

Managing Natural Hazards, Reducing Risks to Development

Reducing vulnerability to disasters is an integral part of the fight against poverty. A natural disaster can destroy decades of development gains in moments. Poor people are typically the most affected and need more time to recover because they are more likely to live on the most fragile lands, in unsafe structures, and have fewer resources with which to protect them.

The World Bank's International Development Association (IDA), the world's fund for the poor, has long played a key role in post-disaster recovery and reconstruction, and increasingly is involved in risk reduction as well. IDA is also one of the largest donors for disaster reconstruction and recovery. According to information from the OECD's Development Aid Committee, humanitarian aid offsets less than 10 percent of a country's disaster losses on average. When the World Bank does not finance the larger reconstruction work, problems are addressed only piecemeal, if at all.

World Bank operations, technical assistance, and research have all contributed to establishing the links between natural disaster risks, poverty reduction, economic growth, and sustainable development. Moreover, they have been successful in generating demand for risk reduction investment. In supporting recovery and reconstruction, IDA has demonstrated that it has the flexibility, leadership, and technical expertise to build on policy reform and draw in local communities for successful project results. IDA uses its unique convening power to work with partners to develop awareness and tools for mainstreaming risk reduction, and is the leading innovator in risk-management financing.

At a glance

- In 2008, the death toll from natural disasters tripled to 235,000 from an annual average of more than 66,000 over the period 2000–2007. In 2008, economic losses totaled \$190 billion, more than double the annual average of \$82 billion over the same period. Six of the 10 countries with the highest number killed (per 100,000 inhabitants) were in IDA countries—Myanmar, Angola, Haiti, Afghanistan, Mongolia and Kyrgyzstan. Similarly five of the ten countries with the highest number affected (per 100,000 inhabitants) were IDA countries—Tajikistan, Djibouti, Somalia, Eritrea, and Guyana (www.cred.be).
- Between 1984 and 2009, 389 disaster related projects were approved for IDA countries. The total credit commitment amount of these projects was US\$ 23.6 billion.

SECTORAL CONTEXT

Natural disasters have grave consequences for poor countries.

The impact of natural disasters in terms of fatalities and losses in economic growth is on the rise, and is more severe in low- and middle-income countries than in high-income countries. In 2008, the death toll from natural disasters tripled to 235,000 from an annual average of more than 66,000 over the period 2000-2007. Same year, economic losses totaled \$190 billion, more than double the annual average of \$82 billion over the same period. Six of the 10 countries with the highest number killed (per 100,000 inhabitants) were in IDA countries—Afghanistan, Angola, Haiti, Kyrgyzstan, Mongolia, and Myanmar. Similarly five of the ten countries with highest number affected (per 100,000 inhabitants) were IDA countries—Djibouti, Eritrea, Guyana,¹ Somalia, and Tajikistan,

Of all the disaster-related deaths in the period 1991-2005, about nine out of ten occurred in developing countries and more than one-quarter of all deaths occurred in least developed countries alone. About 98 percent of all those affected globally were from developing countries, and one-tenth of these from least developed countries.

Wealthy countries rank higher than poor countries in terms of economic losses from disasters due to higher insured values of property. However, when reported as a proportion of Gross Domestic Product (GDP), developing nations rank higher in terms of economic impacts. Hurricane Katrina, which hit the US states of Louisiana, Mississippi, and

Alabama in 2005, and cost roughly US\$125 billion, represented only about 0.1 percent of the US Gross Domestic Product. In contrast, the Maldives' 2004 tsunami losses amounted to 64 percent of GDP,² and in Myanmar in 2008, Cyclone Nargis caused damages that amounted to 30 percent of its GDP.

Even when the national impact is relatively small, the local impact may be catastrophic. The 2004 tsunami is estimated to have reduced Indonesia's GDP growth by just 0.1 to 0.4 percent, but the province of Aceh suffered destruction of its capital stock equivalent to 97 percent of its GDP.

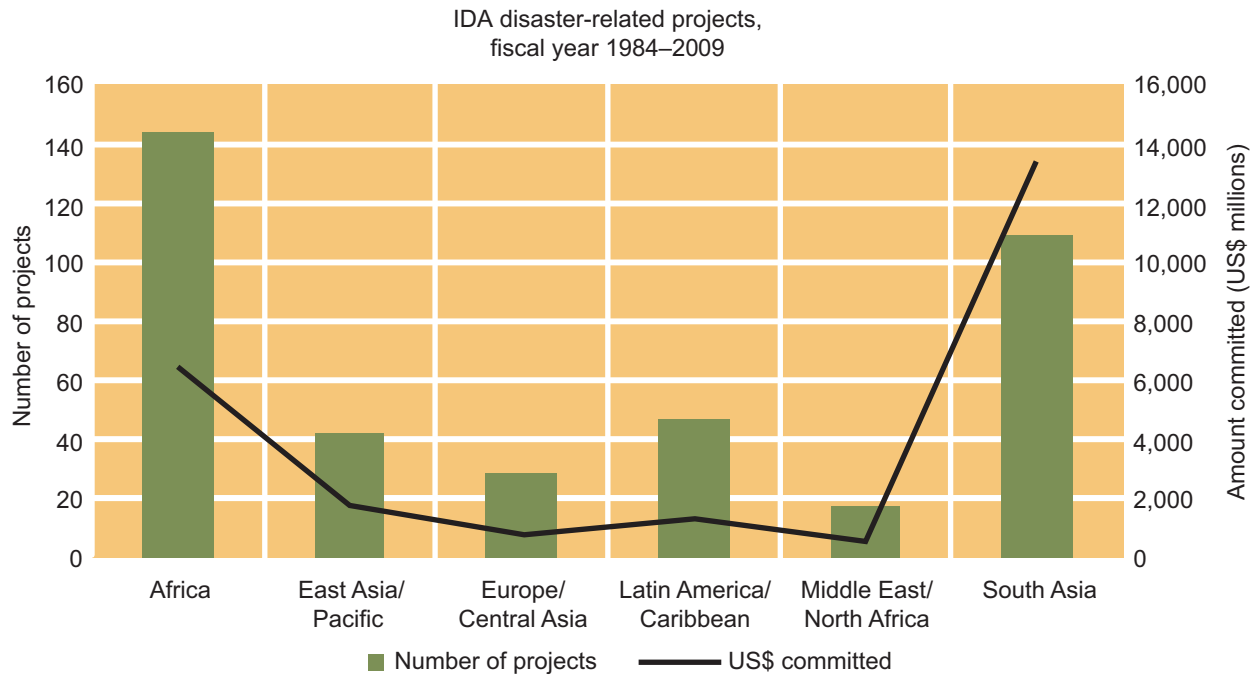
Without effective insurance markets, governments are left with damages that exceed their fiscal resources. In low-income countries, disasters affect the poor the most severely, robbing them of scarce resources and sealing their fate in a cycle of poverty. Disasters also tend to affect the population within a country differentially. Several studies point to a higher impact of disasters on vulnerable groups (such as women, children, and disabled) of the population and also at long-term irreversible consequences of natural disasters on human capital in poor countries.

This situation will be exacerbated by the fact that natural disasters are expected to increase in frequency and severity due to climate change, increased urbanization, and continued environmental degradation. Because of their low capacity to manage disasters, low-income, IDA countries are disproportionately affected by these trends, and disasters pose an increasing threat to their development efforts.

1. 3 CRED Crunch, Issue 16, April 2009, www.cred.be.

2. www.unisdr.org.

How many IDA projects deal with disaster?



IDA CONTRIBUTIONS

Bank support to disaster risk management has included major financing for post-disaster recovery, investments in preventing and mitigating disaster impacts and analytical work for improving disaster risk management. In recent years, policies and investment in disaster management have shifted from support after an event to a combination of mitigation support and post-disaster assistance for accelerated transition from relief to development.

Operations. IDA support for disaster risk management has been growing over the years, both in terms of volume, and as a percentage of overall lending.

Between 1984 and 2009, 389 disaster-related projects were approved for IDA countries. The

total commitment amount of these projects was US\$23.6 billion. Examples of some most recent approvals are in Bangladesh, Haiti and in Yemen.

After Cyclone Sidr (2007) in Bangladesh, IDA approved a US\$109 million Cyclone Recovery and Restoration loan. As one of the most vulnerable countries to natural disasters and effects of climate change, the government of Bangladesh is keen to explore ways to intensify its future capacity in disaster response, preparedness, and risk reduction. In addition to the facilitating the post-cyclone recovery and reconstruction efforts, IDA grant is also utilized to facilitate a 15-year disaster risk reduction program in Bangladesh.

After a series of 2008 hurricanes in Haiti, IDA approved a US\$20 million Emergency Bridge Reconstruction and Vulnerability Reduction

project to restore critical access points, such as roads and bridges and support vulnerability reduction by strengthening the Haitian National Disaster Risk Management System. The Haitian government has adopted safe schools as a national priority in response to growing evidence of the extreme vulnerability of the country's school infrastructure. IDA committed US\$5 million for an Emergency School Reconstruction project, which also includes development of a National Plan of Action for Safe Schools, among others.

Also in 2009, the World Bank approved US\$35 million in additional financing to assist the Republic of Yemen through the Flood Protection and Emergency Reconstruction Project to meet the costs associated with the reconstruction and rehabilitation of critical infrastructure damaged by the category 3 tropical storm and floods of 2008, as well as to strengthen local government's capacity in disaster preparedness, mitigation and response.

Reallocations. Reallocations of existing project funds towards reconstruction after a disaster have been an important part of IDA emergency support, and demonstrate IDA's capacity for rapid and flexible response to emergencies.

For example, in Zambia, IDA responded quickly to the government's request for drought recovery assistance by redirecting un-released funds from existing operations, which allowed the government to maintain its spending programs and address its balance of payments crisis.

Reallocations are highly relevant where the scope or scale of the original project is reduced by disaster and particularly when

the funds are still allocated in the sector they were targeted to. For example, funds originally intended for school improvement can be reallocated to school reconstruction after a hurricane or a volcanic eruption destroys schools. This was the case in the 1995 Honduras Basic Education Project, the 1995 Nicaragua Basic Education Project, and the 1993 Papua New Guinea Education Development Project.

In other cases, IDA has taken advantage of projects in which funds are made available slowly and formally reallocated funds for emergency reconstruction purposes regardless of the original project sector (this occurred in Bolivia in 1998 and Vietnam in 1995).

In the event that existing allocations do not allow for a sufficient response, IDA has expressed its commitment under its most recent refinancing to provide additional allocations to countries in the aftermath of major natural disasters.

Analytical Work. Analytical work is becoming an increasingly important area of Bank support for disaster risk management. World Bank experts provide analysis of risk and potential impacts, assess institutional capacity for managing disaster risk, share lessons learned from recovery efforts, design innovative instruments for disaster risk financing, and guide borrowers in how to improve overall disaster risk management.

Overall, the Bank has prepared more than 80 publications, reports and toolkits on disaster risk management since 1999. Of these, 31 were carried out under the auspices of the Hazard Risk Management Team, typically in collaboration with staff with particular country or sector expertise. Examples of

some most recent toolkits are: Handbook for Post-disaster Housing and Community Reconstruction, Risk Management and Response to Natural Disasters through Social Funds and Community-Driven Development Operations; Safe Schools and Hospital Guidelines; and Best Practice Notes on Recovery and Reconstruction.

Inclusion in country development strategies. Traditionally, natural disasters were considered external shocks that could not be planned for, and therefore were not featured

Natural Disaster Risk Hotspots

One global initiative has had a particular impact at the strategic level. "Natural Disaster Risk Hotspots," published in 2005, identifies countries prone to experiencing high casualties and economic losses resulting from six major hazards: droughts, cyclones, earthquakes, floods, volcanoes and landslides.

By determining disaster vulnerability, the study is influencing risk mitigation investments and informing the Bank and other donors as to how to better manage future emergency lending.

The Hotspots initiative received the 2006 Good Practice Award from the World Bank's Independent Evaluation Group for being influential, innovative, and demonstrating results. The evaluation also recommends that the Bank use the Hotspots categorization of countries' relative risk levels to prioritize investments, target vulnerable areas, and ensure that mitigation measures are built into operations.

Building on the Hotspots work, the 2009 Global Assessment Report on Disaster Risk Reduction makes a much more accurate characterization of disaster risk. It updates the patterns, trends and drivers of global disaster utilizing improvements in methodology and data since the publication of the Hotspots study.

in most of the World Bank's country assistance strategies (CASs). However, the Hotspots analysis (see box) has dispelled much of the uncertainty and unpredictability surrounding hazard events. This analysis is being used to raise awareness among Bank staff and clients in high-risk, low-capacity countries of the need to integrate disaster risk reduction into their development strategies.

The Bank policy on Rapid Response to Crises and Emergencies emphasizes a more strategic approach to disaster management and notes the importance of paying attention, before disaster strikes, to risk reduction in high risk countries. This includes better evaluations of natural disaster risks and the inclusion of appropriate measures in the various poverty reduction strategies designed by governments the Bank.

More and more Country Assistance Strategies are becoming responsive to the country's disaster risk situation. For example, the strategies for a number of countries that receive IDA financing (such as Bangladesh, Cape Verde, Guinea-Bissau, Guyana, India, Mozambique, Sri Lanka and Vietnam) flag natural disasters as a development priority, while many others recognize natural disasters as a risk to economic growth and poverty reduction. Most recently, Haiti and Yemen have incorporated disaster risk management in their developmental strategies by making it one of their strategic pillars.

IDA's work in disaster risk management has yielded many positive results.

Over the past 12 years (1997-2008), 83 percent of IDA projects involving natural disasters were rated as satisfactory or highly

satisfactory by the Bank's Independent Evaluation Group, making this area among the most successful portfolios in the Bank.

Restoring physical assets.

Disaster projects have been best at restoring physical assets destroyed or damaged by natural disasters. For example, IDA support to recovery following devastating floods in Yemen in 1989, included the reconstruction of damaged housing and the rehabilitation of 12 schools and 13 health centers and hospitals. When severe flooding struck Yemen again in 1996, IDA support benefited almost 124,000 people in the three governorates most affected by the disaster through the restoration and rehabilitation of main roads, urban and rural water supply facilities, irrigation systems, canals, embankments and flood protection works.

Most recently, interventions in response to the 2008 floods in Yemen (through Flood Protection and Emergency Reconstruction Additional Financing) aims at reconstructing 12 regional roads where critical segments have been destroyed by the flooding, and retrofitting with adequate storm water drainage systems, and rehabilitating selected priority components of the flood protection system in affected areas.

Two years after the 2005 Pakistan earthquake, more than 350,000 families of the 450,000 who received rural housing reconstruction grants had started to rebuild their homes, with over 80 percent of such beneficiaries adhering to the seismic-resistant construction standards. Almost 95,000 were nearing completion of their houses to seismic-resistant construction standards. More than 80,000 supervisors and house owners had been trained in seismically

safe construction designs and methods. The IDA support was also instrumental for institutional reform, particularly in forming the Earthquake Reconstruction and Rehabilitation Authority.

Improving emergency preparedness.

IDA-supported shelter activities for emergencies have included building shelters, relocating victims to safer areas, facilitating self-help construction of temporary shelter, and supporting the reconstruction of permanent housing using disaster-resistant construction technologies. The Maharashtra emergency earthquake project in India, for example, promoted simple earthquake-resistant features for non-engineered masonry construction based on three simple rules that could be understood, adopted, and applied by villagers. Their simplicity made a wide dissemination possible and benefited a much larger population than originally targeted.

Seven IDA-financed projects have helped build more than 500 cyclone shelters between 1984 and 2003. In Bangladesh, for example, investments in this type of emergency preparedness measure have greatly reduced loss of life due to cyclones. IDA, along with other donors, has supported cyclone shelter construction over several decades. In 1970, 300,000 people died in a cyclone. In 1991, a cyclone left almost 140,000 people dead (90 percent of the victims were women and children). Two cyclones in 1997 killed about 200 people, and major flooding from storms in 1998 claimed about 800 lives, a significant reduction from previous years.

In Grenada, IDA supported retrofitting of emergency shelters and an education sector project included the retrofitting of schools

so that when, in September 2004, the island was hit hard by Hurricane Ivan, the structures were able to withstand the blow. The damage assessment revealed that the retrofitted shelters operated effectively, and the two schools retrofitted by the IDA-supported education program not only survived without significant damage, but were also being used as shelters.

Focusing on social impacts of disasters.

Increasingly, disaster-relief projects tend to focus on social impacts of disasters, and to target the poor. IDA's long-standing support to the Pakistan Poverty Alleviation Fund enabled it to respond immediately to the October 2005 earthquake. Through its network, the fund reached the most vulnerable in remote areas of the country with relief and later reconstruction support. The Pakistan Poverty Alleviation Fund is involved in about 20 percent of the 600,000 houses being reconstructed. Similarly, the Pakistan Earthquake Disability Project (2007) has been designed to serve people with disabilities in 34 Union Councils affected by the 2005 earthquake by ensuring better mobility and increasing their participation in social and economic life.

In North China (1993), an earthquake reconstruction project gave affected people a chance to take part in the rebuilding and maintenance while providing much needed income sources. The project preparation included income-generation schemes that were introduced to help families repay loans received for reconstruction. Affected poor farmers who did not have funds to repair or rebuild their homes particularly benefited from this project. Local economic activity was not only restored to pre-earthquake levels but has been growing since project completion.

The post-disaster context can at times be used as an opportunity to advance issues that otherwise may not progress as quickly. A good example is gender equity. IDA-supported recovery projects have helped promote inclusion and equity for women. For example, in many developing countries women are not allowed to own land or houses. In Tonga, after a disaster in 2002, any woman whose house was not damaged by the cyclone had to give up her home to a male relative who had lost his house.

IDA-financed projects have helped elevate the status of women in society by providing land titles in the names of both men and women. This took place in Maharashtra, where, for the first time, even widows received houses in their own names, and voluntary payments for lost relatives were sent to them. The same approach was taken in the Gujarat Earthquake Emergency Reconstruction Project following the January 2001 earthquake in that state.

Successful projects have displayed some key ingredients: flexibility, innovation, partnership and community participation.

Flexibility. In the wake of Hurricane Mitch, IDA provided Honduras with urgently needed support. In that particular case, IDA's primary response was balance of payment support through an emergency recovery credit. This was supplemented by reallocations from seven existing projects and redirection of a social fund to assist in the recovery and reconstruction.

The Honduran Social Fund dramatically expanded its operations after Hurricane Mitch struck in 1998. Operations during the two years following the disaster (one of the stron-

Three Months after the Tsunami

IDA also demonstrated flexibility in providing early livelihood support in the immediate aftermath of the December 2004 tsunami. In Sri Lanka, IDA support provided cash grants for affected households to help restore their livelihoods and rebuild their houses within three months of the devastating event.

Nearly 100,000 families benefited from these cash grants, which reduced immediate suffering, restored livelihoods, and restarted local economies. The livelihood cash grants helped affected people get back to business promptly and also helped children return to school by allowing families to replace school supplies and school uniforms lost by the tsunami.

More than 80 percent of those hit the hardest (the self-employed and casual workers) regained employment within one-and-a-half years after the tsunami.

gest and deadliest hurricanes in the Western Hemisphere) were significantly increased compared with the fund's first eight years overall. Some 6,400 projects (worth US\$137 million) were approved during the two years following Mitch (November 1998-October 2000), compared to the 10,000 projects (at US\$125 million) executed during the first eight years of the social fund's existence (1990-98).

IDA bolstered the Honduran Social Fund's role in the reconstruction efforts by stepping up installments of the next credit supporting the fund (US\$45 million) and granting US\$22.5 million as a supplemental emergency credit in 1999. A follow-on project is now working to reduce vulnerability by strengthening municipal institutions for disaster risk reduction.

Innovation. The IDA-financed North China earthquake reconstruction project (1993) integrated cultural heritage concerns in its response to the Lijiang earthquake. High-rise apartment complexes were torn down and traditional single family houses reconstructed. This helped Lijiang achieve UNESCO designation as a World Heritage Site, which increased the city's attractiveness for tourists, creating additional employment.

The Bank is also using its expertise and convening power to explore innovative risk financing mechanisms for its clients. National catastrophe insurance schemes have been developed higher-income developing countries that borrow from the International Bank for Reconstruction and Development (IBRD) arm of the World Bank—such as Turkey and Romania, and more recently in the Caribbean (see box).

Partnerships and coordination. The World Bank often plays a lead role in conducting post-disaster damage and needs assessments with the United Nations and other international financial institutions. Its leadership has also provided critical coordination and strategic guidance to recovery programs.

Project documents show that the development of a joint strategy with other donors following disasters has often been accomplished successfully in IDA client countries, such as Bangladesh (1999), Gujarat, India (2002), Honduras (1999), Mozambique (2000), Nicaragua (1999), and Sudan (1989).

Sudan serves as one example. For the 1989 Sudan Emergency Flood Reconstruction Program, IDA and the UN Development Program conducted a joint damage and needs assessment. Following the assessment, the mission

Pooling Risk, Saving Money

The *Caribbean Catastrophe Risk Insurance Facility* is the first regional disaster insurance facility in the world. Heads of government within the Caribbean Community requested World Bank assistance in establishing this facility following the devastation of 2004's Hurricane Ivan.

Caribbean states are highly vulnerable to natural disasters and have only limited options available to respond. The Caribbean Catastrophe Risk Insurance Facility represents an important shift from disaster response to disaster risk reduction. It will provide participating governments in the region with immediate access to liquidity if hit by a hurricane or earthquake. (On average, one major hurricane affects a Caribbean Community country every two years.) Pooling their risk will save the 18 participating countries approximately 40 percent in individual premium payments.

At a donor conference hosted by the World Bank for the Risk Insurance Facility in February 2007, pledges were received from Bermuda, Canada, France, the United Kingdom, the Caribbean Development Bank and the World Bank. The Risk Insurance Facility will also serve as a pilot program that could be extended to other small states, such as the Pacific islands.

produced a document that was then presented at a donor conference in Paris. Negotiations helped ensure that donors' interests were met but that there were no unnecessary overlaps in coverage. Keeping the composition of IDA's contribution flexible helped other donors make adjustments in their programs. IDA then financed the balance in order to complete a comprehensive reconstruction program.

In Sri Lanka after the 2004 tsunami, IDA played an important role in getting other key donors active in the housing sector to adopt the same model of owner-driven housing reconstruction in their geographic region of responsibility.

In the last two years the World Bank has partnered with governments and regional and international organizations to conduct comprehensive post disaster damage and needs assessments in several IDA countries. These are Bangladesh (Cyclone Sidr 2007), Haiti (Hurricane series 2008), Myanmar (Cyclone Nargis 2008), and Yemen (Floods 2008). These assessments have provided a basis for a systematic recovery and reconstruction planning in the affected countries.

Community participation. The benefits of community participation were demonstrated in a 1993 flood rehabilitation project in Argentina. Beneficiaries were involved in all stages of the project, and interaction between them and the local authorities resulted in the timely availability of construction materials and the accommodation of local customs in the architectural design of new houses. Staff observed that this created ownership among beneficiaries and encouraged the maintenance of the new homes.

In Aceh, Indonesia, following the tsunami, IDA took advantage of the existing Kecamatan Development Program, a landmark community-driven project covering almost half of Indonesia's villages, to implement a project for housing reconstruction. Similarly, the homeowner-driven housing program in post-tsunami Sri Lanka was based on the principles of inclusiveness, equity, transparency, and participation by those receiving the benefits.

OUTLOOK

Client countries have very much valued IDA's role in providing emergency assistance in the past, and the Bank as a whole is stepping up its efforts to improve response capacity for future emergencies.

Global Facility for Disaster Reduction and Recovery

In January 2005, 168 governments adopted the Hyogo Framework for Action at the UN World Conference on Disaster Reduction, in Kobe, Japan. The Framework provides an action plan to substantially reduce disaster losses by 2015.

In June 2006, the World Bank's Board of Directors endorsed the establishment of the Global Facility for Disaster Reduction and Recovery. This long-term partnership between the World Bank, the UN International Strategy for Disaster Reduction, and an expanding group of donor governments helps disaster-prone countries enhance their capacity for disaster prevention, emergency preparedness, response and recovery. The Global Facility has a long-term commitment of US\$5 million a year from the World Bank's Development Grant Facility and a total donor contribution of US\$75 million. After having initiated operations in 54 countries during its first two years, the Facility is currently deepening its engagement in 20 disaster-prone countries, of which 17 are IDA eligible countries. In these countries the Global Facility for Disaster Risk Reduction has developed comprehensive disaster risk reduction programs to broaden technical assistance over the next 3–5 years.

The Bank's policies and procedures for Rapid Response to Crises and Emergencies were revised in (2007) in light of the Bank's evolving role and the growing demand for rapid and effective emergency responses. Among the revisions introduced were:

- More rapid approvals for emergency operations;
- A stronger focus on social and economic reintegration of vulnerable groups;
- Increased flexibility for better cooperation;
- A clearer understanding of the Bank's role in coordinated international responses to emergencies; and
- A more strategic approach to disaster risk reduction.

The policy emphasizes that disaster risk reduction should be an integral part of country assistance strategies and poverty reduction strategies. The biennial progress report on the implementation of the World Bank's policies and procedures for Rapid Response to Crises and Emergencies notes that the policy framework provided greater speed and flex-

ibility in delivering bank assistance to dealing with disasters, crises and conflict situations.

Capacity is being built in parallel with policy changes. Bank teams are being trained in the use of tools and methodologies to assess risks, damages, economic losses, and financial needs for recovery and reconstruction. A Quick Reaction Team and an "on-call" register of staff for immediate response in fragile states have been established. Moreover, in 2009, the World Bank also set up a Disaster Risk Management Global Expert Team.

The core function of this team is to make the best global expertise rapidly and reliably available wherever it is needed, in the form of Global Expert Team members, or other experts identified and mobilized by the group. The team can provide expert advice in any technical area related to disaster management, such as disaster response, risk financing solutions, and technical options for disaster risk management.

These changes will further strengthen IDA's ability to provide quick, flexible and strategic

support to client countries in need of urgent reconstruction and recovery assistance.

At the same time, there is increasing recognition among members of the international community that disaster risk reduction is not merely an issue of humanitarian assistance, but a key development challenge.

Human action (or inaction) creates hazard vulnerability, turning hazard events into disasters when they interact with low-capacity systems. The World Bank is poised to treat disaster prevention as a core development issue, and its work with partners to document disaster-poverty links has been critical to providing the impetus for more investment in reducing potential impacts before disaster strikes.

IDA is uniquely positioned to support effective recovery, and to make disaster risk reduction an integral part of development.

It can lead the development of comprehensive risk management strategies for its client countries because of its convening power,

which is unmatched by any other institution. IDA can coordinate and assemble leading global specialists in various fields of expertise that are particularly needed at the initial stage of a catastrophe risk management program. It has close working relationships with the governments of member countries with interest in improving risk management. It can help to ensure that risk financing mechanisms are part of an overall country risk management strategy that also includes effective risk reduction strategies.

Altogether, IDA can bring together all relevant stake-holders to promote risk reduction and make development efforts truly sustainable. IDA resources are essential to making this happen. The emphasis during IDA replenishment negotiations on expanding disaster preparedness has provided timely and important incentive to IDA countries to work at reducing poverty and protecting development gains through disaster risk reduction.

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<http://www.worldbank.org/ida>