fatalities in absolute terms, smaller and poorer countries, especially in Central America, have often seen a greater proportion of their people killed by natural disasters (see Figure 1).

The staggering figure of $20 billion in damages during the last 10 years likely underestimates the real toll of disasters in the region, as thousands of smaller events striking isolated communities are not necessarily reported, and the complexity of the economic and social impact of a disaster makes it difficult to capture the total cost to society and the environment in monetary value. A pilot study of just three countries (Costa Rica, El Salvador and Guatemala) by the Latin American Network for the Social Study of Disaster Prevention (La Red), registered over 2,400 small scale local events with important, though not quantified, impacts between 1990 and 1995.

Figure 1



Source: OFDA/CRED. 1999.

Evaluations of the impact of a disaster should include the indirect costs from the resulting disruption in economic activity, as well as secondary effects on various macroeconomic variables, in addition to direct damage to goods and assets (see Box 1). When disasters affect significant proportions of the economy (as happens in small islands states with a limited economic base), a deceleration in economic growth is to be expected. This recessionary effect of disasters can be partially offset by the surge of public and private investment during reconstruction. However, in the wake of a disaster, the shortfall in tax revenues and increase in public expenditures can lead to a rise in the public deficit. Furthermore, the decline in production capacity and strong public and private investment in reconstruction, are likely to lead to an increase in the trade deficit as imports rise and exports fall. This effect on the current account may be partially offset by the capital inflows generated by official and private donations.

Box 1

Impact of Disasters on GDP: Hurricane Mitch

Estimates of damages caused by Hurricane Mitch in Central America totalled $6 billion in 1998, the equivalent of 16% of that year's GDP, 66% of exports, 96.5% of gross fixed capital formation and 37.2% of the total external debt. The sectoral breakdown of damages shows that the most affected sector was, by far, agriculture (49%), followed by infrastructure (21%), social sectors (13%), industry (10%) and other (7%). For Honduras alone, damages reached almost $4 billion, i.e., 81.6% of GDP, 174.3 % of exports, 343.9 % of gross fixed capital formation and 94.1% of the external debt.

Between 1992 and 1998, the Central American region grew at a rapid 4.3% a year. Before Hurricane Mitch, projections indicated that GDP growth would reach 4.8% on average for the years 1999-2003, enabling regional per capita GDP to recuperate its 1978 level in 2004 (US$1,166). Instead, ECLAC now estimates that the average rate of growth for Central America for the years 1999-2003 will be only 3.6%, 1.2 percentage points lower than would otherwise have been the case. As a result, the region will take three more years to recuperate from the "lost decade" and regain the 1978 level of per capita GDP.

In addition to these immediate economic impacts, disasters can have longer-term effects on a region's or country's economic and social development. First, damage associated with disasters can be irreversible, not only in the case of fatalities and their impacts on families, but also when natural resources, such as forests and arable soil, are destroyed or washed away. Disasters also exacerbate poverty and give rise to social tensions, which in turn may stress the democratic process and governance in the region. Finally, disasters can set back a country's development process by several years because of the lag associated with the reconstruction of fixed capital.

The burden associated with disasters often falls heavily on the state, usually at a time when it is least able to cope. With low rates of coverage for disaster insurance, the government acts as a *de facto* insurer of last resort, absorbing much of the loss and increasing the accumulation of public and external debt over time. Government assistance, although badly needed, can also create adverse incentives, for example, when individuals and companies are not held responsible for the risks that they take. In addition, this broader burden can preclude the state from focusing scarce resources on other priority areas.

Development Patterns that Contribute to Vulnerability

The region's pattern of development and, more specifically, the persistence of widespread poverty, rapid and uncontrolled urbanization and environmental degradation have led to an increase in its vulnerability to natural hazards. Evidence suggests that the region's propensity to experience damage and its difficulties in recovering from disasters are growing.

Rapid Growth and Increasing Poverty in Urban Areas

Over the last 30 years, the region has experienced rapid and uncontrolled urban expansion, characterized by inadequate land use and lagging infrastructure investments. Latin America is already predominantly urban, with 75% of its population living in cities. This tendency is continuing, with a rapid increase in the proportion of the population living in megacities. Much of the basic infrastructure of cities is poorly maintained. Breakdowns in the distribution systems for vital goods and serv-

ices such as food, water and fuel, may have major consequences for affected populations in disaster prone cities. For example, an earthquake can interrupt water networks, resulting in deteriorating health conditions and a reduced capacity to fight fires.

Cities are also absorbing greater percentages of the poor in the region. Poverty, by its very nature, puts people at greater risk. With fewer resources, poor people settle where land is cheap, that is, in disaster-prone areas like steep hillsides and flood plains. Land use controls have been largely unsuccessful in preventing these precarious settlement patterns. Many informal residential settlements, especially in their initial stages of consolidation, do not include disaster resistant construction. Basic low-cost community level mitigation measures, such as retention walls and adequate surface drainage, are often missing. Given deficient design and quality of construction, it does not take a large event to cause severe damages to the lives, homes, and infrastructure of these communities.

Poverty and Environmental Degradation in Rural Areas

In rural areas, poverty, environmental degradation and growing vulnerability often go together. Today 50 percent of rural households in the region are considered poor, the same figure as in 1980. Lack of development opportunities have hindered economic growth in the rural sector, which in turn has contributed to an undue reliance on natural resources as a source of rural subsistence. The marked deterioration of the region's environment and its natural resources is due to various factors, including deforestation, overgrazing, river bank alterations and inappropriate hillside agriculture. For example, mangrove forests that provide natural protection against high winds are disappearing from hurricane-prone coastal regions. Continuing soil erosion and the loss of vegetative cover in mountainous areas has diminished the land's capacity to absorb heavy rainfall and made it more susceptible to landslides and flash floods.

Poor Policy Planning

With a few notable exceptions, the region has not pursued policies that reflect an understanding of its vulnerabilities and that identify actions to redress them. Land-use planning and building codes are still generally inadequate or poorly enforced in most of the hazard-prone areas in the region. Incentives to encourage the private sector and households to adopt preventive measures rarely accompany those regulations that do exist. Infrastructure policies have directed far too few resources to basic maintenance, reducing resistance to natural hazards. Due to their weakness and instability, political and institutional systems have had little success in implementing effective public policies. In some municipalities in the region, regulations adopted to ensure better standards for residential development have even had adverse effects, by excluding the poor from the legal land markets and inhibiting the investment necessary to consolidate and improve the safety of neighborhoods.

Lack of Political Interest in Prevention

Disaster prevention has largely been absent from the public discourse of political leaders as well as from the electoral process. At least until recently, the prevailing attitude has been that prevention is a "cost" rather than an "investment." Often it was assumed that friendly governments, donors and international financial organizations would help cover disaster losses. Local communities, already stressed by their daily struggle for better employment, health, basic education and other needs, have not pressured their local and national leaders to do more to reduce their vulnerability to disaster. In addition to these problems, there is a marked inability by the scientific community to adequately convey the results of their research to communities, governments and the private sector, who consequently remain poorly equipped to interact with decisionmakers to address vulnerability at its source.

The dominant paradigm for dealing with disasters has been the development of preparedness and emergency response plans, which are inevitably directed toward the effects rather than the causes of natural events. Moreover, reconstruction efforts have often failed to adopt measures to reduce future risk. In the aftermath of a disaster, the pressure to restore services and economic activities has often led to poor quality reconstruction. Infrastructure is frequently rebuilt in the previous hazard-prone location. In addition, hazard-resistant building techniques, most of whose cost represents less than 10 percent of the total cost of new construction, are not adopted. International coopera-

tion, when the mobilization is massive and uncoordinated, can also contribute to this failure.

Facing the Challenge of Disasters: The Region's Capabilities and Assets

Disaster reduction and development that promises the region more security in the future requires both broad political commitment and the concerted effort of local communities, national governments and regional bodies. At the beginning of the new millennium, developments in the region bode well for each country's ability to provide the leadership and resources necessary to face the challenges posed by natural disasters, especially with the active support of development partners such as the IDB.

Macroeconomic Stability and the Consolidation of Democracy

Most countries in the region have achieved level of macroeconomic stability that will enable governments to better respond to the aggregate shocks associated with disasters, as well as to invest more to prevent disasters and reduce risks. The diversification of the region's economies also improves their ability to recover more quickly from disasters. More private financing can be expected in disaster mitigation as financial markets throughout the region deepen, and as the identification and pricing of risks improve. Likely candidates for financing are the energy and infrastructure sectors.

Decentralization and the consolidation of democracy in the region are bringing governments closer to the needs and the reach of their citizens. With careful attention, such gains can enable a more efficient and transparent allocation of public resources to development and disaster prevention. This process also creates important new opportunities for assisting local communities to understand the risks they face and involving them in the decision-making process for finding solutions.

Emerging Government Agendas

As a result of recent disasters that have highlighted the region's extreme vulnerability, several governments have placed disaster prevention on the political agenda. In October 1999, at the annual summit of the region's heads of state, the presidents of the six Central American countries adopted a Strategic Framework for the Reduction of Vulnerability and Disasters in Central America to promote the sustainability of investments in reconstruction following Hurricane Mitch, and to reduce their long-term and recurrent risk due to natural hazards.

This political momentum also builds upon the commitments acquired during the last decade, which was named the International Decade for Natural Disaster Reduction. In recognition of the need to mitigate disasters, the countries of the hemisphere created the Inter-American Committee on Natural Disasters through the Organization of American States in 1999. With the participation of the Inter-American Development Bank, the Pan-American Health Organization (PAHO), the Pan-American Institute of Geography and History and the Council for Integral Development, this committee will prepare strategic initiatives, placing special attention on reducing the vulnerability of member states to natural disasters.

Specialized Institutions and Civil Society

This new political direction may lead to concrete actions by institutions and communities with experience in evaluating, mitigating and responding to disasters. Some countries, like Colombia, have built integrated multi-institutional and multisectoral systems for disaster prevention and response. Other countries are modernizing national disaster institutions. In Central America, for example, some countries are revising legal frameworks to direct the national disaster management systems to include disaster prevention as an important element.

Many governments have also organized regional institutions such as the Caribbean Disaster Emergency Response Agency (CDERA) and the Center for Coordination for the Prevention of Natural Disasters in Central America (CEPREDENAC) to promote international cooperation, information exchange and technical assistance aimed at improving disaster prevention.

The region is also equipping itself with information technology that opens new opportunities for analysis of hazard and vulnerability. A number of other specialized institutions are involved in providing information on disasters, such as the Regional Disaster Information Center for Latin

America and the Caribbean (CRID). Institutions dedicated to research and technology for disaster mitigation include, among others, the Regional Center of Seismology for South America (CERESIS). The Network of Social Studies for Disaster Prevention in Latin America (La RED) connects nongovernmental institutions and researchers throughout the region. Their objective is to provide information and policy advise to national governments, and regional and international organizations.

United Nations organizations are also supporting improvements in disaster prevention and response. In this regard, special mention should be made of the efforts of the Economic Commission for Latin America and the Caribbean (ECLAC) to evaluate the economic impact of natural disasters, a source of important information for reconstruction and prevention planning. The Pan American Health Organization has provided long-standing and broad support to the health sector for emergency preparedness and the safety of hospital facilities. Similarly, the World Bank and other U.N. agencies (such as UNDP, UNESCO, WMO, Habitat and the IDNDR [now the ISDR]) are supporting key scientific and sectoral capacities for risk reduction. Bilateral assistance from Europe, Japan, Canada, the United States and other nations also supports regional, national and local risk assessment, emergency preparedness and mitigation projects.

Civil society and local nongovernmental organizations throughout the Americas are gaining valuable experience in disaster prevention and response, many with the support of the international NGO community. Many community level initiatives are underway to reduce vulnerability and improve emergency response in a sustainable and low-cost fashion. In Central America, Hurricane Mitch showed that innovative community actions could have a real impact on the prevention of disasters. For instance, local private radio stations helped save lives by warning communities of the coming disaster. In La Masica, Honduras, land use practices for hillside areas and a primitive but very effective warning system prevented many fatalities and enhanced the survival capability of isolated communities. Similarly, the women of Mulukuku, Nicaragua, who were trained in disaster preparedness, were vital allies in the emergency response to Hurricane Mitch, again reducing fatalities and aiding the post-disaster recovery of the communities at a grassroots level.

Part 2: The IDB Policy Framework

The Bank has adopted a policy framework that directs its lending and technical assistance to helping member countries meet the challenges of increasing vulnerability and losses from natural hazards. The framework is made up of three parts: 1) the Bank's strategic vision for development, including a focus on areas vital to addressing the sources of vulnerability, 2) a new disaster policy that focuses on risk reduction and improved disaster response, and 3) the description of a new approach to risk management.

Part 2 of this report outlines this new policy framework, while Part 3 highlights the elements of the new operational approach, providing examples from Bank lending and technical assistance in the region.

IDB Group

In large part the repeated occurrence of severe natural disasters in Latin America and the Caribbean is due to lagging unsustainable development. To be effective, risk management cannot be put into place in a vacuum; it needs a favorable political and socioeconomic environment. Ideally, this would be characterized by macroeconomic stability, efficient market structures and transparent and efficient public institutions. It would also depend on an educated, healthy and productive population able to cope with the adverse effects of natural disasters, with an ever decreasing need for international assistance.

The mandate of the IDB Bank Group (the Bank, the Inter-American Investment Corporation and the Multilateral Investment Facility) is to contribute to long-term economic and social development in the region–in effect, to help its member countries put in place just such an environment conducive to effective risk management. For the last 40 years, the Bank has financed activities in areas such as basic infrastructure, poverty reduction, environmental and natural resource management, and urban development. It has also assisted governments in defining appropriate policies and sectoral reforms and in reorganizing their public institutions. In doing so, the IDB is now the primary source of multilateral funds for the region, as well as an important catalyst of additional resources (see Box 2).

Box 2

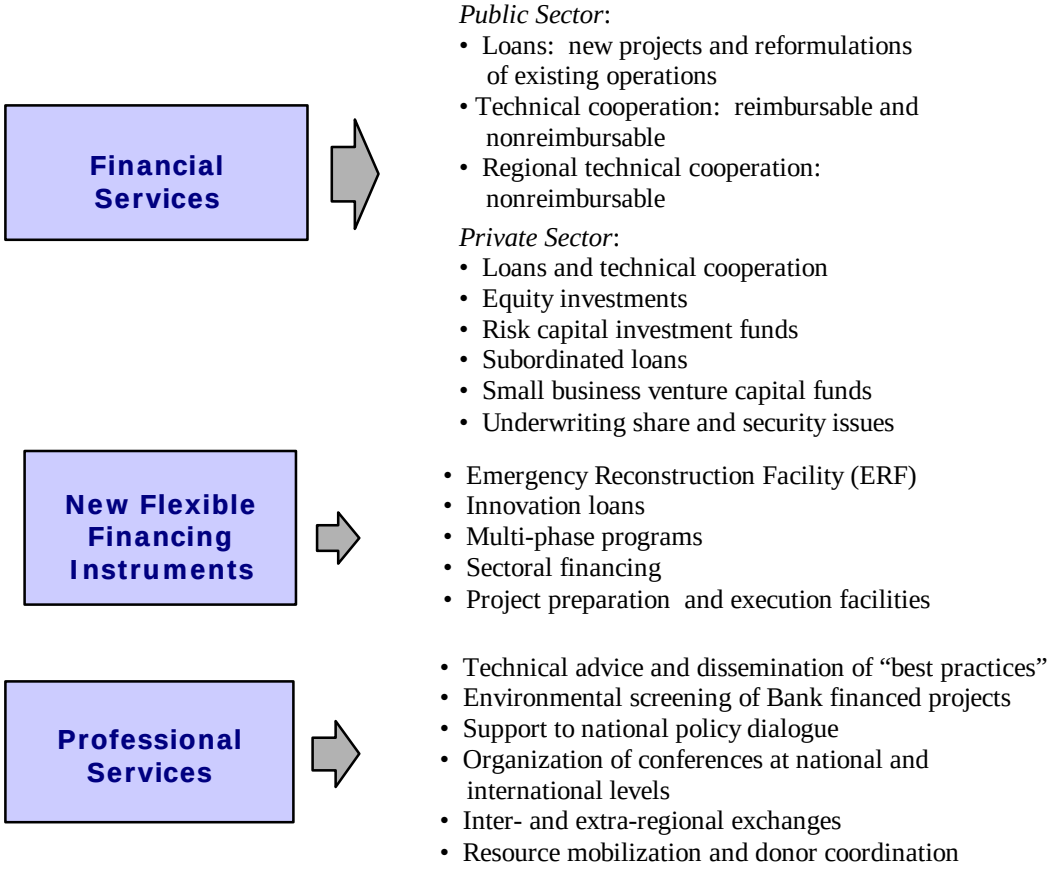
IDB Lending Trends

Since 1961, the IDB has mobilized financing for projects that total over $250 billion. Total lending reached $9.5 billion in 1999, making it the main source of multilateral funds in the region for the sixth consecutive year. The sectoral breakdown of loans in 1999 is as follows: social investment (44.9%), reform and modernization of the state (24.7%), productive sectors (16.4%), physical infrastructure (11.1%), and others (2.9%).

The Bank provides financing and technical assistance to its member countries through various services, as outlined in Box 3. This array of services is designed to meet the needs of the region's countries for short- and long-term development assistance. In an effort to better serve its members, the Bank continually updates and modifies the benefits it offers to the region.

Box 3

Services of the IDB Group



The Bank's Strategic Development Vision

To address the changing development needs of the region, the IDB is defining priority areas of actions. These priority areas include social investments and urban development (to better address rural poverty, urban living conditions, and social safety nets); modernization of the state (to improve governance, ethics and transparency and to foster strategic alliances among state, civil society and private enterprises); competitiveness (to strengthen financial and infrastructure systems, promote private sector involvement, develop technologies and foster trade and integration); new regional cooperation initiatives (in planning and investments); and environmental and natural resource management (to reduce vulnerability).

IDB-financed activities in these areas can contribute to addressing the structural and socioeconomic sources of vulnerability to disasters, as well as help the region build an environment conducive to adopting effective risk management.

Social Investments and Urban Development
Social investments, which represent 43 percent of total IDB lending, can directly or indirectly contribute to risk reduction by increasing the living standards of the poor. In this sector, the IDB finances projects that seek to increase access to primary health care, education, potable water and sanitation; provide more economic opportunities by improving access to markets, training, and technology; support the creation of social safety nets; increase rural employment and income generation opportunities; and improve the sustainable management of natural resources. These investments can often directly reduce risks associated with natural hazards. Urban development projects, such as the Rio de Janeiro and São Paulo *favela* improvement projects, directly tackle poverty-related vulnerability by improving basic water and sanitation infrastructure, housing conditions, and

land titling in disaster-prone informal settlements. Similarly, support for better technology and alternative income-generating opportunities for poor farmers has slowed deforestation and led to more sustainable farming practices in some areas.

Modernization of the State

Throughout the region, the Bank provides significant support for the process of state modernization. IDB projects promote better governance by fostering citizen participation in decision-making processes and in holding elected officials accountable for their actions, both of which improve the ability of civil society to demand better disaster prevention and response policies. The Bank also assists governments in strengthening public institutions and ensuring a more transparent and efficient management of public resources.

Support for decentralization initiatives is at the center of IDB\lending policy for state modernization. Local governments are given more responsibility for ensuring the delivery of services. This includes making sure their responsibilities correspond with their revenue sources through better fiscal management systems. Capable municipalities and good governing structures can result in better policies and better resource administration for land use, housing and city planning, as well as a more effective enforcement of rules and standards, such as building codes.

Competitiveness

Diversified economies with strong macroeconomic fundamentals and financial markets are more resilient in the face of natural disasters, both in terms of prevention and recovery. The Bank's continuing focus on helping countries to improve their capacity to compete in international markets is an essential step in producing an environment more apt to foster risk reduction. All the areas in which the IDB provides assistance—such as supporting macroeconomic stability, developing efficient financial markets, assuring adequate transportation corridors, encouraging private sector investment, and promoting more diversified and sustainable uses of natural resources—are useful (and sometimes indispensable) for effectively reducing risks.

Helping countries to develop efficient insurance markets, in addition to improving competitiveness, can also stimulate better assessments of risks associated with natural hazards. By adequately pricing risk, insurance companies are in a position to provide powerful incentives for private investment in prevention. Wider insurance coverage can also reduce the implicit liability of the public sector.

Regional Cooperation

Since its creation the IDB, together with the OAS and other multilateral forums, has worked toward strengthening regional cooperation by jointly financing development projects as well as supporting trade negotiations and cultural exchanges. Regional cooperation is an indispensable component of a risk-reduction strategy. Disasters do not respect national boundaries. Many disasters in the region are the result of the mismanagement of shared natural resources such as forests, soils and watersheds, whose optimal administration requires cross-border collaboration. Regional cooperation and joint investments in electricity and transportation infrastructure, river basins and coastal management programs the establishment of forecasting capabilities and self-insurance schemes or disaster intervention funds make good sense. They are efficient, innovative and cost effective instruments.

Environmental and Natural Resource Management

More effective management of the environment and natural resources is an integral part of the strategic vision of the IDB. The Bank is helping countries to fight environmental degradation that exacerbates the vulnerability of human settlements and economic activity in the region. Reforesting watersheds and coastal zones, controlling soil erosion, and improving land use in cities can substantially reduce the potential impacts of high winds and heavy rainfall, such as flash floods and landslides. Working together with governments in the region, the IDB can play a key role in this sector by making sure that all its projects are environmentally sound. It can also lead initiatives that promote environmental conservation and that improve natural resource management both in rural and urban areas.

IDB's Approach to Risk Management

Continued economic and social development is necessary for reducing risks to a manageable level, but in itself is not sufficient. To achieve true development and stem the tide of the region's growing vulnerability to natural hazards, the Bank is committed to helping countries take a comprehensive approach to risk management. This concerted effort must address the roots of vulnerability as well as the human and economic consequences of natural disasters. The Bank's Policy on Natural and Unexpected Disasters, which was revised in 1999, provides a solid platform for its support to countries in this area. The same is true of the Bank's leadership in mobilizing resources and fostering dialogue in the region.

A New Policy

Since the early 1980s, the IDB has had a policy on disasters in place that stipulates the nature and level of assistance the Bank will provide in the case of an emergency. This policy was based on the premise that, as a development bank, the Bank's comparative advantage was to provide financing and technical assistance for rehabilitation and reconstruction rather than emergency humanitarian activities. Therefore, the policy focused mainly on mechanisms for mobilizing resources for reconstruction. Acknowledging the current need for reducing vulnerability in the region, the IDB adopted a new policy in March 1999 to put the challenge of prevention at the forefront of the development debate and adopt a more comprehensive and proactive approach to risk reduction as well as post-disaster recovery.

The new Policy on Natural and Unexpected Disasters provides the platform needed to help countries face the challenges of development in a region prone to hazards. The new policy explicitly puts prevention on an equal footing with disaster response and reconstruction in the Bank's operations. It states that the purpose of the Bank's participation in the area is to assist member countries "in effectively protecting and resuming their economic development" as well as "in taking appropriate measures to reduce and avoid losses from all kinds of disasters." This has led the way for disaster prevention operations independent of disaster events, complementing the more traditional support for prevention in reconstruction projects. Moreover, the policy specifies that the analysis and management of risk will be mainstreamed in all of the Bank's lending operations.

The policy has also led to improvements in the efficiency and timeliness of the Bank's response to natural disasters. In the event of a disaster, it allows for the emergency redirection of funds in existing lending programs in the country and, when necessary, the approval of new emergency operations. The development of new reconstruction loans may follow a new streamlined design and approval process and a simplified procurement process. To help relieve financial constraints after a disaster, the Bank may authorize longer repayment periods, lower interest rates on new loans, increase the amount of revolving funds for disbursements or relax local funding requirements.

In support of this new policy, the Bank also created a new financial instrument enabling the rapid mobilization of fresh resources in post-disaster situations: the Emergency Reconstruction Facility for Natural and Unexpected Disaster Support (ERF). The ERF is endowed with $100 million and can be used for emergency-related temporary rehabilitation projects (see a detailed description of the ERF in Part 3 of this document). In keeping with the policy's mitigation focus, the ERF—which is clearly an emergency-related instrument—requires for its use the "solid assurance of the country's commitment to strengthen in-country capacity in the areas of preparedness, prevention and organizational set up to manage disaster mitigation and relief efforts."

Mobilizing Resources

The Bank is a key player in mobilizing resources for member countries affected by disasters. In terms of its own resources, the IDB's lending resources for reconstruction and prevention/projects reached an estimated $1.5 billion in the last four years alone. Emergency, reconstruction and mitigation-related technical cooperation projects (most of them grants) amounted to $11 million over the same period.

In addition to these disaster-related projects, IDB financing for many agricultural, infrastructure, environmental and urban development projects

includes important risk-reduction components. For example, the Bank may finance hazard monitoring systems, risk mapping and disaster mitigation techniques such as drainage, reforestation, and hazard-resistant design specifications. For Central America, Mexico, Haiti and the Dominican Republic alone, such risk reduction components amounted to close to $300 million in the last 10 years. While still a small percentage of the Bank's total lending (roughly two percent for the decade), these disaster mitigation operations are nevertheless an important point of departure for much greater support to reduce risks associated with natural hazards.

As a regional development bank, the IDB coordinates closely with the international cooperation community responding to disasters in its member countries. In the aftermath of Hurricane Mitch, the Bank established a Regional Consultative Group with multilateral agencies, donors and governments, to provide a forum where the affected countries could present their national plans for reconstruction and transformation, and the partners could monitor progress in the region.

Box 4

Key Elements of Risk Management

Pre-Disaster Phase				**Post-Disaster Phase**	
Risk Identification	**Mitigation**	**Risk Transfer**	**Preparedness**	**Emergency Response**	**Rehabilitation and Reconstruction**
Hazard assessment (frequency, magnitude and location)	Physical/structural mitigation works	Insurance/ reinsurance of public infrastructure and private assets	Early warning systems. Communication systems	Humanitarian assistance	Rehabilitation/ reconstruction of damaged critical infrastructure
Vulnerability assessment (population and assets exposed)	Land-use planning and building codes	Financial market instruments (catastrophe bonds, weather-indexed hedge funds)	Contingency planning (utility companies/ public services)	Clean-up, temporary repairs and restoration of services	Macroeconomic and budget management (stabilization, protection of social expenditures)
Risk assessment (a function of hazard and vulnerability)	Economic incentives for pro-mitigation behavior	Privatization of public services with safety regulation (energy, water, transportation, etc.)	Networks of emergency responders (local/national)	Damage assessment	Revitalization for affected sectors (exports, tourism, agriculture, etc.)
Hazard monitoring and forecasting (GIS, mapping, and scenario building)	Education, training and awareness about risks and prevention	Calamity Funds (national or local level)	Shelter facilities Evacuation plans	Mobilization of recovery resources (public/multilateral/insurance)	Incorporation of disaster mitigation components in reconstruction activities

Building and Strengthening National Systems for Disaster Prevention and Response: These systems are an integrated, cross-sectoral network of institutions addressing all the above phases of risk reduction and disaster recovery. Activities that need support are policy and planning, reform of legal and regulatory frameworks, coordination mechanisms, strengthening of participating institutions, national action plans for mitigation policies and institutional development.

Information, Raising Awareness and Fostering Dialogue in the Region

Wide dissemination of quality information on risk reduction and consensus building on priorities for future action are fundamental elements in reducing losses in the region. The Bank is supporting both through various non-lending activities. With its partners in the region, the Bank has organized a number of workshops to raise the awareness of civil society and governments about disaster-related issues.

Recent examples include the Regional Workshop on Environmental Management and the Reduction of Vulnerability to Natural Disasters (El Salvador), the Central American Workshop on School Reconstruction (Honduras) and Prevention of Disasters: Social, Political, Economic and Environmental Variables (Dominican Republic).

The IDB also finances research and publications related to disasters. In preparation for lending operations, the Bank finances studies relevant to risk management, such as risk assessment methodologies, river basin monitoring plans and lessons learned from practices in the region. The Bank also supports advancing an exchange of knowledge and expertise in the field of disasters in general, such as a comprehensive research agenda to better understand the consequences of natural disasters on women.

Finally, the IDB promotes better risk reduction management through its participation and leadership in various regional forums. The Bank participates in the Inter-American Committee on Natural Disaster Reduction to improve coordination among multilateral agencies, governments and NGOs and, in particular, promote a proactive approach to risk reduction. As part of this work, the IDB chairs the subcommittee charged with finding innovative solutions for financing disaster prevention in the region.

A Comprehensive Approach

With a sound foundation in its development vision and disaster policy, the Bank's new approach will help countries to target investments to reducing risk. It will also help them build their capacity for managing the process of risk reduction and disaster recovery in the future. As summarized in Box 4, the approach involves activities before and after disasters that improve the identification, mitigation and transfer of risk, as well as preparing for an effective response to an event, including the type of reconstruction that ensures an effective recovery while building in safeguards against future events.

Part 3: Bank Supported Operations in Risk Reduction and Disaster Recovery

As discussed in Part 2, the Bank's proactive stance to reducing the toll of disasters in the region requires a more comprehensive approach (one that encompasses both pre-disaster risk reduction and post-disaster recovery), and is framed by new policies and institutional arrangements that support effective action. IDB funding helps countries undertake key elements of risk reduction management: identifying the risks they face, adopting mitigation measures to protect vital infrastructure and human lives, adopting risk transfer mechanisms when appropriate to spread financial risk over time and between actors, and preparing for an effective response in case of a disaster.

The Bank is also helping countries complete the transition to more effective institutional arrangements and policies, which are fundamental for building a permanent technical and operational capacity needed to ensure sustained investments in reducing risks. Finally, when disasters strike—as they will continue to do—the Bank will support the region's countries by providing immediate financial resources for emergency needs and the speedy restoration of critical facilities. The Bank's longer-term assistance helps rehabilitate and reconstruct the affected sectors and communities. Following are highlights of the elements of this approach, providing examples of Bank support.

Investing in Key Components of Risk Reduction and Disaster Recovery

The Bank is well known for the sizable resources that it has made available to countries for reconstruction after a disaster. However, the Bank has also financed risk identification, disaster mitigation and emergency preparedness activities. Unfortunately, the Bank's efforts in the past are dwarfed by the requirements needed to reverse the region's growing vulnerability. The Bank will have to substantially increase its support in the following key areas of risk management.

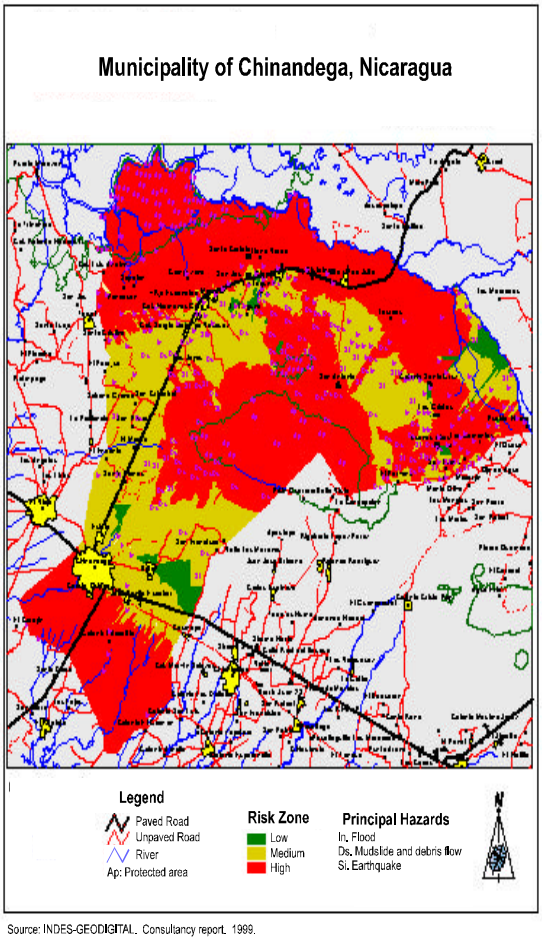
Identifying and Understanding Risk

Bank supported programs can help a country to identify the principal natural hazards it faces, including their frequency, intensity, duration and location. Combined with information on the country's vulnerability to these events—such as exposed populations, infrastructure, critical facilities and natural resources (as well as the factors that contribute to this growing exposure, like deforestation)—this information on physical hazards yields an estimate of the likely impacts of a given event. The analysis may include estimates not only of direct physical and economic losses, but secondary and indirect impacts as well. For example, in Chinandega, Nicaragua, as elsewhere in Central America, Bank funding facilitated the production of a municipal level risk map and a day-long workshop with residents, local government officials and NGOs to review in detail the hazards they face and the level of risk that might be acceptable for housing. In the case of Chinandega, the most important hazards relate to floods and mudflows (see Figure 2).

The identification of certain risks can be used to define needed prevention and mitigation measures and to locate public and private investments in safe areas. In Costa Rica, for example, the Bank financed Electric Development Program III included a study of the potential for earthquakes (active faults), as well as geological surveys to identify unstable slopes. This information was used to identify safe locations for electric facilities and transmission lines and to specify appropriate seismic-resistant construction design. In El Salvador, a recent water and sanitation program is providing financing for the modernization of a hydrometeorology information network as well as a study of the hydrology of watershed areas. Both activities allow monitoring of the likelihood of flooding and an estimate of potential impacts on vital infrastructure. To provide the region with autonomous risk identification capacities, the Bank has financed studies of the modernization of weather services and forecasting capabilities in the

region (see Box 5). [1] In addition, the IDB is currently designing technical assistance grants to develop the use of cutting-edge information technology as a tool to identify risk in the region.

Figure 2. Zoning for Housing in the Presence of Risk



Source: INDES-GEODIGITAL. Consultancy report. 1999.

Mitigation

Recent events throughout the region serve as reminders that investments in mitigation can be effective at preventing or reducing damage when disasters strike (see Box 6). Countries in the region, many with Bank support, have already begun to take some important steps to reduce risk. On a sectoral basis, programs for roads, infrastructure, health, agriculture and urban development have adopted specific mitigation measures to reduce the impact of disasters. For instance, given Panama's vulnerability to earthquakes, torrential rains and flooding, a recent Bank-supported road program that finances the rehabilitation and replacement of bridges also explicitly provides an additional ten percent in financing for disaster mitigation measures. An environmental management program in Argentina is financing macro-drainage works to prevent flooding of the Matanza-Riachuelo river basin. In Brazil, the Rio de Janeiro Urban Upgrading Program finances urban greening, hillside stabilization and surface drainage works to reduce the landslide and flooding hazard in poor urban neighborhoods. Similarly, the Bank has financed investments to safeguard a variety of social and economic assets, such as hospitals, schools, utilities, basic infrastructure, human settlements and natural resources (see Box 7).

Box 5

Modernization of Weather Services and Forecasting Capabilities: "Proyecto Clima Iberoamericano"

In cooperation with the World Meteorological Organization, the Bank financed studies in 13 countries to evaluate the needs and opportunities for modernizing national weather services and forecasting capabilities. These feasibility studies reviewed the needs and uses of meteorological and hydrological information systems and products, as well as the state of observation networks and human, technological, and institutional resources. The study recommended and estimated costs for modernization actions in four key areas: observation networks, information systems, communication systems, and institutional capacities.

The countries participating in the study were Argentina, Bolivia, Brazil, Colombia, Costa Rica, Chile, Ecuador, El Salvador, Mexico, Paraguay, Peru, Uruguay, and Venezuela.

[1] The source for the information in boxes 5-10 is internal IDB documentation and loan reference material.

Box 6

Mitigation Works: The Sabaneta Dam in the Dominican Republic

Built by the Government of the Dominican Republic in the 1980s, the Sabaneta Dam, which was designed to regulate water flows down the San Juan river, posed a sizeable risk, as leaks and damaged emergency spillways reduced the resistance of the structure and significantly increased the threat of rupture in the event of heavy rainfall.

At the request of the government, in 1993 the IDB approved financing of a $48 million investment project that included preventive retrofitting works to overhaul the dike and other critical dam structures. Repair works, amounting to $10.7 million were completed in the first part of 1998, just in time for Hurricane Georges, a Category III hurricane. Among the hardest hit areas in terms of rainfall associated with Georges, was precisely the province of San Juan de la Maguana, site of the Sabaneta Dam. In fact, 320 mm of rainfall were dumped in the San Juan River basin and an estimated 255 mm poured directly on the dam. In spite of this, the dam, spillways, powerhouse and stilling basin functioned normally and experienced no significant damage, prompting a panel of experts to conclude that the just completed works had proven highly effective.

The gains associated with the normal functioning of the dam during the hurricane were substantial. The San Juan river basin is home to 174,900 people, most of them living downstream of the Sabaneta Dam. The San Juan valley is also the second most productive agricultural region in the country, with more than ten percent of the total arable land area of the country. The dam's rupture would have resulted in heavy losses of human lives and agricultural production as well as major indirect losses caused by the disruption of production and related increases in unemployment and poverty.

Mitigation measures, such as land use and hazard resistant building regulations, professional training and community awareness campaigns, also help to reduce the impact of disasters. A Bank supported reconstruction program after the earthquake in Colombia's coffee region in 1999 required that only those rehabilitation and repair works built according to earthquake-resistant codes were eligible for funding.

Box 7

Good Practices in Disaster Mitigation: Slope Protection the Mt. Pichincha in Ecuador

The purpose of this $20 million loan approved in 1996 is to mitigate the potential of disasters on the slopes of Mt. Pinchincha, an actives volcano near Quito. Water regulation works proved to be an effective method to avert damage from floods and mudslides during the last rainy season. The new hydrometeorological network provided valuable information for the operation of a future warning system. Community participation was a key element. Local microenterprises were established and received assistance to provide solid waste collection services. The workshops and public education campaigns developed a better understanding and awareness about the risks of living in a very fragile area and the role of residents in mitigating risks. Nongovernmental organizations and the United Nations HABITAT Program proposed improvements to the city's urban policy and municipal government organization. As a result of the volcanic activity from Mt. Pichincha during 1999, the Major of Quito coordinated a yellow and red code alert to prepare residents for a major eruption.

In addition to direct investment, the Bank may lend technical assistance for evaluating the feasibility of mitigation projects, which themselves would be bankable. The Bank is financing a Prevention and Mitigation Fund for Central America, managed by the Center for Prevention of Natural Disasters in Central America (CEPREDENAC). The Fund offers matching grants and technical assistance to public and private organizations in the six Central American countries, to be used for risk assessment mitigation measures, and institutional strengthening.

Early Warning and Emergency Preparedness

With Bank support, a number of countries are improving their early warning and emergency preparedness capabilities (the state of readiness to

respond rapidly and effectively to save lives, reduce suffering and enhance recovery of communities after a disaster strikes). The Bank is financing training programs for local citizen preparedness in Belize and national early warning systems and response capabilities in Ecuador and Argentina. In Belize, Bank funding will facilitate the preparation of evacuation plans, retrofitting existing schools to act as local shelters and building new regional shelters. In Brazil, Bank financing will strengthen the activities of the Coordination Commission for Meteorology, Climatology and Hydrology and will create regional meteorological centers at the state level. Improving understanding and communication among the scientists, the technical experts who assess atmospheric and hydrological conditions, and the persons responsible for issuing early warnings and mobilizing response in a disaster, is critical for reducing potential impacts.

Institutional Reforms

Risk reduction is now on various government agendas across the region, in many cases for the first time. Countries are recognizing that in order to enable governmental institutions to meet risk reduction objectives for development—and not to simply respond better to disasters when they happen—they must put new institutional arrangements in place. Planning and development agencies must assume a more explicit role in risk reduction and coordination mechanisms need to be introduced that permit national agencies, local governments and civil society to join in a common risk reduction strategy.

The Bank is placing new emphasis on supporting the transition to new institutional arrangements, policies, dedicated budgets and programs that will build the permanent technical and operational capacity needed to ensure sustained, and long overdue, investments in disaster prevention. In Central America, the Bank supports a regional program to help fledgling national systems to formulate nation-wide action plans for mitigation policies and institutional development. It also provides resources for sharing technical information and good practices. In Ecuador, Argentina and Colombia, institutional strengthening efforts are helping build and fortify effective interinstitutional systems for risk reduction.

Although in the aftermath of a disaster the perspective of responders is relatively short term, the Bank has also helped countries take a longer-term perspective (see Box 8). The Bank's financing of mitigation works (which are the investment components of a reconstruction project) is an important instrument in promoting institutional reforms to transform these nascent national systems into more efficient providers of mitigation and preparedness services. Indeed, the momentum generated by the flurry of mitigation and preparedness activities that inevitably emerge in most post-disaster situations will be lost if countries do not start organizing effective national systems for risk management to support and lend continuity to the efforts.

Box 8

Building Interinstitutional Systems for Disaster Prevention and Response

The 1999 Hurricane Rehabilitation and Preparedness Program in Belize provides $21 million in technical assistance to the government to develop an overall national emergency management system, transforming the National Emergency Management Organization (NEMO) into an apex institution in charge of all aspects of risk management. With financing from the Bank, NEMO will undertake hazard analysis studies and will prepare a comprehensive plan to guide its future activities. The IDB will finance the modernization of the organization, including its mandate, human resources and operating procedures, as well as its existing facilities and equipment. The project will also strengthen local response capabilities by financing community awareness and training activities.

Immediate Response

Mobilizing Resources Quickly

The Bank's primary mission is development lending, while emergency response and disaster relief is the domain of domestic and international humanitarian assistance organizations. Nevertheless, the Bank's representative in the affected

country can immediately make available up to $50,000 in grant resources that is usually passed directly to the national response agency. More importantly, the Bank is present during the emergency, participating in the initial analyses of damages and needs, in order to provide technical assistance in identifying short- and medium-term recovery strategies for different sectors, and to begin preparing lending programs to support the reconstruction.

Within days, the Bank's representative in the country can identify resources from projects currently in progress that may be redirected to meet immediate emergency needs (such as restoring services, or immediate rehabilitation of infrastructure), as well as longer-term reconstruction needs. If requested, these resources can also finance humanitarian assistance (for example, medicines or shelters). In a matter of three days after the recent landslides and debris flows in Venezuela, the Bank was able to earmark $200 million from existing operations for the emergency, allowing the government and the Bank to subsequently work out if and how they would be reprogrammed.

The Emergency Reconstruction Facility

In December 1998, the Bank established the Emergency Reconstruction Facility (ERF), a mechanism that permits it to respond rapidly in the aftermath of a disaster. Following the 1999 earthquake in the coffee region, Colombia was the first country to use the ERF (see Box 9).

The purpose of the ERF is to very quickly make available resources to finance a pre-established menu of eligible activities. These include help in speeding up the restoration of services, financing temporary repairs, and cleaning up in the early period after a disaster. The country's request for use of these funds triggers a fast-track process of loan approval at Bank headquarters, which can take place in as little as two to four weeks. The ERF can provide up to $65 million, chargeable to the Bank's Ordinary Capital, and up to another $35 million chargeable to the Fund for Special Operations (highly concessional resources) to finance operations of the Facility on a reimbursable basis.

Box 9

Colombia Uses the Emergency Reconstruction Facility (ERF) for Rapid Response to the 1999 Earthquake

The IDB first used the ERF in response to the earthquake that devastated the coffee growing region of Colombia in January, 1999. On February 16, 1999, less than 20 days after the disaster, the IDB approved a $20 million loan to help resume basic services in the coffee belt. In conformity with the ERF's flexible rules, this emergency loan had a short disbursement period (one year), a grace period of five years, a 20 percent revolving fund and simplified procurement procedures.

This loan provided immediate resources for jumpstarting the rehabilitation process, including damage assessment studies and reconstruction action plans, debris removal and building demolition, inspection and stabilization of bridges, temporary housing and infrastructure repair of such services as drinking water, sanitation, health and education. This project laid the foundations for a $135 million reconstruction operation approved at the end of 1999.

Emergency Stabilization: Addressing Macroeconomic and Social Impacts

In the aftermath of a large disaster, countries may face a variety of macroeconomic impacts, including declining exports and rising imports, a deceleration of economic growth, a reduction of per capita income, a decline in their tax revenues that can prolong fiscal imbalances, and a sudden increase in the level of indebtedness. The Bank works with countries to address these issues in a variety of ways, such as by lending to fill the shortfall in recurrent public expenditures for vital social programs, for balance of payment support, and by restructuring and forgiving debt. After Hurricane Mitch, the international financial institutions helped Honduras and Nicaragua to qualify for highly indebted poor country (HIPC) status. In so doing, new agreements were negotiated with creditors and the Central America Emergency Trust Fund was established in collaboration with the International Monetary Fund and the World Bank to mobilize funds to cover debt service payments.

Recognizing the magnitude of the adverse impacts of natural disasters on low-income and vulnerable groups, the IDB is financing several innovative projects to provide assistance to children affected by disasters. The 1999 Emergency Support to Children and Adolescents technical cooperation project facilitates immediate assistance to children and adolescents affected by Hurricane Mitch in Nicaragua. They are offered adequate health services including disease monitoring and prevention, vaccinations, sexual education and mental health assistance. In response to the 1998 floods in Argentina, the Program to Assist Children and Adolescents at Risk was modified to include the affected regions. Finally, initiatives are under way to accelerate the reconstruction of schools in Central America and reduce their vulnerability to floods and hurricanes.

Post Disaster Reconstruction and Transformation

The Bank has characteristically responded to natural disasters by focusing on the aftermath of an event and directing its lending to reconstruction and rehabilitation of the affected sectors and infrastructure. In the last 10 years, the Bank has lent around $2 billion in the region to help countries emerge from disaster-related emergencies, primarily to rebuild and rehabilitate damaged infrastructure. In some cases, the funds went to rebuild water projects, road systems and housing projects that the Bank had helped to finance in the first place.

Certainly, reconstruction has been by far the most visible disaster-related lending. In the last 10 years, Bank financing has concentrated on rebuilding physical infrastructure (water, sewerage, electricity and road systems – corresponding to 65% of all lending in reconstruction), on reestablishing social services (health, education, housing – 25%), and on credit lines and support for productive activities (such as microenterprises – 10 %). In the same period, over two thirds of IDB loans related to emergencies represented new monies to the affected countries. Less than a third of the reconstruction resources came from modifications of already approved loans under implementation.

Bank financing for reconstruction has ranged from targeting specific reconstruction works to a more comprehensive approach. The program in the Dominican Republic provides a recent example of Bank efforts to avoid repeated vulnerability by adopting a comprehensive approach that addresses future risk through reconstruction investments (see Box 10).

Box 10

Reconstruction Program after Hurricane Georges Contributes to Risk Reduction

The $105 million Bank-sponsored reconstruction program in the Dominican Republic, approved in 1998, financed the usual rehabilitation activities: both large infrastructure projects (city water supply systems, and repair of high-voltage towers in the power transmission system), as well as various smaller projects to repair, rehabilitate and rebuild social, productive and institutional infrastructure in low-income communities affected by the hurricane.

At the same time, the program protects recurrent public expenditures on social programs. In this case it is making up the fiscal shortfall to safeguard child welfare programs. In addition, the program finances activities to improve the country's ability to reduce vulnerability, as well as to better respond to the next event. These include strengthening disaster response agencies, a national land use plan that includes the evaluation of risk, forestry and ecotourism investments, and flood control works.

Comprehensive reconstruction programs can help finance risk assessments, adopt technologies to reduce vulnerability and strengthen disaster prevention. The latter includes modifying existing building codes or land use regulations and stimulating the rational use of natural resources.

Part 4: Moving Forward: A Plan of Action

The Bank is committed to assisting its member countries to address the difficulties posed by natural disasters. The IDB's leadership is evident in its successful mobilization of resources in the aftermath of the catastrophes of the past two years. Further, it continues to support the region's social and economic development, which is vital to adequate disaster preparedness. Despite the promising advances highlighted in Part 1, underinvestment in mitigation and prevention persists, making certain that losses related to disasters will remain large. In addition to speedy and efficient technical and financial support following an event of this kind, the Bank is committed to helping the countries develop and implement better prevention practices that will reduce the devastation wrought by future events. This section of the report focuses on 1) establishing strategic areas in which investments in risk reduction must be promoted, and 2) detailing the Bank's action plan to incorporate those areas into its activities.

Strategic Areas for Risk Reduction

The primary goals of the Bank's activities in in this area are to reduce the overall cost of disasters and to enable member countries to better manage the risk they face. To achieve these goals, lending and non-lending operations will increasingly focus on overcoming structural hurdles and building the capacity to effectively manage risk reduction. These hurdles include poor access to reliable and appropriate risk information by decisionmakers; the private sector's lack of involvement in prevention and risk management; the incipient political momentum in favor of prevention and mitigation; and the relative scarcity of technical and operational capacity of risk management institutions. Building upon experiences in the region and other parts of the world, the Bank will focus its efforts on the six strategic areas described below.

Building National Systems

With a few notable exceptions, prevention and mitigation efforts are taking place in an *ad hoc* fashion and the capability to manage or reduce vulnerability within countries is limited. There are national emergency commissions (as they are generically called) which are government bodies made up largely of civilian protection agencies and organizations. Typically set up in the 1970s in response to large disasters, these institutions have tended to persist in their focus on preparedness, response and recuperation activities related to emergencies. While most countries have established elements for emergency management (such as national emergency plans), many of these are not backed by interinstitutional agreements nor do they have resources that allow them to operate effectively. National mitigation strategies that incorporate a comprehensive approach to risk reduction are still not widely evident in the region.

New emphasis is needed on supporting each country's transition to new policies, institutional arrangements, and programs that will build a permanent technical and operational capacity. This is necessary to ensure sustained investments in disaster mitigation within the framework of interinstitutional risk management systems. These systems include public and private institutions, local governments, and civil society organizations. The Bank supports countries' initiatives to put in place effective legal and institutional arrangements, dedicated budgets, and the technical and policy know-how to reduce risks.

Building a Culture of Prevention

In many cases, little attention is given to understanding the needs of potential victims of disasters and stimulating an effective demand for mitigation. Families need to protect their homes and neighborhoods, communities must protect their schools, keep health facilities working and establish shelters. Companies need to safeguard their assets against business interruption, and local governments must enforce construction codes and land use decisions. Attention to the demand for safety can improve the allocation of resources for mitigation, make governments and others account-

able for managing risk, and monitor the progress and performance of policies and actions.

Several approaches can be can be followed to reach the desired effects. Local communities and municipal governments, sectoral ministries and the private sector (the consumers of risk mitigation services) need to understand the risks they face and should be empowered to protect themselves and their assets. Information sharing is essential to this end. It includes demonstrating the positive results of mitigation measures and providing readily accessible information about the hazards that communities face. An analysis of what makes them vulnerable, as well as their standing relative to other communities, can help make mitigation a community priority. Economic incentives are also valuable tools to signal the importance of mitigation and stimulate investment in new areas. These incentives can include subsidies for the construction of low-income housing in areas that are less prone to disasters, insurance schemes and grants for conducting studies of the feasibility of mitigation investment projects.

Reducing the Vulnerability of the Poor

In times of disasters, low-income groups are most at risk of dying or suffering extensive damage to their housing or productive assets because they are more likely to live in hazard-prone areas and occupy precarious dwellings. In addition, they are often ill-equipped to cope with the impact of destructive natural events on income and assets. These factors mean that the poor are largely unable to purchase private insurance to mitigate risk and thus are the least able to recover physically and financially from disaster. Hazard mitigation programs often bypass poor communities; in other instances they provide financing for solutions that do not fit the needs of the communities. Instead of receiving the attention they deserve, poor neighborhoods and marginal areas are rarely the focus of reconstruction investments. Unless specific action is taken, the rate of poverty will increase substantially after a disaster, as will the area's vulnerability to future events.

Building upon the Bank's experience in the fight against poverty, future projects to reduce poverty and manage natural hazard should attempt to better respond to the risks and challenges that poor households and neighborhoods face. To properly identify and understand the risks face by poor populations, efforts should be made to share expertise and conduct coordinated poverty- and risk-mapping investments. Given the extreme vulnerability of the poor, it is imperative that low-cost, innovative and sustainable approaches be implemented to effectively reduce risks in low-income neighborhoods. More emphasis should be placed on hazard-resistant infrastructure built with financing from Social Investment Funds. Moreover, efforts should be made to systematically included affected low-income communities in reconstruction programs.

When possible, poverty-reduction programs should be designed to reduce risks by, for example including income-generation schemes designed to also protect the environment, establishing safety net mechanisms that take into account the impact of disasters, and making basic information about risk reduction a part of education programs.

Involving the Private Sector

Natural disasters in the region often result in high economic losses in the private sector, which, in one way or another, are often covered by the public sector. When reconstruction and rehabilitation are financed from the current fiscal budget, funds are unavailable for other development needs; this may have an undesirable impact on macroeconomic stability. To reduce the economic burden associated with these disasters and encourage responsible risk management behavior, governments are looking at ways to encourage the private sector to adopt mitigation strategies that would transfer risk to other parties. These strategies include regulation (for example, for land use and building codes), economic incentives and the use of insurance and capital markets.

The government, and society as a whole, have further interests in stimulating the private sector to prepare for natural disasters and mitigate their effects. Following a disaster, more resilient businesses continue to have jobs available, can provide essential services (such as transportation, utilities, communication, etc.) and are a source of tax revenue. Thus, the development of reciprocal agreements in the transportation sector, for example, are an important element in ensuring fewer disruptions

in services. Moreover, when private sector activities are less vulnerable to disasters and property insured, public fiscal resources can focus on helping the recovery of marginal segments of the population.

The increased use of private insurance and the associated emphasis on appropriate risk management can be expected to lead to a reduction in losses. In addition to insurance for specific assets, a country that has appropriate risk management programs in effect is also more likely to be able to arrange contingent coverage for extreme "one in a hundred year" events. Countries can do this by setting up risk retention groups, pooling and direct access to the international insurance and reinsurance markets. Specific insurance-like instruments (contingent equity, weather derivatives, insurance options embedded in bond issues, etc.) are being developed that can help countries and firms manage risk more effectively. Even if insurance is not purchased, a country with these instruments will be better able to manage risk, reduce losses and ensure that contingent funding is available for unexpectedly large losses. These types of instruments can also attract groups from the private sector who would traditionally not have access to insurance, either because of lack of supply or due to high premiums. Governments can use these mechanisms to offer loss protection under certain conditions, usually associated with prevention actions taken by the beneficiaries.

Governments can also address the underlying constraints that hinder the private sector from adopting risk reducing actions. For example, to create an enabling environment for insurance markets, governments could use incentives such as regulatory reform, removing market barriers to entry, land use planning, property valuation and titling, building codes and risk assessments. The government can also provide inducements through direct payments, lower housing costs or tax incentives, to encourage greater demand for insurance, particularly among lower-income groups. These mechanisms (government actions and incentives) also serve to induce better risk management strategies.

Risk Information for Making Decisions

While risk management includes a variety of activities, the basis for all of these is information. More to the point, projections on the occurrence and estimates of the impact of natural hazards are essential to establish a priority ranking of mitigation needs and enable interested stakeholders to evaluate the overall risk of disasters in a specific country, region or sector. Risk information is crucial in order to adopt appropriate mitigation and preparedness policies and to set specific objectives and priorities for sectoral investments. Information on risk and vulnerability is also needed to develop private disaster insurance and other forms of market risk-sharing instruments.

To fill the current information vacuum, the Bank plans to facilitate the availability of diagnoses of risk for the countries in the region, especially those that are more prone to disasters. Moreover, the Bank will work with countries that have already begun this process to enhance and/or expand their diagnostics. The Bank will also fund regional research to evaluate existing assessment methodologies and their uses in order to improve those tools that can best provide relevant and accurate information to decisionmakers.

Fostering Leadership and Cooperation in the Region

Regional cooperation for risk management can benefit individual countries. Coordinated management of watersheds and the interconnected networks of electric systems and highways, as well as the possible pooling of resources for risk-retention (i.e., self-insurance) schemes are examples of regional cooperation. The challenge resides in reaching consensus about common policies and goals, making information widely available, mobilizing regional resources for prevention and building coordinated institutional systems.

Regional cooperation can also make an important contribution to national decision-making. Regional agencies can provide valuable assistance in the process of formulating national action plans for mitigation policies and institutional development. They can also provide resources for sharing technical information and experiences across the region. Existing partnerships with governments and regional institutions need to be developed to facilitate cooperation in risk reduction and provide a forum for intraregional and interinstitutional dialogue.

Mainstreaming Risk Reduction in Bank Operations

A two-pronged strategy is necessary to implement the strategic themes described above. The Bank will: (a) promote its goals in these strategic areas by helping each country to adopt appropriate risk reduction measures, and (b) make a concerted effort to mainstream risk management into the way the Bank does business. To this end, the Bank will emphasize risk reduction actions in its dialogue with borrowing member countries. In its review of project designs and preparation it will evaluate its experience to date and explore non-lending services to support risk reduction. As part of these efforts the Bank will consider establishing new financial mechanisms to encourage adding risk reduction components to projects throughout the region.

The Facility for Innovation in Disaster Prevention

The Bank is examining new financial mechanisms to encourage borrowing member countries to undertake and strengthen disaster prevention and mitigation actions. The Facility for Innovation in Disaster Prevention would support experimentation or pilot programs for gaining experience in the comprehensive approach to risk reduction and disaster management. Pilot programs would help demonstrate the potential of this specific approach to risk reduction, help achieve consensus, gain valuable institutional experience and boost institutional capacity prior to trying larger scale programs.

The Facility for Innovation in Disaster Prevention would consist of two financial instruments. First, in collaboration with bilateral donors, the Bank would mobilize *grant funding* on a select basis and particularly for lower-income countries of the region. The purpose of this funding would be to identify key prevention needs and opportunities. Funded activities may include risk assessments for specific investments, sectors and locations; evaluations of policy frameworks and institutional capabilities in risk reduction and analyses of the lessons learned from past actions that can be applied to future local and national disaster mitigation efforts.

Secondly, the Facility could also make available funds for *reimbursable financing*, up to US$10 million per country per year. These funds would be directed toward stand-alone projects that finance key investments which could lead to establishing, or significantly strengthening, national disaster prevention and risk management systems. These investments cover several diverse areas such as: policy and institutional development; innovative financing instruments (risk reduction funds, contingent financing arrangements, insurance schemes); hazard monitoring, forecasting and early warning systems; priority mitigation strategies and investments; education, training and technology development for risk reduction; and information systems for risk reduction investments.

The proposed Facility would also consider incorporating the repayment of its financing within larger, follow-on loans. The Facility could initially have a financing authority of US$150 million that could be replenished as a function of funding demand in member countries.

Bank/Country Dialogue for Risk Reduction

The Bank is in constant policy dialogue with senior government officials in the region to establish the precedence of development objectives for Bank financing. This policy dialogue can bring to light a country's vulnerabilities, consolidate its risk reduction policies and program initiatives into existing platforms, stimulate investments in mitigation and institution building, and help each country monitor its own progress. The Bank will incorporate risk reduction objectives and priorities in the early stages of its programming dialogue with its member countries.

Through its various mechanisms, the Bank will also encourage countries to include risk reduction objectives and actions in their overall policy agenda as well as in those programs to be financed by the Bank. The Bank can assist by: (a) providing long-term strategic guidance on risk management in selected borrowing member countries, (b) increasing the priority of risk management in the agendas of finance ministries in the region, (c) coordinating the use of IDB instruments for priority investments in risk reduction management and d) evaluating the risk management capabilities of

its member countries. This dialogue will stress two key elements that need to be addressed: the need to develop vulnerability information systems in order to identify priority interventions, and developing effective priority-setting processes that ensure stakeholder participation, promote conflict resolution and evaluate tradeoffs.

Risk Reduction in Project Preparation and Financing

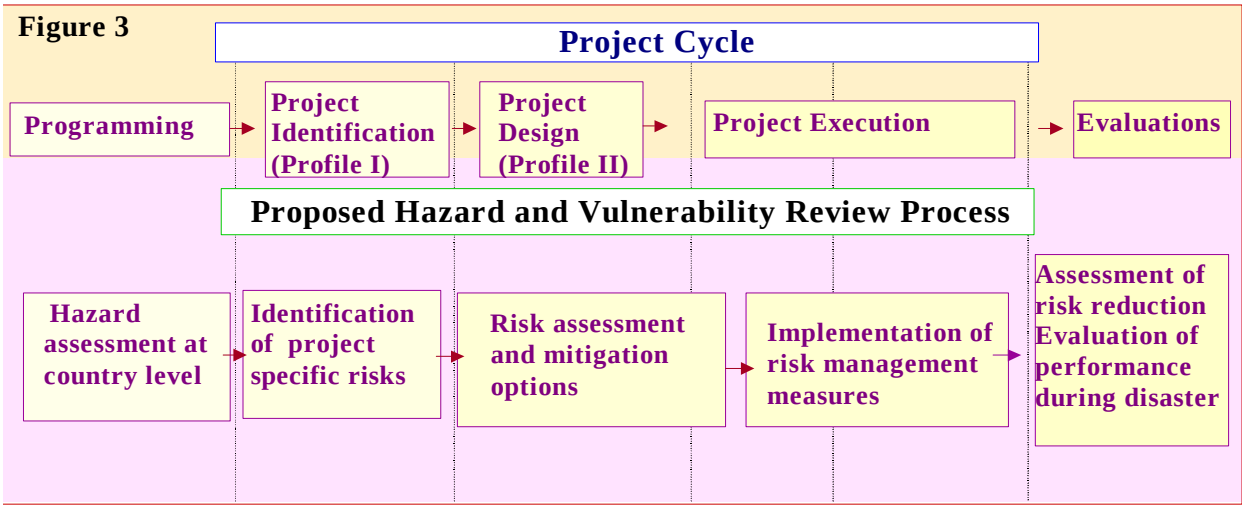
Bank project teams will assist countries in the design and preparation of operations to support government priorities and, in this process, evaluate whether or not some type of vulnerability assessment is warranted.

The Committee for Environmental and Social Impacts (CESI), which reviews all Bank operations, will collaborate with project teams in assessing the vulnerability requirements of projects. These assessments will identify the degree to which investments are likely to be affected by natural hazards, and which mitigation measures are appropriate in reducing risk to acceptable levels. (See Figure 3 for a schematic representation of how risk analysis can be incorporated into the Bank's project cycle).

The Bank will collaborate with borrowing member countries in developing instruments for apportioning risk liabilities and providing the proper incentives for private/public risk management. The Bank chairs a working group of the Inter-American Committee for Disaster Reduction formed to develop financial instruments for mitigation and prevention. Bank operations will also be used to promote institutional reforms needed to transform national disaster management systems into more efficient providers of prevention and preparedness services. Promoting the administrative and implementation capacity of local governments and civil society organizations will be an integral part of this institutional approach to project execution and evaluation.

Risk Management in the Project Cycle: a Proposal

Figure 3



Evaluating the Bank's Experience in Operations

To analyze the scope and nature of risk reduction activities in its projects the Bank is currently undertaking a review of one of its lending portfolio in its operational regions (Region II: Mexico, Central America, Haiti and the Dominican Republic). This review should be expanded to encompass all the Bank's regions in order to identify lessons learned that can be used to improve risk reduction capabilities in member countries. Moreover, the Bank will conduct evaluations of selected projects, especially in critical investment areas that have traditionally been the most affected by natural disasters. These evaluations will identify lessons and

good practices for future operations, which will then be disseminated.

Building Networks and Strategic Alliances

Focal points will be established for advancing the Bank's risk reduction plan of action in each of the Bank's regional departments (both operational and in policy/research). These focal points, which include technical specialists in headquarters and in Bank offices in borrowing member countries, are the points of technical contact for countries seeking Bank support for their risk management strategies and investments. Bank specialists will work with member countries on several fronts: to identify and prepare projects within country programming dialogue; to identify resources to address natural hazard risk across sectors, country, and operational regions; to coordinate with the international community; and to establish benchmarks and measure the progress of the projects. These focal points will serve as a basis for establishing a disaster management action group inside the Bank, whose mandate will be to establish a joint research and investment work program. They will also share expertise and lessons learned, and participate in the regional network in a technical capacity.

In the region, the Bank will play a central role in building networks to advance knowledge and expertise, as well as to promote joint strategies and project financing to reduce risk and improve response. Toward this end, the Bank is renewing its efforts to forge strategic partnerships with other international institutions involved in this area, including the World Bank, the OAS, the U.N. agencies (UNDP, UNESCO, Habitat and WMO), PAHO, and ECLAC, as well as NGOs and scientific and technical organizations. In this spirit of cooperation, the IDB recently joined the ProVention Consortium (a World Bank-sponsored initiative), and the Inter-American Committee for Natural Disaster Reduction. It has also established a special relationship with ECLAC in this field.

A Call for Action

The Latin America and Caribbean region has an important opportunity to address vulnerability at its roots and to take a proactive stance to protect its population, assets and development from future natural disasters. As part of its development mandate and the plan of action outlined here, the IDB will join forces with regional partners and member countries to assist in this effort. The Bank will work to incorporate risk reduction into its own lending operations and in the development vision of each of its member countries. In collaboration with other multilateral institutions and donors, the Bank will explore innovative solutions for financing prevention projects and initiatives in the region. In the event of a disaster, the Bank will continue to respond to the needs for reconstruction, but will ensure that its financing contribute to breaking the cycle of destruction-reconstruction-destruction, which still plagues development efforts in the region.

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International Decade for Natural Disaster Reduction

. . . . We have to act decisively now, to guarantee a safer world for future generations. . . . We stress the importance of developing and strengthening regional approaches dedicated to disaster reduction in order to take account of local specificity and needs. We emphasize in this respect, the need to support institutional initiatives and mechanisms for strengthening regional, sub-regional national and local capabilities, coordination, and applied research. . . .

Appropriate financial resources will be needed to ensure the development and implementation of prevention and mitigation policies and programs in all countries particularly developing countries. Innovative approaches should be explored including the funding of international initiatives. However, full use should be made of existing regional and national financial mechanisms involving those communities most directly exposed to risks. All bilateral and multilateral development assistance should include disaster reduction components. . . .

Excerpts from **The Geneva Mandate on Disaster Reduction**
IDNDR International Program forum, "Towards Partnerships for Disaster Reduction in the 21st Century"
Geneva, 9 July 1999

The representatives of the American countries, international agencies and the other participants gathered at the Hemispheric Meeting of the International Decade for Natural Disaster Reduction held in San Jose, Costa Rica, . . .

Affirm that: . . . .

4. *In order to achieve sustainable human development, it is critical to adopt policies and strategies aimed at reducing vulnerability, as an integral part of development planning.*
5. *National institutions responsible for prevention and mitigation, as well as those in charge of preparedness and emergency management present varying levels of progress and efficiency in different countries. They need further strengthening modernization and adaptation to the profile of existing risks. It is critical that civil society be involved effectively in this process.*

Recommend:

3. *To include disaster reduction measures in national legal and institutional frameworks, taking into account the different requirements and objectives of prevention and mitigation, as well as those of preparedness and disaster management. To this purpose, governments have to strengthen institutions in charge of disaster management. Furthermore, they have to guarantee the functional continuity through permanent human resources. . . .*
4. *That governments include vulnerability and risk reduction elements in the formulation of national policies, strategies and development plans, and adopt common regional and sub-regional strategies to optimize the use of national and international resources. . . .*
5. *To conclude bilateral and sub-regional cooperation agreements in order to share resources and experiences in disaster prevention and mitigation, as well as in preparedness and mutual assistance in case of disaster. . . .*

Excerpts from the **San José Declaration**
Hemispheric Meeting of the IDNDR
San José, Costa Rica, 4 June, 1999