Training courses on disaster management have been carried out regionally and nationally - from ADPC alone over 2,000 disaster management professional participated in training courses over the decade. The goal of delivering a range of disaster management courses at the national and sub-national levels has advanced through the establishment of the Asian Disaster Mitigation Training Network (ADMIT). In the future, distance learning will also play an important role in providing professional development opportunities to an even wider group.

Asian Disaster Mitigation Training Network (ADMIT)

ADMIT is a new network of regional and national partner training institutions to deliver courses developed under ADPC's Asian Urban Disaster Mitigation Program (AUDMP) at the national level throughout Asia and the Pacific. The founders meeting of the ADMIT in May 1999 brought together chiefs of 11 national training institutions from India, Indonesia, Nepal, the Philippines and Sri Lanka, and 2 regional training institutions, namely IULA/NSPAC and ADPC. The training institutions are presently adapting ADPC's Urban Disaster Mitigation course curriculum for national audiences and will begin teaching the courses by the end of the decade. ADMIT will expand to other countries and adapt other courses from ADPC.

ADPC's Asian Urban Disaster Mitigation Program, the United Nations Development Programme (UNDP) and IDNDR's Risk Assessment Tools for Diagnosis of Urban Areas Against Seismic Disaster (RADIUS) have made a substantial contribution in assisting municipal governments to enhance their capacity for disaster preparedness. As part of the public awareness campaigns of the AUDMP and RADIUS, locally-implemented urban seismic risk reduction projects have carried out earthquake scenario workshops in Bandung (Indonesia), Kathmandu (Nepal), Tashkent (Uzbekistan), and Zigong (China)

Contributing to this impulse was the growing active involvement in disaster reduction activities within the UN system and by bilateral and multi-lateral organizations. The UNDP, the United Nations Educational, Sciencetific and Cultural Organization (UNESCO), the Food and Agriculture Organization (FAO) and others all supported projects for disaster mitigation, as did the European Union under the DIPECHO program. The United States Agency for International Development's (USAID) Office of Foreign Disaster Assistance (OFDA), the Australia Agency for International Development (AUSAID) and the Japan International Cooperation Agency (JICA), all supported regional capacity building for disaster reduction through core funding to regional programs and facilities. The World Bank and the Asian Development Bank (ADB) started to earmark funds specifically for disaster reduction. For example, the ADB extended loans in the area of disaster mitigation and post-disaster rehabilitation totalling over US $2 billion.

SO WHY HASN'T THERE BEEN MORE PROGRESS?

In spite of all the work done, natural disasters continue to ravage the countries of Asia and the Pacific. As the decade winds down, specialists and advocates in this endeavor are still challenged by one incontestable fact: deaths and suffering resulting from disasters are not declining in most developing countries. In fact, more disparity is evident in the capacity of response between countries in the region; while new risks - like extreme climate events - loom ominously on the horizon.

Understanding the reasons of the limitations of experiences to date was a central issue at the regional meeting in February 1999. "Is it because, despite consensus that disaster can be reduced and people protected, current strategies are still anchored on the hackneyed analysis of blaming nature as the prime culprit for the devastation?" - so demanded Zenaida Delica, president of the Global Forum of NGOs for Disaster Reduction (GFNDR). "Or is it also because the present structures in disaster-prone developing countries are nurturing the causes of vulnerabilities, instead of reducing them?"

A conceptual caveat

The answer begs clarifications on the difference between hazards and disasters, without which it may be really difficult to generate the will for real change that all countries have acknowledged as a number one priority for the future.

Hazards are not disasters

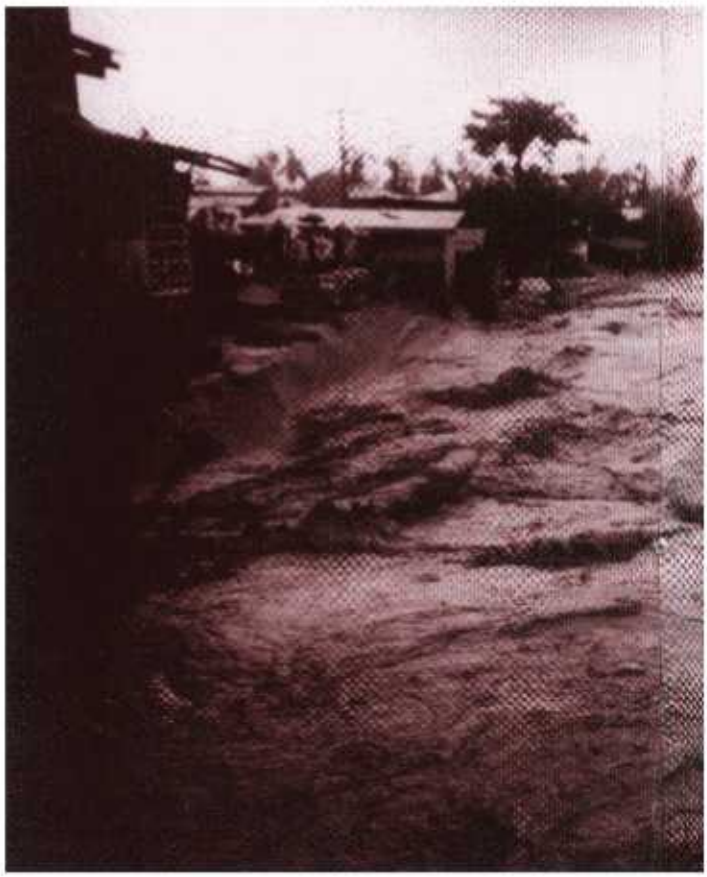
To develop the appropriate systems and measures to mitigate the effects of natural hazards, one must know how hazards turn into disasters. A natural phenomenon becomes a disaster only when it causes both loss of life and considerable damage to property.
Human society has very limited control over the hazards produced by the forces of nature. Besides the usual forces, there is an extremely important human factor that magnifies the levels of destruction and thereby transforms the occurrence of a natural hazard into a disaster.

Driving forces

Rapid population growth in the region is one of the main elements increasing vulnerability to natural hazards. Higher rates of population growth results directly in high population density and higher levels of physical infrastructure. High population densities almost inevitably result in high death tolls, and high property values unavoidably result in high losses if appropriate preventive measures are not undertaken beforehand.
The other effect of rapid population growth, which has a direct bearing on the prevalence of natural disasters, is the haphazard development and enlargement of urban areas. The main feature of urban growth driven by these factors in the region is the increasing emergence of slums and squatter areas on the fringes of cities.

Poverty is also one of the major underlying causes for the inappropriate types and poor quality of building materials, substandard planning, and most importantly, weak enforcement of building codes and provisions, which eventually lead to a high number of casualties when disasters strike. The impact of natural disaster is much higher in the developing countries in the region than in the developed counties, and it is usually the poor who are most affected.

The hazards, such as meteorological and geological conditions, and severe climatic conditions, will continue to threaten all countries in the region. They are not going to go away. But it is the population pressure and ecological fragility of habitats in the region, caused by industrialization and urbanization, that will aggravate the adverse impacts of these hazards. Among the main reasons for the continuing increase in the levels of loss caused by natural disasters is the continuing growth of the population, the increase in building density by the growing concentration of people and economic assets in urban areas, and by the constant migration of people to hazard-prone areas such as coasts and hillsides. The development of industry in regions that are subject to natural hazards, without appropriate protective measures being taken, is another reason for the growing increase in the levels of loss caused by natural disasters.



The magnitude of the risk correlates closely with the proportion of the population in poverty. In Asia, that is first and foremost the one billion or so who still live in absolute poverty, despite unprecedented economic growth in the past two decades, deemed miraculous until the 1997 meltdown. Disaster is a question of vulnerability, and vulnerability is the single most negative consequence of poverty. This applies equally to individuals, communities and nations. Like the squatter who cannot afford to live anywhere but in a cardboard house, poor countries hurt more from disasters. In more developed countries where disaster mitigation measures are adequately established, the loss of lives is relatively small, but the damage to property is high. In the less developed countries, property loss is relatively small, but the cost in lives is high.

As Delica points out, although disaster has been theoretically accepted as a question of vulnerability, a narrow view of hazards and hazard reduction still predominates. As governments have made monitoring and scientific understanding of geophysical processes a top priority, there has been little determination to analyze vulnerability in the sense of how social and economic systems place people at different levels of risk from nature's hazards.

Disaster prevention and sustainable development

In some sectors issues are better understood in terms of their economic impact. The financial bottom line is that nowadays, the proportion of GDP developing countries are loosing due to disasters is as much as 20 times higher than industrialized countries. In Bangladesh, just one flood alone destroyed15,000 kilometers of road,

14,000 schools, and caused US $500 millions in damage to rice crops. Disaster, if not addressed properly, can literally turn the development clock backwards. Along with GDP decline, the country can be further impoverished through macro economic trends of widening deficits in the foreign trade balance: exports going down and down, and imports of foods and grains going up and up.

In terms of practice, a paradigm shift from a purely technical viewpoint to a combination of approaches is imperative. Delica points out that a good understanding of scientific and technological aspects will be effective if considerable attention to social, economic and political factors is given to disaster reduction planning. Reduction of people's everyday vulnerabilities, such as food insecurity, low income, and landless-ness, will definitely help reduce vulnerabilities to natural hazards. In this regard, the need for people's participation and empowerment, from the very beginning of the process of disaster reduction, is essential.

Starting with Community Involvement for Successful Disaster Reduction

D Designing strategies that will ensure community involvement
I Incorporating risk assessment into development planning
S Sustaining the natural environment as a resource base of a community
A Addressing the root causes of vulnerability
S Strengthening the community's structure and coping strategies
T Targeting the most vulnerable
E Empowering the communities to participate in making decisions on issues that affect their lives
R Reducing vulnerabilities of the communities by increasing the people's capacities

R Reaching a broad consensus on priorities
E Enriching the disasters and development discourse
D Documenting the best practices on community-based disaster management to draw lessons from experience
U Uniting on a fundamental shift from science to practical application and from sectoral to interdisciplinary action
C Complementing community skills and resources
T Translating theory into practice, commitment into policies, policies into plans and plans into implementation
I Improving the socio-economic status of people
O Organizing local activities to highlight community achievements in disaster reduction
N Networking among us and with various groups outside of the disaster management circles

But in crisis, as the Chinese say, there is opportunity. It was often pointed out during the four days of discussion at the regional meeting, that resources will never be enough so the main concern should really be on examining the application of existing resources. In other words, are we doing all we can do with what we already know and already have?

In 1998 the World Bank established a Disaster Management Facility responding to the heightened profile the issue has assumed in terms of global human development During the decade, the World Bank funded disaster reduction interventions in India, Indonesia, PNG, and the Philippines. These experiences confirmed that the cost and losses resulting from natural disasters can be minimized by sensible, easy-to-follow, low-cost disaster mitigation policies; use of state of the art technology and codes of practice; and by building the knowledge from the start, and updating it whenever possible. Preparedness training beforehand and community involvement were keys to success.

In Flores, Indonesia, local people learned how to reinforce masonry blocks by tying wires every four rows of block and embedding reinforced columns ever three meters. The mitigation measures were complemented by training the community in preparedness and in evacuating buildings in case of incidents. The total cost of US$75 million, obtained as loans and funds from the International Bank for Reconstruction and Development (IBRD), ADB and the Australian Government, is little compared to potential damage without these interventions.

In Maharashtra, India, local builders were encouraged to integrate appropriate seismic technology into the popular building style in rural areas. Community and NGO participation in a World Bank-funded, state government-operated, reconstruction program (MEERP) resulted in increased awareness and appreciation of mitigation measures by the people who needed them the most. The government made an extra commitment to popular understanding of long-term disaster reduction through coordinating training programs for engineers and members of local self-government, educational campaigns in schools and villages, as well as the production of a manual for non-engineered buildings. Perhaps the most significant long-term benefit of the program was the development of district-level disaster mitigation plans, which made up just a fraction of the total reconstruction cost.

ASIAN DEVELOPMENT BANK:

From 1987 to 1998, the ADB made a number of loans in the area of disaster mitigation and focussed on floods, and the ADB estimated that five to six projects approved each year proofing measures into the design of infrastructure. The ADB provided 31 disaster-related (i) a regional study on disaster mitigation; (ii) institutional strengthening of ADPC; and the ADB financed the production of two key books, both prepared by ADPC: (ADB, 1991).

A review of ADB loans was presented for the first time at the February regional meeting. in Asia and the Pacific as a financial institution:
Need for financial and economic analysis of the impact of disasters Changes in the

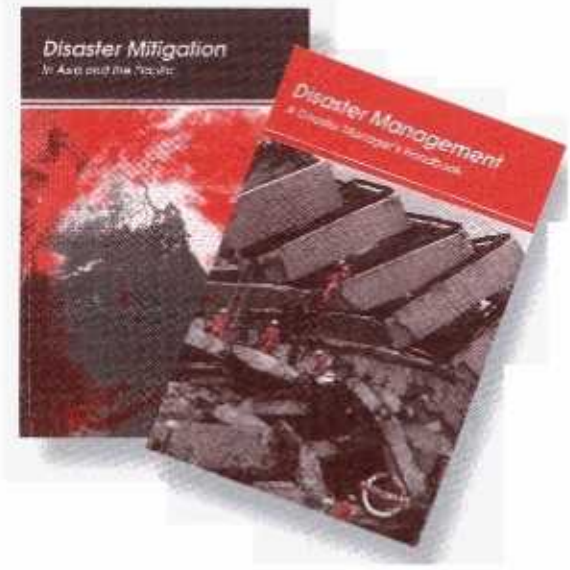
These stories from Flores and Maharashtra represent a changing attitude by countries in the region in how they address the broader, inseparable issue of sustainable development. In short, countries have begun to mainstream disaster reduction into sustainable development by addressing how they use resources in a macro way, and through what type of development paths they pursue.

Agenda for the 21st century

The participants of the regional meeting for Asia and the Pacific expressed this very recognition of disaster prevention as an integral component of sustainable development. The declaration prepared at the close of the meeting effectively outlines an agenda for the future by calling for:

- a holistic and integrated effort by all member countries to promote disaster prevention as a public value;
- improvement of integrated risk management through the involvement of an increasing range of professional, technical and scientific disciplines;
- strengthening of existing frameworks and further regional and sub-regional professional and institutional frameworks;
- realization of meaningful participation of local communities in reducing the vulnerability of people, the environment, social and economic resources; and to enhance disaster management capabilities.

While the IDNDR will come to an end, the organizations that contributed to the successful accomplishments during the decade will move forward. These issues must be integrated into the approach of all organizations in the region for continued excellence in disaster reduction. Lessons from experience in the region will pave the way for future activities in disaster reduction.



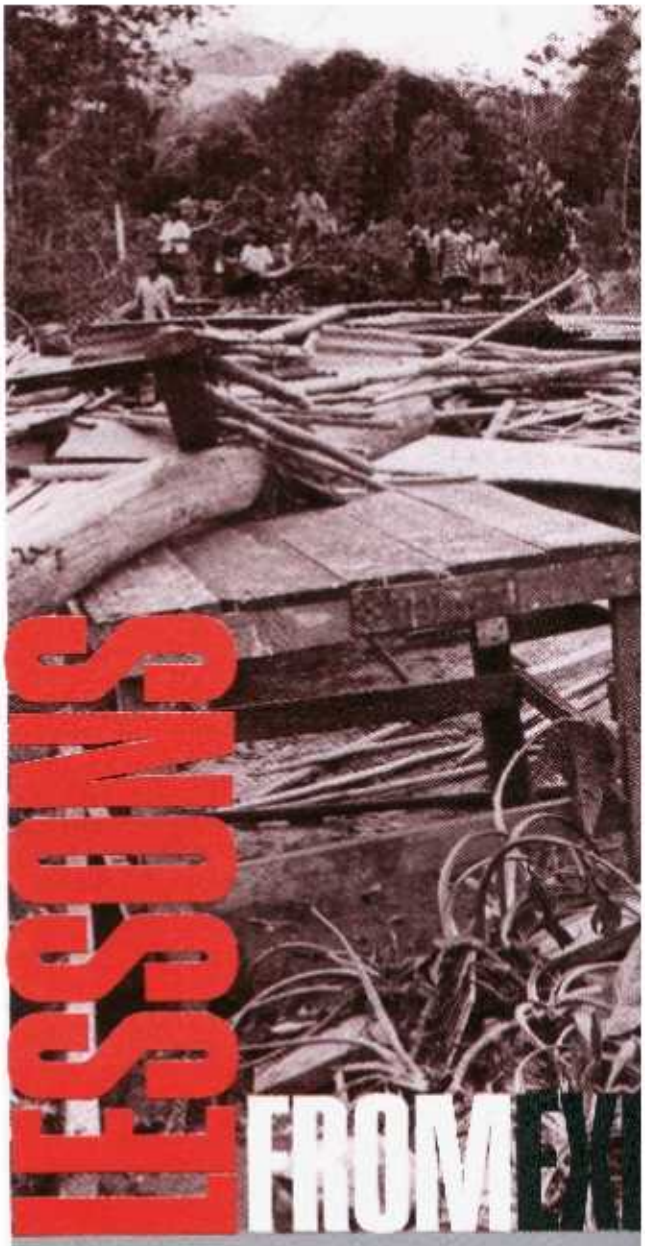
Challenges for the Future

post-disaster rehabilitation, altogether totaling US $2 billion. All of the mitigation loans contain a flood protection component, while others incorporate appropriate disaster- technical assistance loans, including a regional project of US$ 1 million to support: (iii) activities of the 1994 World Conference on Natural Disaster Reduction. In 1991, (ADB, 1991) and

In the future, the ADB faces several challenges in taking a lead role in disaster reduction

scale and frequency of disasters Expansion of institutional stakeholders

According to a global survey prepared by the Swiss Reinsurance Company, between 1970 and 1997 there were 40 events that together caused over one million deaths. Of the forty, 30 happened in Asia and the Pacific, accounting for 87% of the casualties. That is how critical these hazards are for the countries in this region. Here is a look at issues in question in the region for both geology and meteorology-related hazards.



LESSONS FROM EX

MITIGATION AND PREPAREDNESS FOR METEOROLOGY-RELATED DISASTERS IN ASIA AND THE PACIFIC

Meteorology-related disasters, such typhoons, cyclones, monsoons, storm surges, floods, and droughts are the most recurrent and long-lasting disasters in the region. They affect

RIENCE OR LEARNING THE EASY WAY

SETTINGS, VOICES AND CASE

a large number of countries in the region frequently, causing great loss of life and extensive damage to property and infrastructure.

More than 50% of the world's meteorology-related disasters over the past two decades have occurred in Asia and the Pacific. Over the past two years alone the region has suffered exceptionally from floods. In 1997 damage from floods in seven countries of Asia and the Pacific totaled about US $7 billion. In 1998 the most extreme floods in several decades devastated Bangladesh, China, India, Republic of Korea and Vietnam. The floods in Bangladesh left 70% of the country inundated for three months and directly affected tens of millions of people; while the damage in the region that year is estimated at US $23 billion. As for water shortage, countries of Asia and the Pacific are the most severely affected in the world as land degradation and desertification cause tremendous losses in land productivity and agricultural output.

Integration of mitigation measures into other development aspects

The immediacy with which disaster mitigation needs to be integrated with development aspects is most clearly visible during the occurrence of meteorology-related disasters. There is a need to integrate mitigation measures with watershed management and other environmental planning requirements to avoid loss of investment in environmental and agricultural infrastructure. ESCAP, for example, has extended its scope of work with floods to address flood control within the framework of basin development, then the economic and social development process, and finally as part of an integrated water resources management program.

Strategic planning process for economic and social policy making

The integration of disaster reduction into the process of economic and social development and environmental management is itself a process and a difficult one at that. The cultural, social, economic, political and environmental conditions of each country require strategic planning. One means to this end is capacity building. Another means is to learn from regional and sub-regional experience.

Regional Cooperation to Mitigate Meteorology-related Disasters

The Mekong River Commission
The Sub-regional Watershed Program for Early Warning in India, Bangladesh and Nepal
ASEAN Regional Forum Intersessional Meetings on Disaster Relief
ESCAP/WMO Tropical Cyclone Panel, WMO/ESCAP Typhoon Committee
ADPC/EC Improving Cyclone Warning Response and Mitigation Workshops (ICWRM)

Regional cooperation on flood mitigation, forecasting and early warning

Cooperation has evolved into a multi-disciplinary area, and as such has expanded from limited activities to projects, programs and institutions, all of which require significant resources for implementation. While cooperation for any regional disaster reduction requires external assistance to facilitate networking, once achieved, cooperation can create an environment conducive to foreign investment.

Several regional cooperation efforts over the past decade have indicated that success in cooperation for flood mitigation depends on how the related measures are integrated into sub-regional development and annual disaster preparedness plans. There is a need, therefore, to enhance the levels of community participation, transfer of technology for flood control and management, and information exchange of real-time data.

GIS Applications for Flood Warning in North Queensland, Australia

Responding to flooding in the town of Cairns, Australia, is the responsibility of the Cairns City Council, which for the past 5 years has been collaborating with the Bureau of Meteorology and the Australian Geological Survey Organization (AGSO) to incorporate data into GIS for emergencies. In February 1999, when Tropical Cyclone Rona visited the Cairns area, it brought with it torrential rains that caused severe flooding. What followed stands out as a major success in the way local authorities, with the use of new technologies, are now managing disasters. The Counter Disaster Coordinator of the Cairns City Council fired up the GIS system and received data coming in from the flood warning systems established along a major river in Cairns. Within a short time the coordinator was able to identify the individual buildings that would be at risk from the predicted level of flooding, and based upon the assessment called for an evacuation of 2,000 people. Hopefully the use of GIS and increased literacy in high technology across local authorities of Asia and the Pacific will provide us with more stories of success in disaster management.

Regional cooperation for land degradation, desertification, and forest fires

Land degradation, desertification, and forest and bush fires also pose serious threats in the region in the wake of growing population and increased demand for food and habitats. While the desertification process is often thought of as the interaction of natural and socio-economic forces,

in fact human-induced factors such as deforestation, faulty land use practices, mismanagement of irrigation systems and overgrazing, can accelerate the process. Regional networks have been established for desertification and haze, but require significant investment in resources and increased capacity for data collection and networking.

Prevention Pays

During the period from June to September of 1998, more than 1.5 million families in China lost their homes to floods. Resettlement of victims after disasters costs money, takes time, and often does not deal with long-term sustainability of the settlements. Calculations by HABITAT reveal that providing new villages with water and sanitation and access roads does not cost more than US $75,000 per village, a small price to pay for relocating hazard-prone settlements to safe habitats. In order to ensure long-term viability of the new villages, special training of village leaders will complement the resettlement. It is up to the government to consider financing resettlement projects with these preventive measures, and while it is too early to tell, chances are that prevention will pay off in the long run.

Regional Cooperation to Mitigate Land Degradation, Desertification and Fire

Desertification Control Network in Asia and the Pacific will promote exchange of experiences, provide training on desertification control methodologies, and assist develop an Annex to the United Nations Convention to Combat Desertification (CCD).
ASEAN Regional Haze Action Plan (RHAP) will provide training in fire fighting and haze management, improve meteorological services, launch air and ground surveillance, strengthen early-warning systems and provide technical assistance for coal and peat fire suppression.

Gender-sensitive Communication for Early Warning and Shelters

Women and children make up the greatest proportion of deaths during meteorological disasters, due mainly to the poor mechanism for early warning. For those women and children that do manage to evacuate and reach the shelters in time, gender-insensitive shelter design causes additional strains on the women and children. Experience from Bangladesh can serve as a lesson for how to design shelters better; but early warning can only be communicated effectively by changes in society's view of women's rights and responsibilities during disasters.

MITIGATION AND PREPAREDNESS FOR GEOLOGY-RELATED DISASTERS IN ASIA AND THE PACIFIC

Geology-related disasters, such as earthquakes, tsunamis, landslides and volcanic eruptions, are among the most destructive. They affect a large number of countries in the region frequently, causing great loss of life and extensive damage to property and infrastructure.

According to a global survey prepared by the Swiss Reinsurance Company, between 1970 and 1997 they were 40 events that caused over one million deaths, almost half inflicted by earthquakes. Of the forty, 30 happened in Asia and the Pacific, accounting for 87% of the casualties. That is how critical these geology-related hazards are for the countries in this region. Here is a look of issues in question in the region.