

# ASIAN DISASTER MANAGEMENT NEWS

a newsletter of and for the community of disaster risk management practitioners and development workers

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## Post Disaster Impact Assessments in Asia-Pacific

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# editor's note

Dear Readers,

The year 2006 is momentous for ADPC with celebrations of 20 years of collaborations, commitment and partnerships in Disaster Management. ADPC's evolution since its inception in 1986 has come a long way in terms of its approach and practices from traditional disaster management methodologies, tools and techniques to a more holistic perception to Disaster Risk Management, mainstreaming and anchoring Disaster Risk Management and Sustainable Development initiatives.

As perceived in the Kashmir-Pakistan Earthquake in October 2005 and the Leyte Landslide in the Philippines in March 2006, natural disasters not only impact lives but also the economy of the affected nation. The impact includes loss of life, direct damage and losses to assets, infrastructure, social and productive sectors, which ultimately affects the macro-economic development of any region, state or country. Thus, the complex issues of mitigating the socio-economic, agriculture, health, psychosocial impacts of a disaster through scientific assessments, community-based action programs, comparative studies, and various other approaches is highlighted under the Post-Disaster Impact Assessments for the Asian Disaster Management News, the first quarterly issue of this year.

Acknowledgement is due to the ADPC's Disaster Management Systems team for conceptualizing and contributing to this issue. Thanks to all the contributors for their reflections on various facets of post-disaster impacts.

I wish you a very good year ahead.

Earl Kessler



## highlight



### Ministry of Foreign Affairs of Thailand Honors ADPC

Asian Disaster Preparedness Center (ADPC) is acknowledged and awarded an outstanding organisation for its work and contributions to mine risk education for students. The award is offered by the Ministry of Foreign Affairs of Thailand. Dr. Suvit Yodmani, Executive Director of ADPC is awarded the outstanding individual for his support in mine education and its awareness. The award is designed in accordance with the United Nations' initiative to identify 4 April as International Day of Mine Awareness and Assistance in Mine Action. The award ceremony was held on 7 April 2006.



# Post Disaster Impact Assessments

by J. Roberto Jovel

International Consultant on Disaster Impact Assessment

*Former Director of the United Nations Economic Commission for Latin America and the Caribbean (ECLAC) who led the development of methodology for damage and loss assessment following disasters, and who has recently been associated with ADPC in disaster impact assessment in the Asian Region.*

The knowledge of disaster impact is an essential tool for meeting humanitarian needs during the emergency phase and for planning and conducting reconstruction and social and economic recovery after disasters. It provides a sound basis for planning disaster and risk management.

There exist, in general, three types of assessments after disaster.

- **Humanitarian needs assessment** is undertaken immediately after a disaster in order to meet the most urgent needs of the affected population. The affected government usually carries it out with the assistance of international organizations, such as OCHA, and is modified as needs change over time.
- **Assessment of the value of damage and losses**, which is being applied more frequently in the Asian region in recent years due to its recent development and application, provides for the quantification of the economic and social impact of the disaster. This methodology has been developed and used for the past thirty years in the Latin America and Caribbean (LAC) region.
- **Reconstruction needs assessment** that is normally carried out by development banks to ascertain the amount of funding required for reconstruction and recovery in the affected country or region. This type of assessment differs from the damage and loss assessment in that it estimates the funding required to replace the assets that were destroyed or damaged, including expected costs of relocation of human settlements and infrastructure as well as longer term disaster mitigation.

This article concentrates on the emerging experience and knowledge on the assessment of damage and losses, a field in which ADPC has successfully entered into in recent years to further assist member governments and civil society in general to recover from frequent disasters.

## THE ASSESSMENT OF DAMAGE AND LOSSES

In the not too distant past, disaster impact only referred to the value of destroyed or damaged assets that were to be replaced. The mid-term effects of disasters were not estimated, thereby causing an underestimation of total disaster impact. Since the early seventies, the United Nations Economic Commission for Latin America and the Caribbean (ECLAC) introduced the notion that disaster impact assessment should also estimate the changes in the flows of the economy that arise in the medium term after a disaster, as a result of damage to assets.

The ECLAC methodology enables the estimation of the replacement value of destroyed physical assets as well as the estimation of the economic losses arising from the temporary absence of the assets. Introduction of loss evaluation provides a more accurate and comprehensive assessment of disaster impact since it enables the estimation of the impact on social and economic development and growth, by projecting the performance of all sectors affected by the disaster over the time required for full recovery<sup>1</sup>.

<sup>1</sup>For a full description of the methodology of damage and loss assessment, see ECLAC, *Handbook for Estimating the Socio-Economic and Environmental Effects of Disasters*, Second Edition, Four Volumes, 2003.



## USES OF THE DAMAGE AND LOSS ASSESSMENT

The intended uses of the damage and loss assessment go well beyond the sole knowledge of the cost of the disaster to the affected country, region or locality. Its first intended use is that of providing a solid basis for the formulation of parallel-track, reconstruction and socio-economic recovery programs, that includes priorities on a sectoral and spatial basis, as well as the differential impact for women and other vulnerable population groups.

On the basis of the damage and loss assessment, governments are able to modify their public policies and to adjust their on-going development plans to compensate for the new needs arising from the disaster. Examples of these are the definition of compensation packages for the affected population, the establishment of special lines of credit to small and medium entrepreneurs, the application of temporary tax relief measures for large enterprises, and the expansion of housing and human settlement schemes.

The damage and loss assessment tool also enables the determination of when the domestic capacity to achieve reconstruction and recovery is insufficient, and thus define the need for international cooperation participation in post-disaster reconstruction and recovery.

Finally, the damage and loss assessment provides the necessary quantitative framework for undertaking risk and disaster management activities.

## THE LATIN AMERICA AND CARIBBEAN EXPERIENCE

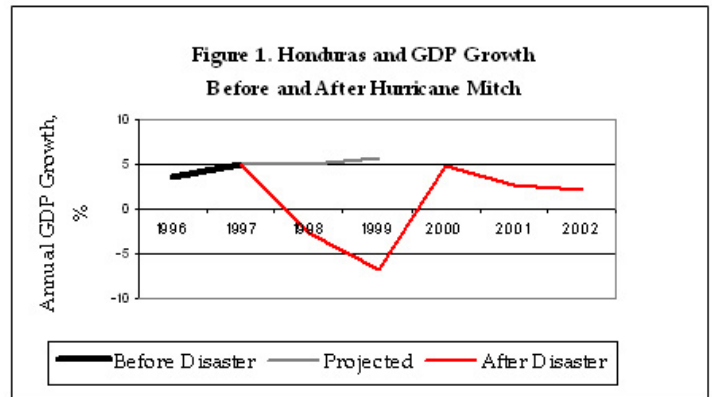
The first full-fledged damage and loss assessment ever carried out by ECLAC was in the case of the earthquake that destroyed Managua, the capital city of Nicaragua in December 1972. Since then, most major disasters – including *inter alia* the large disasters of the Mexico City earthquake in 1985, the El Niño episodes in the Andean sub-region in 1982-1983 and 1997-1998, and Hurricane Mitch in Central America in 1998, as well as many lower impact events—have been evaluated using the tool of the ECLAC methodology.

The analysis of data compiled for the past thirty years in the LAC region show that total impact amounted to more than US\$ 50 billion (in 1998 values), which was concentrated in the smaller, poorer nations of Central America, the Caribbean and the Andean sub-region<sup>2</sup>. The amount of damage and losses caused by disasters was so high that these countries, instead of growing to its full economic potential, were in fact achieving low growth rates. In the case of Central America, the effects of disasters averaged US\$ 25.7 billion in the same period, which are equivalent to 2.1% of the sub-region's combined gross domestic product<sup>3</sup>. This means in fact that these countries economic growth and living conditions, instead of improving over time, have been set back due to the occurrence of disasters.

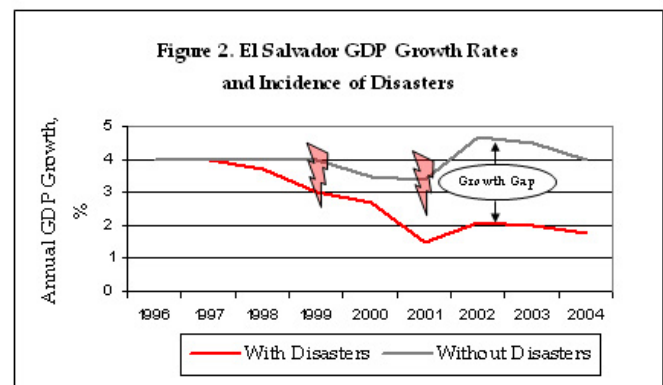
One of the poorest Central American countries, Honduras, sustained impact due to hurricane Mitch in 1998 that represented nearly 80 percent of its gross domestic product (GDP), a serious economic blow that required considerable international assistance. Even with foreign assistance for reconstruction and recovery, the country's GDP fell by nearly 10 percent in the following two years (See figure 1). The fiscal position deteriorated significantly due to the lowered tax receipts and the increase in emergency, rehabilitation and reconstruction domestic expenditures. The country's balance of trade also sustained negative effects due to the significant drop in agricultural exports

and the increased levels of imports of construction materials. The occurrence of successive disasters over a relatively short time span has had a cumulative impact on the affected countries as well. Such is the case of El Salvador, where hurricane Mitch caused extensive flooding in 1998, two major earthquakes and a drought occurred in 2001. Results of the analyses of damage and losses, combined with the monitoring of gross domestic product growth over time, show a significant economic growth gap from which the country has not been able to recover fully (See figure 2).

Affected countries have been able to utilize the assessments to formulate their reconstruction and recovery strategies and



plans, and the international community—including the development banks and most major donor countries – now usually encourage and await the results of the ECLAC assessment in order to define the financial and technical cooperation to the affected country or region. After hurricane Mitch that devastated the five Central American countries in 1998, the governments realized the need to adopt a



pro-active regional strategy and program for disaster damage and loss reduction—instead of continuing with a passive strategy of only reacting to emergencies—that were approved during a presidential summit that was held in October 1999. The regional strategy and plan included specific vulnerability reduction schemes that have already yielded significant results, reducing the socio-economic impact of more recent disasters.

<sup>2</sup>Un tema de desarrollo: La reducción de la vulnerabilidad frente a los desastres; UN-ECLAC and Inter-American Development Bank (IADB), México City and Washington, D.C., 2000.

<sup>3</sup>Jovel, Roberto, *The Impact of Disasters in Latin America and the Caribbean*, a presentation made at Center for Environmental Planning and Technology (CEPT), Ahmedabad, in April 2004.

Using the results of the damage and loss assessment methodology, some individual Latin American and Caribbean countries—such as Mexico and Colombia—are now entering into financial risk transfer schemes such as weather derivatives and CAT bonds to reduce disaster impact. It can be said therefore that the tool of damage loss assessment has proven its usefulness in the case of the LAC region.

**THE RECENT ASIAN EXPERIENCE ON THE ECONOMIC IMPACT OF DISASTERS**

Following paragraphs discuss recent cases of use of damage and loss assessment methodology in Asia. The Gujarat State Disaster Management Agency (GSDMA) recently decided to update its long-standing disaster evaluation scheme that lacked sufficient means to assess economic losses, and ADPC, in collaboration with ECLAC, assisted GSDMA in the adaptation and transfer of the damage and loss assessment methodology in 2004-2005, which has already been tested in the most recent disasters. While undertaking the assignment, a study was conducted to determine the impact of disasters on the Gujarat economy in the past decade, which revealed that the annual average damage and losses caused by disasters in Gujarat amounted to about Rs. 2940 Crore<sup>4</sup>, or the equivalent of 5.4% of the State's gross domestic product, a figure which more than double the one found for Central America!

It was also found that gross state domestic product (GSDP) performance was very much affected by disasters of every kind, as shown in Figure 3, especially by those caused by natural phenomena of hydro-meteorological origin, such as drought and floods, rather than by earthquakes which in any case occur less often than the first ones. In addition, it was found that the traditionally sound fiscal budget position of the State—which before the 1990s had been in the surplus—has deteriorated considerably, due to the need to continuously face post-disaster financial requirements<sup>5</sup>. The need to enter into sound risk management schemes—including risk transfer modalities—in Gujarat cannot be overemphasized.

Immediately after the December 2004 Earthquake and Indian Ocean Tsunami, an assessment of damage and losses—using the simplified ECLAC methodology—was carried out for Indonesia<sup>6</sup>, that resulted in the pledging of US\$ 1.7 billion for the first year of the reconstruction of that country during the 21



Source: The Asian Wall Street Journal, January 21-23, 2005

January 2005 meeting of the Consultative Group for Indonesia (see newspaper clipping). During the first quarter of 2005 similar evaluations were made for India, Sri Lanka and the Maldives Islands, where the main objective was to estimate the funding requirements or needs for reconstruction<sup>7</sup>.

During the third quarter of 2005, ADPC conducted a comparative analysis of disaster impact on socio-economic conditions for the five affected countries of the Indian Ocean region, which enabled a revision and updating of the initial estimates and provided the basis for identifying sectoral vulnerabilities and risks that the countries face. Finally, in late September, ADPC carried out a special training seminar on the theory and practice of the damage and loss assessment following disasters, that was attended by more than forty professionals from India, Indonesia, the Maldives, Sri Lanka, Bangladesh and other Asian countries.

The usefulness of damage and loss assessments has been proven for the Asian region, and significantly concerted efforts are required to develop the critical mass of expertise required for application of such assessment following disasters.

<sup>4</sup>1 Crore = 10,000,000 or 10 Million.

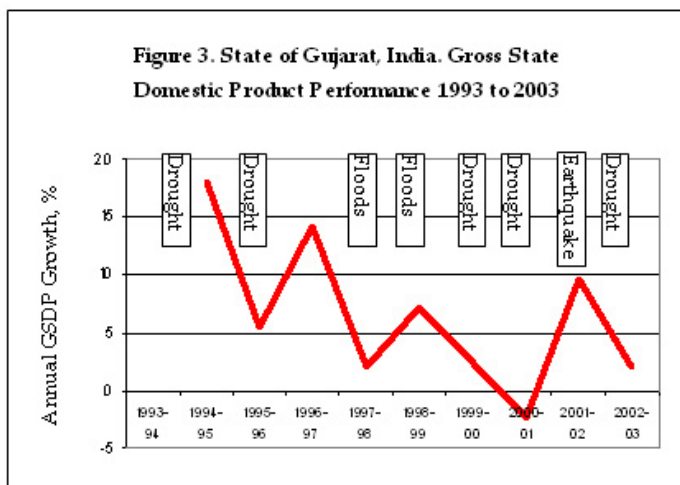
<sup>5</sup>See S.S. Mehta, *Impact of Natural Disasters on Gujarat Economy, in Loss Assessment Methodology Final Report*, ADPC, 2005.

<sup>6</sup>See Indonesia: *Preliminary Damage and Loss Assessment, The December 26, 2004 Natural Disaster*, A Technical report prepared by BAPPENAS and the International Donor Community

<sup>7</sup>For India— See *India: Post Tsunami Recovery Program, Preliminary Damage and Needs Assessment*, Asian Development Bank, United Nations and World Bank).

For Maldives; *Tsunami: Impact and Recovery, Joint Needs Assessment; Joint Needs Assessment*, World Bank-Asian Development Bank-UN System, Republic of the Maldives

For Sri Lanka— See *Sri Lanka: 2005 Post Tsunami Recovery Program, Preliminary Damage and Needs Assessment*, Asian Development Bank, Japan Bank for International Cooperation and World Bank.





## Regional Analysis of the Socio-Economic Impact of the December 2004 Earthquake and Indian Ocean Tsunami



In mid 2005 ADPC undertook a regional study on the socio-economic impact of the Indian Ocean Disaster, with a view to identifying the vulnerabilities and risks faced by the society and economies of the five most-affected countries. The project engaged international consultant Mr. Roberto Jovel and some ADPC permanent staff for its execution.

The study undertaken involved an independent analysis of damage and losses, utilizing existing reports and assessments and compiling and analysing additional information and data from national and international agencies that was not available at the time of the initial national assessments. It also included a comprehensive estimation of damage and losses for the case of Thailand<sup>1</sup>, where no overall assessment had been carried out before.

The results of the ADPC study therefore update and expand the assessments carried out in early 2005 and ensure their comparability by using the same methodology throughout. The results of the analysis were presented and discussed during a special panel meeting, attended by government officials, international institution representatives and members of academic circles that was held in Bangkok in mid-September. The final report of the study that summarizes the findings is presently in press<sup>2</sup>.

The comparative study enabled the estimation of total damage and losses for the Indian Ocean region as US\$ 9.9 billion, a huge amount that is only dwarfed by the loss of human life. In economic terms, the tsunami generated damage and losses that were surpassed only by a major earthquake in Japan and by hurricane Ivan in the United States for the year 2004.

Table 1 shows the results of the comparative analysis undertaken for the Indian Ocean region. It may be observed that Indonesia incurred, by far, the highest economic impact in absolute terms, with total damage and losses of US\$ 4.45 billion (nearly 45% of the total for the region), followed by Thailand (US\$ 2.2 billion),

Sri Lanka (US\$ 1.45 billion), India (US\$ 1.2 billion) and the Maldives Islands (US\$ 603 million). However, a comparison of total impact *vis a vis* the size of the national economies – expressed in terms of gross domestic product – provides a measure of the magnitude of the disaster in each country. In such comparison, the highest values were sustained by the Maldives Islands (84% of GDP) and by Sri Lanka (7.6%), while the other countries sustained much lower magnitudes<sup>1</sup>.

Table 1: Summary of Estimated Total Impact of 2004 Indian Ocean Disaster

Country	Total impact, Million US\$	Magnitude: Impact vs GDP, %
India	1,224	0.2
Indonesia	4,451	2.0
Maldives Islands	603	83.6
Sri Lanka	1,454	7.6
Thailand	2,198	1.4
<b>Total</b>	<b>9,930</b>	<b>1.0</b>

Source: Estimates by ADPC

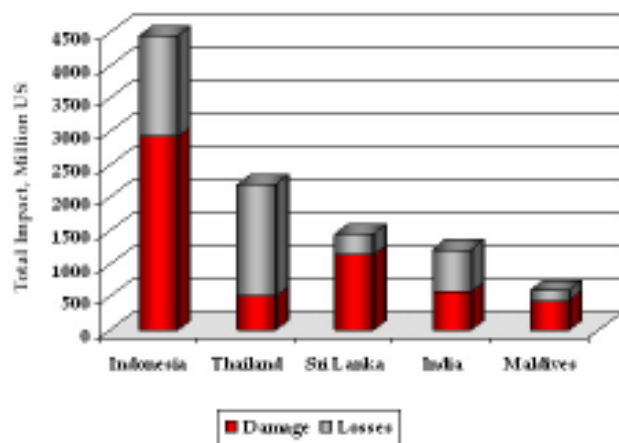
Another interesting feature of the composition of disaster impact is its breakdown into the value of physical assets destroyed or damaged, and the resulting losses in economic flows, as shown in Chart 1. The damage figure provides an indication of the amount of funding required to replace the assets that were destroyed or damaged, followed by the value of losses that will impact negatively on production, income and economic growth in the present and two following years. It may be observed that Indonesia and Sri Lanka are the most affected in terms of assets destruction, while Thailand and Indonesia will sustain the highest losses in the medium term.

<sup>1</sup>Comprehensive Estimation of Damage and Losses in Thailand, Asian Disaster Preparedness Center, Bangkok, Thailand, (In Press).

<sup>2</sup>The Socio-Economic Impact of the 26 December Earthquake and Indian Ocean Tsunami, Asian Disaster Preparedness Center, Bangkok, Thailand, (In Press).



Chart 1: Disaster Impact between physical damaged and losses



It is notable that most damage and losses were sustained by the private sector—composed both of enterprises and private individuals—and that the public sector sustained a relatively small fraction of the total. However, since the private sector includes the damage and losses sustained by lower-income individuals living in the coastal areas of the countries, the governments will have to bear a higher proportion of disaster impact through compensation packages and special financing schemes.

ADPC also analyzed the impact on gross provincial product at the provincial level for Aceh, Indonesia and several provinces in Thailand. In Sri Lanka, suitably disaggregated data was not available for the provincial level. For the Maldives, such analysis was not relevant due to the small size of the country. Table 2 below provides details regarding some of the most affected provinces in terms of impact and magnitude of the disaster.

Further estimates were conducted in order to estimate the average impact of the disaster on the population, as indicated in table 3 below. The highest per capita impact was sustained by the residents of Phang Nga province in Thailand (US\$ 5,090), followed by those living in the Maldive Islands (US\$ 2,058), the provinces of Krabi and Phuket of Thailand (US\$ 1,292 and 1,243, respectively), and Aceh province in Indonesia (US\$ 1,102).

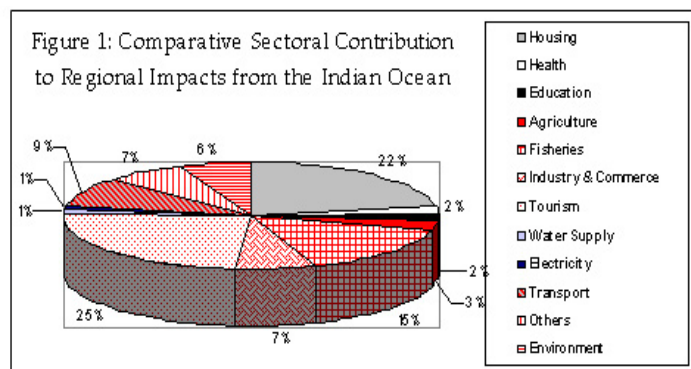
Table 2: Total Amount of Impact and Magnitude of the 2004 Indian Ocean Disaster In the Most Affected Provinces or States

Province or State	Country	Total impact, Million US\$	Magnitude: Impact vs GDP, %
Aceh	Indonesia	4,451	97
Phang Nga	Thailand	1,201	90
Maldives Islands	Maldives Islands	603	84
Krabi	Thailand	504	69
Phuket	Thailand	354	68

Source: Estimates by ADPC

The analysis also enabled the estimation of the most affected sectors of society and the economy of the countries as seen in Figure 1. Nearly one half of the estimated impact was sustained by the productive sectors of tourism, fisheries, agro-industry and commerce, and agriculture. About 26% of the total impact was sustained in the social sectors, most notably in housing, but also in the key sectors of health, education and culture. 17% of the estimated total impact referred to damage and losses to

Figure 1: Comparative Sectoral Contribution to Regional Impacts from the Indian Ocean



physical infrastructure for transport, water supply and energy. Lastly, some cross-sectoral impacts—including those of the environment—accounted for eight per cent of the total. The above composition of damage and losses was found to vary considerably among the countries. Thailand was a special case in that losses in tourism represented a very high proportion of the total country impact.

The ADPC comparative study included sector analyses to identify prevailing vulnerabilities and risks that should be tackled in the near future to reduce the impact of future hazard events. Possible changes in the economic performance of the countries due to the disaster were estimated by combining the expected macro-economic performance before the disaster occurred, with the information on losses by sector and with data and projections of reconstruction progress in the replacement of destroyed or damaged assets. It was found that in 2005—with differences among the affected countries—investments that were effectively carried out in reconstruction were insufficient to compensate the losses in production and income arising from the disaster, and that it will take more than two years on the average to complete reconstruction and economic recovery. Nevertheless, the analysis revealed that—with the exception of the Maldives whose economic vulnerability is higher than that of the other affected countries—the impact of the disaster on national economic growth would be limited during 2005 (See table 3). Furthermore, that once reconstruction and recovery programs attain full speed, economic growth rates should be able to return to pre-disaster levels in the countries.

Data in table 3 show that the higher the size and the degree of diversification in the economy of the affected country, the lower the impact of the disaster on economic performance<sup>3</sup>.

Table 3: Estimated Impact of the Disaster on Economic Growth in 2005

	Pre-Disaster forecasted GDP growth, %	Estimated reduction in GDP growth due to the disaster, %
India	7.2	...
Indonesia	5.4	-0.2
Maldives	7.5	-9.2
Sri Lanka	6.0	-0.6
Thailand	6.0	-0.3

For more information regarding the study, please contact **Mrs. Supriya Mehta**, Project Manager (supriya@adpc.net) or **Mr. Roberto Jovel** (rjovel@jovel.org).

<sup>3</sup>The estimated impact on economic growth given in table 3 refers exclusively to that caused by the disaster, and does not reflect the impact of other shocks such as the rising of international oil prices and of lending rates.

# Post Disaster Building Damage Assessment

*Arghya Sinha Roy, Program Coordinator-  
Disaster Management System/ Supriya  
Prabhu Mehta, Project Manager-Disaster  
Management Systems/ K Iftekhar Ahmed,  
Project Manager-Urban Disaster Risk  
Management/ NMSI Arambepola, Director-  
Urban Disaster Risk Management*

Asian Disaster Preparedness Center

## ABSTRACT

Building damage assessment forms a key component of overall disaster impact and reconstruction needs assessment. The following article attempts to summarize the types of building damage assessment that are commonly used in the Asian region following a disaster, the objectives that these assessments serve and the processes that need to be followed in conducting these assessments, with particular emphasis on assessment of housing. The authors hope to provide a conceptual framework of key considerations in building damage assessment through this article.

As we can see in the table below, some of the recent disasters in the region have impacted housing sector quite significantly. On an average, 1% of India's housing stock is lost annually due to disasters<sup>8</sup>. In the recent 2005 Kashmir Earthquake, more than 200,000 housing units in the districts of Azad Kashmir and NWFP in Pakistan were damaged or destroyed. This damage has a huge direct impact on the community and settlement as a whole in terms of safety of inhabitants, security of the population, and indirect effects on the economy of the settlement. Hence it is an absolute must to carry out Damage Assessment of Buildings with a scientific approach, immediately after a disaster.

Table 1: Summary of Worldwide Disasters, its Economic Impact and the Most Impacted Sector (1999-2005)

Event	Year	Total impact	Housing impact	Currency	Percent of total	Most
Marmara (Turkey) Earthquake <sup>1</sup>	1999	3,076.00	1,100.00	Million US\$	35.76%	Housing
Orissa (India) Cyclone <sup>2</sup>	1999	6,227.59	1,228.74	Crore Ind. Rupees	19.73%	Housing
Gujarat (India) Earthquake <sup>3</sup>	2001	2,131.00	1,111.00	Million US\$	52.14%	Housing
Bangladesh Floods <sup>4</sup>	2004	134,500.00	27,500.00	Million Taka	20.45%	Agriculture
Indonesia tsunami & earthquake <sup>5</sup>	2004	4,451.60	1,437.10	Million US\$	32.28%	Housing
Tsunami Regional Impact <sup>6</sup>	2004	9,929.00	2,196.00	Million US\$	22.12%	Tourism
Pakistan Earthquake <sup>7</sup>	2005	69,333.00	68,438.00	Million Pk. Rupees	40.42%	Housing

## INTRODUCTION

While disasters widely impact various aspects of human lives, the impact on buildings is especially catastrophic since vulnerable populations are rendered homeless or compelled to live in uninhabitable and unsafe homes, with livelihoods impaired due to destruction of workplaces. Disasters such as Earthquakes, Cyclones and Tsunami, and sometimes long duration flooding severely impact particularly the housing sector in our Asian region since large proportion of housing is semi-engineered at best. Table 1 analyzes this for a few recent disasters.

<sup>1</sup> The World Bank, Turkey Country Office; Turkey, *Marmara Earthquake Assessment*; 1999

<sup>2</sup> Government of Orissa, *Memorandum on Damages Caused by the Super Cyclonic storm of Rarest Severity in the state of Orissa*; 1999

<sup>3</sup> The World Bank and the Asian Development Bank; *Gujarat Earthquake Recovery Program: Assessment Report*; 2001

<sup>4</sup> The Asian Development Bank and The World Bank; *Floods in Bangladesh: Damage and Needs Assessment and Proposed Recovery Program, Part 1- Main Report*; 2005

<sup>5</sup> BAPPENAS and the International Donor Community, *Indonesia: Preliminary Damage and Loss Assessment, The December 26, 2004 Natural Disaster*; 2004

<sup>6</sup> Asian Disaster Preparedness Centre; *The Economic Impact of the 26 December 2004 Earthquake and Indian Ocean Tsunami*; 2005

<sup>7</sup> Asian Development Bank and World Bank; *Pakistan 2005 Earthquake, Preliminary Damage and Needs Assessment*; 2005



## PURPOSE OF BUILDING DAMAGE ASSESSMENT

Building Damage Assessment is conducted in the post-disaster context, typically by qualified, trained and authorized personnel to serve the following purposes:

- The most immediate function is that of determining safety of the structure for continued habitation or use by communities. This is an essential function particularly to quell apprehension among the affected population about the safety of their houses, particularly in the context of geological hazards such as earthquakes which can have large scale structural impacts, followed by recurrent aftershocks.
- The building damage assessment is also essential in providing an overall assessment of the quantum of damage and for estimating the expected cost of disaster impacts in terms of value of replacement. This kind of assessment serves as a decision support tool for rehabilitation and reconstruction policies.
- In the longer term, having a database of Comprehensive building damage assessment can also be analyzed to identify typical hazard and location specific building failures, which can be used to identify future risk reduction measures. This assessment would help in learning lessons from gaps in (i) building construction practices (ii) limitations of building materials used (iii) compliance to construction standards and zoning regulations; and guide the framing of long-term policies for hazard resilient building construction policy and practices.

## TYPES OF BUILDING DAMAGE ASSESSMENT

Depending on the purpose of the building damage assessment, identified by the user, the building damage assessment methodology differs slightly in process, scope as well as the human resources' requirement, which may be broadly categorized as follows:

- Rapid Safety Assessment
- Detailed Building Damage Assessment and Categorization
- Engineering Evaluation<sup>9</sup>

**Rapid Safety Assessment** is undertaken to identify and label buildings that cannot be occupied (labelled "UNSAFE"), those that can be reoccupied safely ("SAFE"), those that may be entered very briefly after taking certain precautions ("RESTRICTED USE") and those whose perimeters might be unsafe due to falling hazards or chemical or other contamination ("AREA UNSAFE"). Rapid assessment also provides insights, based on rapid reconnaissance, of the extent of impact, to estimate expected numbers of households to be served in refuge centres for the displaced people and temporary housing requirements. Rapid Safety Assessment, as the title suggests, is undertaken in a very short time frame and therefore does not have adequate information to guide the decision of strengthening, retrofitting or demolition of a building. It is also not intended to estimate the loss of private property, or to estimate the cost needed for strengthening, retrofitting or demolition of a building. ATC-20: Post earthquake Safety Evaluation of Buildings of the Applied Technology Council is an internationally recognized tool for this process.

**Detailed Building Damage Assessment and Categorisation** involves an assessment of individual structural and non-structural members within a building to provide a composite category of damage which represents the severity of impact. This category may be represented by a numerical degree between 0 and 5, or a qualitative category, such as 'minor', 'moderate' and 'extensive' or others, may be provided. This

categorization has been used in past instances for determining extent of financial or material assistance that households may be entitled to in the post-disaster reconstruction phase. Based on this detailed assessment, a more accurate cost estimate for repair and retrofitting of overall building stock is possible. If this assessment follows an initial round of rapid assessment, it can also provide a more conclusive evaluation of structural safety. Unlike the Rapid Assessment, the procedure for Detailed Assessment varies for different kinds of construction and building types.

**Engineering Evaluation** of buildings is required to determine the structural adequacy and integrity or distress of a structure or some of the selected elements prior to undertaking retrofitting, strengthening or repair. The decision to conduct Engineering Evaluation is mostly the responsibility of the building owner due to the cost and time involved in the process.

## STRUCTURAL ELEMENTS TO BE CONSIDERED/ EVALUATED FOR BUILDING DAMAGE ASSESSMENT

It must be recognized that different natural hazards have a differential impact on structures.

**Cyclones**, with their high speed winds impact lighter elements of a structure, such as the roof (especially if pitched), wall cladding and openings, while the heavy rains and floods that often accompany cyclones affect the foundation. Cyclones also often render surrounding area unsafe by uprooting power supply lines and trees.

In **floods** the level of physical vulnerability of a structure depends on its capacity to withstand the prolonged inundation, and pressure from water in case of flash flooding. Building Damage Assessment following floods must integrate assessment of building components such as foundation (or in case of some flood prone areas stilts that prop the structure) and walls. Floods are also accompanied with secondary hazards such as ground settlement.

In the event of **earthquakes**, every structural and non-structural element needs to be examined carefully for damage. Damage to vertical load carrying elements such as columns and walls due to the ground shaking are often the most dangerous since this may cause building collapse. Hence particularly in the case of earthquakes, columns need to be critically examined for vertical, diagonal or/ and cross cracks (wide or hairline width). In some cases, there may be uneven settling of ground due to liquefaction, which can severely impact the structure. The figures 1 and 2, show the typical areas of concern in terms of possible structural failure, as demonstrated in the ATC 20.

## POLICY AND INSTITUTIONAL CONSIDERATIONS IN DAMAGE ASSESSMENT

While building damage assessment is undertaken after most major disasters, not many countries have taken the necessary measures for institutionalizing a scientific and consistent approach towards building damage assessment in our region. Gujarat state in India is one of the few pioneers in having initiated the process of developing and institutionalizing a methodology for damage and loss assessment.

<sup>8</sup>According to Census of India, 2001, as quoted at <http://www.devait.org/taranet/websitepages/basinSaDefault.aspx?catalogid=133>

<sup>9</sup>ADPC & Gujarat State Disaster Management Authority; *Damage Assessment Methodology, as proposed to the Government of Gujarat under Study on Development Methodology for Damage and Loss Assessment; GEERP, 2005*

Figure 1: Structural system with vertical irregularities

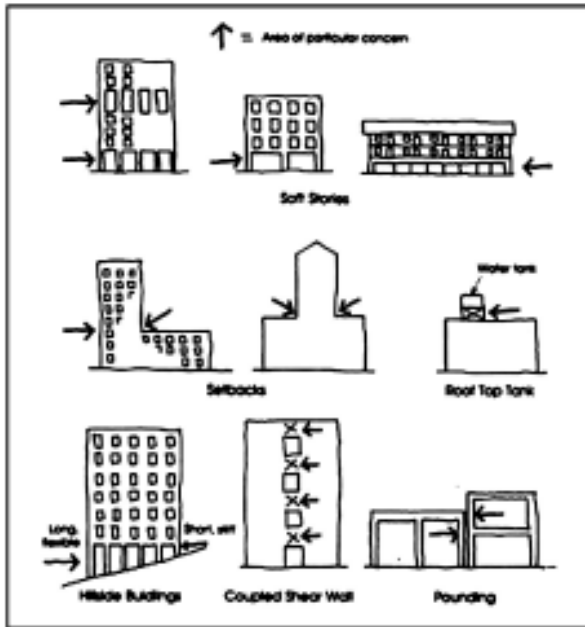
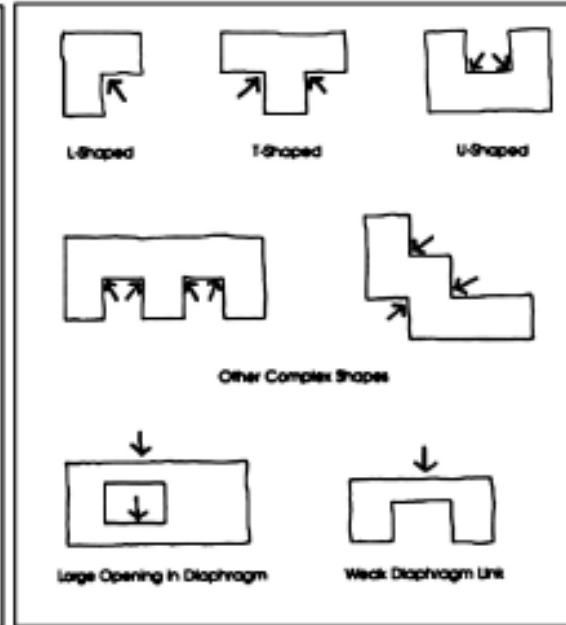


Figure 2: Buildings with irregular configuration plans



Source: ATC- 20; Procedures for Post Earthquake Safety Evaluation of Buildings

Having the necessary human and material resources pre-identified, trained and ready for deployment at any time is essential for an effective and efficient damage assessment system. Since building damage assessment requires expertise in structural/civil engineering, it is often useful to establish and maintain contact with local engineering chapters/associations, which can provide volunteers for undertaking such an exercise when required.

As mentioned earlier, one of the key functions of Building Damage Assessment is also to point towards appropriate future policy with a view towards risk reduction. In many Asian countries, building codes are available, but are either not mandatory or not complied to. Assessment including Engineering Evaluation can ascertain the exact elements of the construction that did not comply with building codes, consequently causing structural failure and damage to the building. For example, corner reinforcement of buildings in an earthquake-prone region may be specified in the code, but might be frequently ignored, resulting in cracking or collapse at the corners of buildings in an earthquake. Building codes tend to be exhaustive; therefore, such assessment based on identification of typical failures would indicate precisely which aspects of the code should be emphasized in future construction policy to avoid repetition of similar failures. Justification of enforcement of such policy could draw upon the findings of the Damage Assessment. It could also form the basis for public awareness, skills development and capacity building of professionals and construction workers, and spontaneous compliance of codes, leading to mainstreaming hitherto neglected aspects of the building codes.

A similar scenario applies in the case of building regulations. Whereas, even though unlike building codes these are mandatory, the vast majority of owner-built constructions usually pay little heed to such regulations. Enforcement is often lax and subverted by corrupt dealings between building owners and authorities. A clear scientifically-driven Damage Assessment can be a powerful tool towards reversing this process by demonstrating the adverse consequences of overlooking or

avoiding building regulations. Additionally, where adequate building regulations have not been in place, the assessment would provide directions for formulating relevant regulations based on the nature of damages, and where applicable, be a basis for revising existing regulations.

Similarly, existing land-use plans are often not followed properly, such as for example an area demarcated for agricultural use is used for housing by building unauthorized settlements. When a flood occurs in such an area, the property damage and economic loss might be significant compared to if it would have been an agricultural area, where even benefits might have been gained in terms of crop irrigation. In such cases, Damage Assessment may allow revision and re-organization, or formulation of new land-use plans based on its findings and future risk reduction considerations. At a more refined level, it may demonstrate the risk and possible futility of settlement in areas earmarked hazardous through hazard-zonation. Such hazard-zonation, not only on the macro national level, but also micro-zonation within cities, exists in some Asian countries, but people are often not aware of the risk of living in areas zoned as hazardous until a disaster does strikes. An opportune moment then arises to build awareness for more selective settlement patterns and policies, facilitated by and demonstrated through the findings of a Damage Assessment.







# Damage and Loss Assessment in Agriculture

by Selvaraju Ramasamy PhD  
Asian Disaster Preparedness Center

Agricultural sector is one of the most vulnerable sectors to high frequency natural disasters in the tropical agro-eco systems. As more population is depending on agriculture and allied sector, the magnitude of infrastructure and properties exposed to natural hazards are also becoming higher. The impact is a function of damage to properties, assets, infrastructure and loss to production in agriculture and allied sectors.

The damage refers to:

- Total or partial destruction of assets, including buildings, agricultural, infrastructure, stocks, natural resources, etc.,
- Damage occurring during or immediately after the disaster
- Measured in physical terms with a monetary replacement value assigned to it

The loss refers to changes in economic flows caused by the disaster, they include:

- Production not obtained, and corresponding higher production costs (eg. re-planting)
- Higher operational costs and lower revenues in the provision of essential services
- Unexpected expenditures (humanitarian assistance, demolition and debris removal, relocation of human settlements)
- Loss occur from the time of the disaster until full reconstruction and economic recovery are achieved
- Losses are measured in monetary terms at current prices

Four major components are considered for quantifying the impact of disasters in agriculture and allied sectors. They are as follows:

1. Damage to farmland-recovery may take many years
2. Damage to physical infrastructure-irrigation and drainage systems, storage facilities, agriculture machinery and equipments
3. Loss of crops-ready to harvest and in mid season
4. Damage and loss to stock-livestock, input (seeds, fertilizer etc), harvested products etc.

A comprehensive damage and loss assessment methodology is proposed for agriculture and allied sectors taking into consideration the basic characteristic of drought for a given region. The climate, weather forecasts and series of updates on climate information can be extensively considered to assess the impact of disasters well before onset. The assessment methodology helps to manage the disasters through pro-active decision making at policy levels.

The impact assessment methodology with reference to drought takes into account the climate forecasts; impact of late onset of rains, long dry spell during growing seasons and early withdrawal of rains, particularly on the critical stages of crops as well as farmers crop adjustment/ crop management practices. The key components of the methodology are:

1. Drought pattern/foot prints based on past experience
2. Drought early warning systems
3. Networking of institutions (Crop Weather Watch Groups)
4. Loss estimation based on the moisture sensitive crop growth stages and yield reduction factors

Based on the history of earlier drought patterns, the change of cropping pattern over a period of time, irrigation status and the sensitivity of crops to moisture stress in different soil conditions, it is possible to evolve a six stage impact (damage and loss) assessment reports, as shown in the table.

**Pre-disaster report** depends on seasonal climate forecast issued by National Meteorological Agencies. Since the forecast at this point is very general, a forecast of below normal rainfall is used as an indicator to anticipate droughts. The Office of Agriculture prepares a preliminary assessment report on possible shortfall in production.

**Flash reports** depend on the commencement of monsoon rainfall. Farmers start sowing after the first spell, the following spells helps germination, vegetative growth and sprouting. In the years of delayed monsoon, farmers tend to go for drought tolerant local varieties instead of improved ones. The area for local fodder, which is used for both coarse cereal and fodder, usually double in years of delayed monsoon and drought.

**Mid-term assessment reports** are based on sown-area under various crops. This report highlights the effects of early or delayed rainfall. This will be based on the crop shifts due to rainfall behavior during early stages of the season. As the agricultural crop area are sensitive to rainfall, early assessment of damage and loss probability is possible. Mid-term assessment report can also use the forecast updates issued by the National Meteorological Agencies.

**Mid-term update reports** are based on the mid-season drought/dry spell or wet spell conditions. The impact of dry spells on different crop systems is assessed based on the matrix of moisture sensitive growth stages and corresponding yield reduction factors. The fraction of yield reduction from the anticipated yield (forecasted yield) can be calculated from the yield reduction factors for various crops under different drought intensities.

If the crops fail during the establishment stages due to early season droughts, the cost of investment till that stage is taken as loss. For example if drought occurs during early stages and crop is damaged at its establishment stage, there will be a re-sowing opportunity and hence the loss here is equal to the amount spent up to establishment stage. If the crop fail due to mid season dry spell, then there is no more replanting opportunity and hence the loss is equal to the value of anticipated production. The value of loss of production can be calculated based on the yield reduction factors. Value of loss = anticipated area (ha) \* loss factor (0-1) \* forecasted yield (kg/ha) \* yield reduction factor (0-1) \* farm gate price (\$/kg).

A pre-final report is made in the harvesting stage. The crop cutting experiments as well as crop yield surveys is used for updating the pre-final reports. Based on the terminal season rainfall and water levels in the reservoirs, it is possible to assess the areas likely to remain unsown for the subsequent season crops. This report will provide the overall damage and loss experienced during the season with a clear picture about the likely production during subsequent season based on the available water resources.

The final report will indicate the actual impact of soil moisture and water levels in reservoirs for subsequent crops. The input parameters for this report are actual seasonal assessments regarding rainfall pattern and area sown under each crop.

Table: A six stage drought impact assessment methodology for the state of Gujarat, India

Time	Type of Report	Details of Report
Upon receipt of India Meteorological Department (IMD) seasonal forecast	Pre-Disaster Report	Scenario reports could be prepared based on the following parameters: 1. The late onset of rains 2. Long dry spells during cropping season 3. Early withdrawal of monsoon 4. Pattern of impact of droughts in the past 5. Possible shift of crops with reference to market prices in the previous season
June-based on onset of monsoon	Flash reports	Initial picture on the magnitude of the drought and its effects based on monsoon onset with reference to normal dates in each of the agro-climatic zone.
July-based on initial rainfall pattern	Mid-term assessment Report	The assessment report would indicate the crop shifts with regard to late onset of monsoon.
August-based on dry and wet spells	Mid-term update reports	The impact of major climate anomalies such as continuous dry spells or dry spells followed by intermittent wet spells on major crops could be assessed on the basis of the area affected and intensity of drought.
Mid October-based on assessments	Final <i>Kharif</i> report Rabi season prospects	Based on Aanawari assessments, overall rainfall situation, September rainfall, water levels in reservoirs, the areas left unsown during <i>Kharif</i> .
End December-based on <i>kharif</i> assessments and <i>rabi</i> prospects	Final Report	Based on the planting area of various crops during <i>rabi</i>

Source: ADPC, 2005





## Moving from Disaster Impacted to Disaster Resistant

by *Ines Pearce*

*Director, Seattle Project Impact for City of Seattle  
Emergency Management*

Post-disaster is the time to determine the extent of damage, and to identify those entities that have not been damaged yet but are still vulnerable. This creates an opportunity to reduce risk before the next event. The Emergency Management Cycle is divided into four phases: Mitigation, Preparedness, Response, and Recovery - a never ending cycle that returns to Mitigation after lessons learned. While seemingly simple, actually moving from one phase to the next is not as clear-cut as one might suspect. In fact, after most disasters occur, Response, Recovery, and Mitigation are addressed simultaneously with the initial priority on saving lives. In order to minimize loss from future disasters it becomes vital to use piqued public interest, highest in disaster's aftermath, to talk about Mitigation. An obstacle can occur during Recovery when there's an emphasis to "return to pre-disaster life" and proactive interest begins to wane. The window of opportunity is open only a short time, so organize those who want to get involved quickly. They can assist in many ways and contribute to lessening the impact of the next disaster with eyes toward what's currently unfolding.

People and organizations want to help after a disaster so it is imperative to find productive ways. Concentrate their attention at the beginning, Mitigation, where they can offer great assistance. Community Partnerships can be undertaken whether you haven't experienced a disaster or are still recovering. While every individual can do much to lessen their own risk and protect others, it needs to be an organized undertaking. First, there must be a structure in place to direct efforts. Needed is a leader who can make decisions yet work collaboratively with a variety of individuals and groups. Every community has a natural leader for Community Partnerships, but sometimes the structure will fully-assemble after the partners are in place and ready for action. The partnership should not be too rigid or unable to consider new ideas. Otherwise, mitigation efforts find increasing difficulty in bringing change and we are left with the results from past disasters.

Second, look at your community's biggest risk. Consider what will have the highest impact to lives and property. Sometimes mitigation solutions will address multiple hazards, but focusing on the greatest risk will typically garner higher interest and can be tied to existing efforts lacking support. It is important to link

with those who already comprise your hazard community (such as researchers and educators) because if people understand the risk, they will see need for action.

Third, take a look at your community as a whole and what entities and organizations comprise it. Locally you have government, businesses, community/neighborhood groups, non-profits, schools, and probably activists interested in making the community safer. The next levels to consider are regional organizations with which your community interacts or relies on in some way. These regional groups may again be government agencies, educational institutions, and possibly a few you don't currently work with but would be valuable in developing disaster resistant strategies. Next look at the national level and consider with whom you currently have links or who would be helpful in your program development. Your strongest base will always be local, as disasters occur at home and the community is most vested in results. However, many enhancements to your effort can come from beyond your local borders. Connect to other regions or countries who have undertaken similar endeavors. This will save precious time, money and energy by building upon something that exists and modifying it to fit your needs. With the range of contributors, all partners must be treated equally because reducing impacts from the next disaster requires collaboration and innovation.

Once your partnership has identified risks, defined a structure, and brought in partners representing all levels of the community, you are ready to select and create programs to lessen long-term vulnerability. Many partners are able to donate goods and services, or find outside donors to contribute to efforts. While funds are always helpful, the momentum, expertise and collaboration of partners are ultimately what bring about sustainable disaster resistant programs.

While assessing the impact of any disaster is daunting, graver still is the responsibility of the community, still vulnerable, and waiting for action. Post-disaster is the time to begin reducing that risk. While each of us is responsible for our own safety, together we can build disaster resistance into our communities that have far reaching and long-lasting impacts.

# Psychosocial Impacts of Disaster and Program Initiatives in Asia

by Satyabrata Dash  
American Red Cross, India

Natural disasters have ravaged communities time and again. The overt impacts have been dealt with by various agencies but the hidden impacts have tended to get neglected to heal on their own. Psychosocial impact is one such impact that is only now emerging as an identified need and is beginning to be addressed since the last two decades. The social impacts and the psychological impact form a community perspective still largely remains unaddressed.

Psychosocial programs post disasters have been implemented in Asia since 1980s with mental health institutes doing outreach programs within the formal sector of health. Psychosocial issues have also been addressed within various programs in contexts of HIV in Bangladesh and continuing conflict situation in Srilanka. Below lists some of the disasters and the key modes of intervention indicating the evolution of psychosocial support programs over time.

## DISASTERS AND THE KEY INTERVENTION MODES

### Bangalore circus tragedy (1981)

- Home based care through simple emotional support.

### Bhopal gas tragedy (1984)

- Training of physicians for Disaster Mental Health care.

### Marathwada Earthquake (1993)

- Training of wide variety of personnel for emotional support

### Bombay riots and bomb blasts (1993)

- Professional and lay counselors provided help individually and group situations.

### Orissa Supercyclone (1999)

- Community level volunteers focusing on women, children, elderly and disabled.

### Gujarat Earthquake (2001)

- Interventions in community, schools, and primary care facilities.
- Development of manuals of care.

There have been numerous challenges in this process of evolution such as in developing strategies to reach out to the grass root levels, in sustainability of the volunteers and trained resources generated in programs limited to trainings and short follow up and support, in operating programs confined to the clinical model and to the health sector, in continuing to provide human resources and operating longer term programs from regular mental health institutes, in advocating the psychosocial needs and developing policies to address them.

The current generation of programs has evolved after various trials and errors and now span into various sectors. There is also a trend of multiple agencies collaborating to address different components of the psychosocial support endeavor on the basis of expertise and availability of funding. The programs of the present time involve the sectors of education and social welfare besides the formal sector of health. The health sector acting from top down (clinical model) and the social welfare and the education sectors acting from bottom up (community based non clinical model). The health system reach out to the communities through its primary health care centers and the outreach activities provided by the community health workers and the social welfare system and the education system help in providing basic psychosocial support to the community (children through schools with spill over of knowledge into their families and the community itself through community level groups and volunteers. Figure 1 also fits into the model of mental health care services within a primary health care framework in emergencies. Figure 2, proposed by the John Hopkins and International Federation of Red Cross and Red Crescent Societies' (IFRC), provides a framework for comprehensive psychosocial support program.

Figure 1: Health, social welfare and education systems help in providing basic psychosocial support to the community

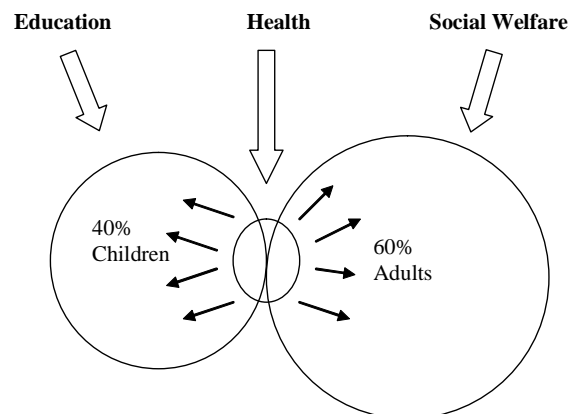
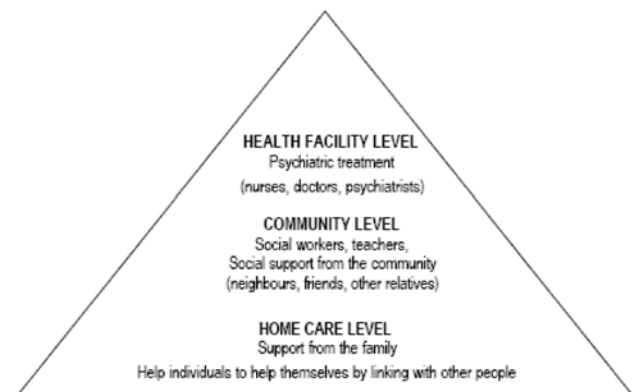


Figure 2: The framework by John Hopkins and IFRC Public Health Guide to Emergencies

### Mental Health Services within a Primary Health Care Framework



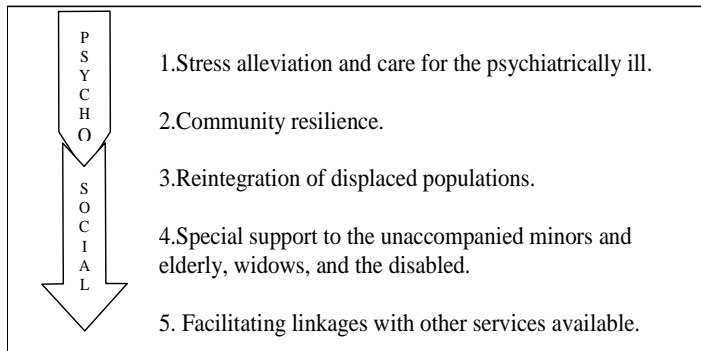


Besides addressing the psychological issues (both psychiatric illness and stress alleviation) and rolling over into development of community resilience in the recovery and reconstruction phases the programs are also beginning to address the social impact of disaster on the communities in contrast to earlier generation programs. There is a built-in support for facilitation of restructuring of the post disaster community by development of healthy bonds within the community members. The issues of unaccompanied minors, widows, disabled and the unaccompanied elderly are given special attention.

Natural disasters have caused massive displacements as experienced in the 26<sup>th</sup> December 2004 Tsunami in South Asia and the South Asia earthquake 2005. A population that needs a great deal of psychosocial support is that of Internally Displaced Persons who are to be integrated into the host communities. They do not enjoy a legal status as refugees nor have specific humanitarian agencies looking into their issues as their mandate. They often land up as responsibility of the local government. There is no guarantee of getting their basic needs met nor are they able to claim their needs.

Psychosocial support through its community resilience component can actually serve as a program that connects the community into various other services such as health care, water sanitation, housing, livelihood and paralegal services. Future generation programs may be designed with activities supporting such linkages. Current psychosocial support services can be broadly outlined as in figure 3.

Figure 3: Current psychosocial support services



In the present time the psychosocial impact and the enormous longer-term needs are being clearly identified in the context of disasters but programming initiatives and trained resources are still far from adequate. Massive disasters involving multiple countries at one time such as the 2004 South Asia Tsunami have come as a challenge to nations and humanitarian agencies and efforts are definitely underway for better programming initiatives in the future.

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## Dealing with Psychosocial Consequences of Disasters: A call for community-based approaches

by Marc Van der Putten  
Faculty of Public Health, Thammasat University,  
Thailand

When about 75% of Bangladesh disappeared under the water surface in 1988, I was, as an international development worker, trapped in these massive country-wide floods, displacing millions, destroying the crops and cattle, killing thousands, mostly the vulnerable; paralyzing communication and service infrastructures, not to mention the economy and destroying the livelihood of countless people.

The situation brought local community leaders together in a spontaneous way and the common thread wiped away the differences among them. Health services managers, religious leaders, school teachers, landlords and local administrative authorities alike joined efforts in coping with the need for action. Health services were declared free, safe locations were identified and temporary shelters were set up for refugees, and preventive actions were conducted to secure safe water and sanitation. And psychosocial support was everywhere as an integral part of the local emergency responses, in the form of people taking in relatives or neighbours, sharing of food teachers, mullah's and guru's counselling and comforting affected families, and the fortunate caring for the funeral of the unfortunate's family members.

This experience with my Bengali friends taught me a lesson: not foreign aid per se, but the community itself holds the key in dealing with psychosocial consequences of disasters.

In discussing psychosocial consequences of disaster we have to keep in mind that different people may use the terms mental health and psychosocial support differently, though the distinctions are not always clear<sup>1</sup>. In a pragmatic way, first line psychosocial support is commonly provided by family and community members, while mental health usually comes into play when psychosocial consequences are too severe and community efforts become insufficient. There remains considerable debate over the extent to which general mental and psychosocial care programmes provided by aid organisations are relevant to the local context<sup>2</sup>. These concerns also extend to the ability of these organisations to assess needs.

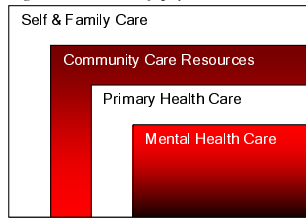
After an extreme life experience such as a disaster, one can expect an immediate and normal psychological stress response<sup>3</sup>. As a consequence of disasters, there are losses: of loved ones, of properties, of livelihood, of community relationships, of

heritage and others. These losses create feelings of fear, helplessness, dependency, and sometimes anger rooted in a deeper loss, the loss of control over one's life and one's destiny. This loss brings about bereavement, the typical grieving process that we can expect under such conditions. The whole process can be divided into (a) the event itself; (b) the aftermath; and (c) the recovery period.

However, experience shows that people know how to support each other when distressed, but usually have no referral mechanisms when that support is not enough. The self-help and healing capacity of communities needs to be mobilized in conjunction with culturally adapted psychological interventions in which religion is acknowledged as an important coping mechanism. Primary health-care structures are best placed to provide psychosocial services that are appropriate to the local community. Specialist psychiatric support, while not forming the bulk of the response at all, does need to be available to those who have more severe problems that cannot be managed at the primary-care level<sup>1</sup>.

This however, places a real challenge for developing countries, especially in rural and remote settings. One problem that persists is the limited possibility for referral of severely traumatized people to specialized services. There are usually a limited number of psychiatrists and psychologists as well as psychiatric hospitals in developing countries. In such situations mental health care falls to district hospitals and primary health-care clinics that have little experience in dealing with mental health disorders.

Figure 1: Levels of psychosocial care



As shown in Figure 1, the majority of people affected by disasters usually find adequate psychosocial support at the family and community care levels. While the primary health care settings complement family and community care for those with more severe and/or prolonged distress. Finally, primary care services should

be able to refer to specialized mental health services if needed. However, that is an ideal situation. Not all communities have human resources prepared to provide such care, most primary health workers, including physicians in developing countries, did not receive training in mental health and psycho-social support and specialised mental health care is hardly within reach.

The way ahead in caring about the psychosocial aspects as a part of disaster preparedness is capacity building among both, communities and local professionals. Considering earthquakes, volcano eruptions, hurricanes, tornados, floods, and tsunamis it is not an exaggeration to state that Asia is disaster prone. This threat of disaster risk will even increase due to population growth, settlement in high risk areas, and emerging diseases among others. In building capacity to deal with psychosocial consequences of disasters key target groups within communities are religious leaders, teachers and (health) volunteers; and within primary health care and district health settings health workers, nurses and physicians. There is no shortness of benchmark experiences in Asia supporting capacity building efforts. Western inputs however, should be handled with caution to assure cultural appropriateness. (source: WHO)

<sup>1</sup> World Health Organization (2005) WHO framework for mental health and psychosocial support after the tsunami. New Delhi: WHO-SEARO

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## FORGOTTEN VULNERABILITY

by Pak-Pajaree Suwannakarn  
HelpAge International-Asia Pacific, Thailand

The impact of the Indian Ocean Tsunami on the most vulnerable group, the older people includes discrimination, vulnerability data, rights, livelihoods, social protection and non-participation. HelpAge International's carried out a research in India, Indonesia, Sri Lank and Thailand in early 2005, which states that in the Asian tsunami, older people were not specifically targeted and in some cases, the relief efforts discriminated them.

Older survivors are often overlooked during initial relief phase and are left out during distribution of relief packages due to their physical disabilities to 'fight' for supplies. Therefore, older people should be exclusively identified and targeted for support. Helping older people to survive and cope with disasters is not about creating special services, but about ensuring that their vulnerability, needs and rights are taken into account at all stages of a relief effort.

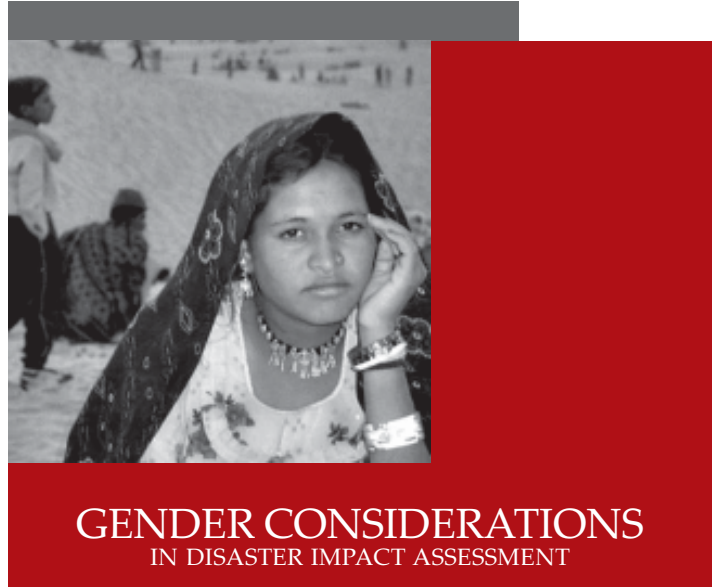
In India, HelpAge International organised a separate distribution outlet for vulnerable groups. Volunteers identified and notified older people and their families about distributions made at the relief collection point. Transportation arrangements were made to and from the relief collection points for those with mobility problems with proper waiting areas.

Lack of data on the older people before the tsunami resulted in not giving any thought or making any provision for them in a disaster preparedness plans. Data on any natural disaster related deaths by age, gender and disability except in the case of children, highlights the fact that this set of the vulnerable group's data is either non-existent or lost in general broader categories.

Right to access to free health care, food and cash support for old people exists during emergencies. However, such entitlements go unclaimed due to discrimination, lack of information or inappropriate structures. During the recovery phase following a disaster, older people typically face exclusion from credit and income-generation programmes, which exacerbates their isolation. In order to help older people access their own entitlements, there is a need to establish mechanisms.



*“Lack of consultations with older people results in them being excluded from livelihood rehabilitation programmes and thus becoming dependent either on their family or on government sanctions to the destitute.”*



by *Anoja Wickramasinghe*  
*University of Peradeniya, Sri Lanka*

As physical health declines with ageing, older people are among those most in need of social protection measures such as health and income support schemes. Access to health care is a key concern for older people at the best of times but the tsunami left many without any access to services or medicine for disaster-related injuries and chronic conditions such as diabetes or heart complaints.

Older people who receive cash as pension overwhelmingly provide for their family's basic needs.

The Madrid International Plan of Action on Ageing acknowledges that in any emergency situations, older people are especially vulnerable and should be identified and targeted for support. And also suggests that interventions need to recognise that older people are part of families and communities who make a positive contribution in coping with emergencies.

During recovery phase of the tsunami, many older people played the critical role by looking after and counselling both their own grandchildren and orphans of friends and extended family. However, in the relief camps during the post-Tsunami, no specific efforts were made by relief workers to consult older people or assess their needs. In some camps, NGOs approached respondents to identify the general needs of the family so that distributions could be arranged for a single household. When asked to identify the most important relief needs of older people, there were noticeable discrepancies between the views of older people and relief workers.

Older people's needs, rights and contributions are to be included exclusively in the plans and activities of the governments, humanitarian and development agencies responding to the post disaster assessments in order to restore their lives.

In their joint draft report (*Sri Lanka damage and needs assessment*, January 2005) the World Bank, Asian Development Bank and Japan Bank for International Cooperation also addressed that older people are among the most vulnerable groups and need special support, "Orphans, widows, single-headed households, old and disabled are especially vulnerable groups in terms of psychosocial distress, restoration of livelihood, and the legal and protection rights on such issues as property and inheritance rights, and custody of children. This will need to be addressed".

*Would it be more realistic to use a replicable framework, the 'gender' simply because it is a cross cutting variable and allows to bring out variability?*

In the analysis of disaster, in both natural and human induced situations, many approaches have been introduced. The gender is often used due to the fact that impacts or the gravity of the social, economic and environmental destruction differ between two social sectors—men and women. In reality the arguments put forward in favour of gender considerations in impact assessment is that men and women are not acted or affected equally or do not act in the same way in a disaster situation. This implies that risks of disaster are marked with a gendered facis and affect on men and women differently. The Tsunami catastrophe, landslide and floods that make devastative effects on people are the testimonies for demonstrating gender impacts. Past experience indicates that disaster impact assessment extend beyond identifying the probability of particular hazard and gauging the intensity and area of impacts. The most complex and difficult area to deal with is the social impacts. Simply because they are associated with the spatial context and influenced by the social heterogeneity of any given location and also the differential impacts of disaster, risks, vulnerability, coping and rebuilding capacity of men and women. This also leads to suggest the needs for adopting a replicable social framework for disaster impact assessment which in turn help develop management plans acceptable to people. In this regard what would be the most appropriate framework for disaster impact assessment? Would it be better to analyze focusing on geographical locations in an area based manner generalizing the impacts by layering in relation to socio-economic status? Would it be more realistic to use a replicable framework, the 'gender' simply because it is a cross cutting variable and allows to bring out variability?

The experience in conducting a local response study in Sri Lanka as part of the ADPC project made it clear that gender offers a feasible framework for impact assessment due to several reasons.

- Men's and women's safety and risks are influenced by the social contexts by which their livelihood, capabilities, capacities, commitments and behaviour are being inculcated. Therefore gender as a framework helps to reveal the impacts within the social context;

- The capacity to accept risks are influenced by their gender and gender relations;
- Degree of vulnerabilities to the disaster threats is associated with the socially evolved tasks and roles of being men and women;
- Their capacity to contribute to the process of rebuilding and rehabilitation and coping with the destruction varies due to the differences in assets, access and conditions required to secure services;
- It is also extremely important to make use of the investments to address gender specific issues and reduce the gender gaps for equality.

One of the objectives of the post disaster assessments being the development of safer conditions for those who live in risk prone areas, the outcome heavily rely on how one would analyzed the impacts. The past events reveal that safer conditions for men and women were not similar, due to the fact that socially induced gender terms have not permitted them to have equal capacities.

### THE KEY ISSUES

The key issues emerged in the impact assessment done in disaster affected areas are the pointers by which risks of re-enforcing gender in reconstruction and rehabilitation process are indicated. For instance, the post tsunami impacts are assessed in relation to loss of lives, private property, livelihood, assets, personal belongings, value of the devastated land, infrastructure, resources etc. that are translated into numerical values. The family or the household has been taken as a functional unit by which damages are easily condensed and numerically reflected. The attempts made in this direction have replicated the issues related to the functioning of households and the dominant power structure. The losses are also dictated by gender terms where damages to physical property have been clearly indicated by men while the damages caused by disasters to accumulated assets that are not often been accounted for even in normal situations have been considered peripheral. One discussion held at a transitional settlement clearly demonstrated this point, where women's views regarding to local response was continuously interrupted and controlled by a man who has made use of the opportunity to put up two houses and collect all types of assistance by himself. Women were of the view that sanitary condition of the settlement was extremely poor and tendency for spreading diseases is high. The man who dominated the discussion was of the opinion that women should see to the hygiene and sanitation and allocate their time to clean up the place. At the same place a common hall for cooking and dinning has been put up to provide space for women, but the place has been occupied by men for chatting, playing cards and watching television. Throughout men used a controlling stake with the assumption that women are not capable of expressing their views and their needs and concerns are secondary. As a result what have been reflected fully were the views of the dominated power. The gender issues in a disaster management process are associated with inequality, power relations, social status, unequal access and control over property and decisions and also the assets. The replacement costs of losses incurred by women are difficult to synthesize – "every kitchen utensil was essential for assuring the services for family wellbeing. For instance, the fuelwood shed located at the backyard was part of the system and it helped us to reduce our dependence on men's income to secure energy for cooking. We are given two-burner gas cookers, but we have no cash to buy gas cylinders and we are sure that recurrent cost of gas would not be appreciated by men...." discussion at Hummane. The issues of income earning opportunities have become deeper on women due to the need for rebuilding everything.

Gender difference in experience is looked into from a deeper sympathy extended for women due to their association with care givers roles. From the perspectives of gender the key issue is the hindering of devastated effects on women than that of men due to their occupations and involvement in all aspects of life on conventional grounds than on legal grounds. Women are often the customary uses of resources including family assets therefore the numerical values related to losses are considered as losses to men's property and assets. The result of this tends to create more burdens on women simply because they are not directly consulted in the process of rehabilitation and reconstruction. Rather than promoting a gender integrated effort in the process emphasis has been placed on gender needs assessment done in isolation. Rehabilitation and reconstruction investments created new opportunities to build better, for eradicating the conventional consultative process where men as the heads of the households and the property owners got directly involved in influencing the process. One case for demonstration was noted in Ambalangoda where women had to put up tentative shelter to restore their livelihood source—the coir rope making, where men had obtained resources to put up fully equipped units to produce spinning wheels. At the same place men were spending their time supervising the house construction while women were preparing meals in temporary sheds for the workers on the construction site. The process pertaining to social, economic and environmental rehabilitation, restoration and reconstruction seems to depend on the ways in which post disaster impact assessment have been made and they are translated into action. In the aftermath of the tsunami a conscious effort has been made in the same manner to institutionalize disaster risk management on the assumption that gender specific capacity building has little significance. The vulnerability of men and women has been quite high due to one known fact, which is their lack of preparedness to response to emergency situation. A close orientation process is required to make them prepared to response to emergency situation with a minimum damage. This has to deal with the gender concerns and capabilities. In this regard functions of men and women in household institutions are quite important. Many women have loss their lives in their effort in protecting and rescuing children than that of men, and the habit of running to house interior for safety. A substantial number of men have lost their lives by moving into risks with the interest of knowing and watching what is happening. Under these circumstances assessment is needed looking from the perspectives of conventional gender behavioral patterns. Framework for gathering, consolidating, analyzing and implementing risk management should focus on the following:

- Nature of risks and possible consequences of a disaster on men and women;
- Level of men and women's exposure to a possible disaster; Degree of vulnerability and threat to men and women caused by disaster;
- Men's and women's capabilities and capacities to deal with a disaster;
- The coping strategies that they are familiar with and feasibility for them to follow them;
- The factors or conditions influencing their vulnerability and disparity;
- The priority concerns of men and women and the ways by which they prefer to solve them;
- The means of information/warning prepared by men and women and their confidence over the reliability.

Under these circumstances it is important to note that gender issues are associated and resulted from a long standing social context of any given location or a community. Yet, the output of a disaster assessment should provide strategic solutions to the problems stemmed out of the conventionally embedded gender disparities.

# Activities

## ASIAN DISASTER PREPAREDNESS CENTER

JANUARY TO MARCH

**H.E. Major General Tara Bahadur Thapa, The Royal Nepalese Ambassador to Thailand** visited ADPC on 14 February. Nepal is one of the nine founding members of ADPC as an International Intergovernmental Organization and is member of the ADPC Board of Trustees (BOT).

**H.E. Mrs. Merete Fjeld Brattested, Norwegian Ambassador to Thailand** visited ADPC on 24 January. Ambassador Merete Brattested has kindly accepted to be a member of the Board of Trustees of ADPC.

On 7 February, ADPC and Geo-Informatics and Space Technology Development Agency (GISTDA), signed a **Memorandum of Understanding** for planning, development, implementation and collaboration on training and capacity building activities related to GIS applications for disaster prevention, reduction and mitigation in MRC countries; exchange of personnel to complement each other's activities; and mutual exchange and sharing of information, materials and publications. GISTDA and ADPC will work together in preparing comprehensive hazard maps of Asian countries.

The **AusAID Midterm Review** of a Comprehensive Disaster Risk Management in Asia Project was carried out by Mr. Bernard Broughton, Team Leader and Ms. Sutthana Vichitrananda, Project Manager, AusAID, Bangkok from 14-23 February.

ADPC in partnership with Telecoms Sans Frontieres (TSF) established an **Emergency Telecommunications Response** mission during the massive **landslide in Leyte, Philippines**. The mission from 16 February–5 March in St. Bernard Operations Center gave efficient communication service mainly to local and international NGOs, local, provincial government officials, and UNDAC personnel. The mission also assisted the worst affected zones through its satellite communications equipments.

**Hon. Minister Mr. Mahinda Samarasinghe**, Minister of Disaster Management and Human Rights of the Democratic Socialist Republic of Sri Lanka visited ADPC on 16 February. The Hon. Minister was accompanied by H.E. Mr. J.D.A. Wijewardena, Sri Lankan Ambassador to Thailand, Major General Gamini Hettiarachchi, Director General of Disaster Management Centre, and Mr. G. H. P. Dharmaratna, Director General of Meteorology, Sri Lanka. Sri Lanka is one of the nine founding members of the ADPC BOT.

**H.E. Mr. Lyonpo Chenkyab Dorji**, Secretary General of South Asian Association of Regional Cooperation (SAARC) visited ADPC on 21 February.

ADPC in partnership with United Nations Development Fund for Women (UNIFEM) celebrated the **International Women's Day** on **8 March** on the theme "Emergencies and the Strength of Women". The day acknowledged and honored outstanding Women and Organizations. The forum through its talks and presentations highlighted women's unique role in disaster and post-disaster rebuilding. Thanpuying Sumalee Chartikavanij and H.E. Mrs. Merete Fjeld Brattested, Norwegian Ambassador to Thailand were the keynote speakers. Mrs. Prateep Ungsongtham Hata, Secretary General of Duang Prateep Foundation and World Vision Foundation of Thailand gave an insight into the grass root activities of their organizations.

Dr. Bhichit Rattakul, Senior Advisor to ADPC and former Thai Minister of Science, Technology and the Environment, ADPC, in

partnership with the Thai DDPM, led an **Evacuation Drill** in Kamala School in Phuket, Thailand on 3 February. The drill involved 410 school children and 20 teachers. UNDP, Tambon Administration Office, and Community Committee officials were invited to participate in the drill. This was part of the ADPC End-to-End TEWS for five countries of Southeast Asia.

Mr. Earl Kessler, ADPC's Deputy Executive Director attended the **UNDP/ISDR Global Future Search Meeting on Rethinking Capacity Development for Disaster risk reduction: Action 2005-2015**, in Chavannes-de-Bogis, Switzerland from 13-15 February.

### DISASTER MANAGEMENT SYSTEM (DMS) TEAM

As part of the GTZ-MRC-ADPC Flood Emergency Management Strengthening (FEMS) project activities, a study on **Institutional Role Analysis and Improvement Identification** was carried out in An Giang province and the two target districts of Chau Thanh and Tan Chau, from middle of December 2005 to 25 January 2006. The study was conducted by Mekong Development Research Institute (MDI), Cantho University in partnership with ADPC and highlighted the existing flood planning processes practiced by Provincial and District Committees for Flood and Storm Control (PCFSC and DCFSC). It also identified the gaps and needs of the PCFSC and DCFSC especially in the area of planning and coordination. The findings of the study were shared with PCFSC and DCFSC on 14 February at the "Institutional Role Analysis Workshop" organized in Long Xuyen city, An Giang province. MDI presented the findings and recommendations for improvements, which will serve as the basis for implementation of flood preparedness planning activities under FEMS in Vietnam.

ADPC under the MRC-ADPC-ECHO Phase II project organized three training programs on "**Planning and Implementation of Flood Preparedness Programme at Province and District Levels**" in the provinces of Kampong Cham in Cambodia from 9-12 January, Champassak in Lao PDR from 24-27 January and Tien Giang Province of Vietnam from 13-16 February. The main focus of each training was to enhance the capacity of the members of Provincial and District levels Committee for Disaster Management in flood preparedness planning.

Under the GTZ-MRC-ADPC Flood Emergency Management Strengthening (FEMS) project, the process on Kandal provincial flood preparedness programme development was initiated on 27 January. A one-day consultative meeting was held in Kandal to review the draft provincial flood preparedness plan developed by Kandal Provincial Committee on Disaster Management (PCDM) in collaboration with ADPC and National Committee on Disaster Management (NCDM-Cambodia). The plan was revised based on inputs received at the meeting and presented to a wider audience on 21-22 February at the "**Consultative Workshop on Development of Provincial Flood Preparedness Programme**", held at Kandal provincial hall. Representatives from Kandal PCDM secretariat, member line departments of Kandal PCDM, District Committee on Disaster Management (DCDM) of Leuk Dek and Lovea Em districts, NCDM-Cambodia, Cambodia National Mekong Committee (CNMC) and partner NGOs including Seila program in Kandal attended the meeting. The major outcomes of the workshop include endorsement of the Kandal Provincial Flood Preparedness Plan by all its member agencies and the initiation of resource mobilization strategy development for implementation of the Plan. ADPC in consultation with the National Committee for Disaster Management (NCDM), Cambodia and Cambodia National Mekong Committee (CNMC) organized a workshop on 20-21 March in Kratie, Cambodia. The focus of the workshop was to



arrive at a consensus on the **flood preparedness planning** process and in particular to review and reach an agreement on the roles and responsibilities of all the stakeholders in a District Flood Preparedness Program being supported under the project. Participants included members of the Kratie DCDM and PCDM, District Red Cross and NGOs. Representatives from ADPC and MRCs provided inputs to the Kratie District on the implementation of flood preparedness programs.

ADPC in consultation with MRCs conducted the **"ECHO II End of Project Evaluation"** in Cambodia, Lao PDR and Vietnam from 20-30 March. The evaluation assessed the effectiveness of the activities carried out and made strategies to ensure the continuation of the flood preparedness planning process at the provincial and district levels in the lower Mekong Basin Countries. An external evaluator was hired in agreement with the Donor. ADPC and MRCS project team participated in the process and the evaluation was carried out under the guidance of the Team Leader, ADPC.

### CLIMATE RISK MANAGEMENT (CRM) TEAM

In support of the US Government's Indian Ocean Tsunami Early Warning System program, ADPC, together with the US Department of Agriculture/US Forestry Service completed a workshop entitled **"Incorporating the Incident Command System (ICS) into the Government of Sri Lanka's Disaster Response System"** from 11-12 January. The government of Sri Lanka has agreed to take steps to adopt ICS as a critical component of its disaster management programs, including tsunami early warning.

ADPC, in partnership with the Philippine Bureau of Agricultural Statistics (BAS), conducted a workshop on **Agricultural Damage and Loss Assessment Methodology** on 12 January in Manila. The methodology, which was jointly developed by ADPC and BAS for the FAO-funded project "Damage and Loss Assessment Methodology and Compendium of Agriculture Risk Management Initiatives" served as the key discussion piece during the workshop and is being considered for adoption by BAS.

ADPC met with the USAID representatives in Bangladesh to finalize funding arrangements for the **Climate Forecast Applications in Bangladesh-2 (CFAB-2) project**. CFAB-2 is a follow-up program to CFAB-1, which was implemented by CRM-ADPC from November 2000 to December 2003. While CFAB 1 focused on developing a three-tiered flood forecasting system for Bangladesh, CFAB-2 aims at enabling Bangladeshi institutions to apply forecasts in reducing risks in the agriculture and water resources sectors.

ADPC carried out capacity building activities under **"Improved Adaptive Capacity to Climate Change for Sustainable Livelihoods in the Agriculture Sector"**. A training workshop on **"livelihood adaptation to climate change"** in Bangladesh was organized at FAO-Bangladesh on 22-23 February for the National level Technical Implementation Working Group and representatives from other organizations. Two Upazilla level training on **"Climate change adaptation and disaster mitigation"** were organized at Chapainowobganj, Bangladesh from 28 February to 7 March 2006. The project was conducted with funding support from Comprehensive Disaster Management Programme (CDMP) through FAO.

ADPC, together with the University of Hawaii Hilo, the Asian Institute of Technology, Bangkok and the Tambon Kam Phuan, Suk Samran District of Ranong Province conducted a **Community-based Disaster Risk Management (CBDRM) Training under the USAID-Livelihood Program** in Ranong Province from

1-5 March. As a result of the training, the participants gained a good understanding of the process of risk assessment, produced their own hazard map, identified their own risk and mitigation measures, and developed their own action plans for disaster management.

ADPC facilitated a training workshop on **"Institutionalizing Climate Forecast Applications for Disaster Mitigation"** on 16-17 March at Palangka Raya, Central Kalimantan, Indonesia in association with CARE Indonesia.

ADPC, in cooperation with the International Telecommunication Union (ITU), the Telecommunications Regulatory Commission of Sri Lanka (TRC), and the Bangladesh Telecommunication Regulatory Commission (BTRC) organized a workshop on **"Emergency Telecommunications for Disaster Management"** in Sri Lanka on 23 March and in Bangladesh on 29 March.

### PARTNERSHIPS FOR DISASTER REDUCTION IN SOUTHEAST ASIA - PHASE III (PDRSEA3)

ADPC in partnership with UNESCAP organized a **Regional Workshop on CBDRM Standards** from 24-27 January in Bangkok with funding support from DIPECHO. The purpose of formulating CBDRM standards is to contribute to improvements in the practice of community-based disaster risk management (CBDRM) in the countries of Southeast Asia by providing guidelines to decision makers and practitioners for designing, implementing and evaluating the community-based initiatives and projects. As a result of this workshop, the **"Critical Guidelines for Community Based Disaster Risk Management in Southeast Asia"** was developed. This document includes Process Guidelines and Outcome Guidelines in the implementation of CBDRM.

The **Strategic Collaborative Planning Workshop** for Indonesia was held from 6-7 February in Bogor, Indonesia.

**National workshops** are being organized in five PDRSEA project countries for developing criteria on CBDRM good practices and impact indicators for CBDRM projects. The national workshop for Timor Leste was held in Dili on 9-10 February. Significant results of the workshop were the development of the criteria (and indicators) for assessment of vulnerability at family and community levels. The workshop in Cambodia was held on 28-29 March and in Indonesia in the fourth week of March.

A **joint meeting of the four regional committees** (HTTF, ACDM, TC, MRC) was held on 16-17 February in Bangkok. Organized by PDRSEA in collaboration with UNESCAP and supported by DIPECHO, the meeting brought together the Chairpersons of the Haze Technical Task Force (HTTF), ASEAN Committee on Disaster Management (ACDM), Typhoon Committee, and the Mekong River Commission (MRC) to explore areas of bilateral and multilateral collaboration. Components of their respective CBDRM programs, gaps, areas for cooperation and possible technical support from ADPC/UNESCAP were reviewed.

The fourth **Disaster Management Practitioners for Southeast Asia (DMP SEA) Workshop** was held from 8-10 March in Bangkok. The theme for this year's workshop "Learning from community based practices: Strengthening policy and partnerships". The workshop focused on three major themes: Innovative Approaches to CBDRM; Integrating CBDRM into the Socio-Economic Development Process; and Partnerships and Networking to Enhance CBDRM. Workshop papers and proceedings will be available in April 2006.

The second **meeting with Business Groups** in Vietnam was held on 15 March in Hanoi to draft a plan and identify resources and

mechanisms to support private and business sector involvement in CBDRM in Vietnam.

**PUBLIC HEALTH AND EMERGENCIES (PHE) TEAM**

ADPC and Thammasat University's Faculty of Public Health organized a workshop on "**Avian Influenza: Public Health Implications**" at Thammasat University on 7 February. The workshop featured a presentation on the issue by WHO's representative in Bangkok, Dr. William Aldis, followed by active discussions and exchange of ideas and experiences, with the view to developing active collaboration among the three partner agencies – Thammasat University, WHO and ADPC. ADPC is offering its expertise in Community-based Disaster Risk Communication to tackle the avian flu in the region.

ADPC attended the **Expert Consultation on Emergency Preparedness for the Health Sector and Communities: Challenges and Way Forward**, Geneva from 15-17 February. The meeting was attended by Temporary Advisers; Consultants; WHO Staff from Humanitarian Action Crises (HAC); other WHO departments and Regional Offices and experts with extensive experience in the area of emergency preparedness and mitigation. The meeting was organized by the World Health Organization (WHO), Geneva.

ADPC in partnership with Thammasat University's Faculty of Public Health and DDPM organized a half-day event on "**Creating a Community Medical Emergency Program**" at Thammasat University on 21 February. The event featured a presentation by Mr. Phillip Walker, Emergency Management Coordinator & Federal Coordinating Center Veterans Affairs Medical System in the Texas Medical Center, Houston. The focus was on establishment of Comprehensive Emergency Management Plan (CEMP) and Supplemental Emergency Response Plan (SERP) as parts of disaster mitigation.

The **Public Health in Emergencies Management in Asia and the Pacific (PHEMAP) Curriculum Review** took place in Bangkok from 20-24 March. PHEMAP is the inter-regional training course jointly organized by the ADPC, WHO-SEARO and WPRO in Asia and the Pacific. The objective was to review and develop a set of PHEMAP course manuals for the inter-regional PHEMAP course, and for adaptation in PHEMAP national courses. The course aims at helping countries to develop more effective policies, procedures, plans, guidelines and standards of best practice for health sector emergency management.

**TRAINING RESOURCE GROUP (TRG)**

The **33<sup>rd</sup> Regional Disaster Management Course** organized by ADPC in Bangkok from 16 January – 3 February was attended by officials from UN, international organisations, NGO's, and national governments from Africa, Asian, European, North American and Pacific countries. The course provided comprehensive disaster management knowledge and skills to enhance the capabilities of executive managers who have key disaster management responsibilities.

A two-weeks **Disaster Management Course** was held in Kabul, Afghanistan from 9-19 February to provide comprehensive disaster management knowledge and skills to enhance the capabilities of 30 senior/middle level policy managers, decision-makers from government and non-government offices. This course was a component of ADPC's "Training & Capacity Building Project" in partnership with InWent Germany and with funding support from UNDP Afghanistan.

ADPC welcomed an important **Chinese delegation** led by the Deputy Director-General of the **National Disaster Reduction**

**Center** (NDRC), Ministry of Civil Affairs, China from 19-25 February. The purpose of the visit was to enhance partnership between NDRC, China and ADPC.

ADPC's organized the fifth and sixth training course on **Crisis Management** with the funding support from UNDP in Satun and Ranong provinces of Thailand during 14-16 February and 6-8 March, respectively and the second course on **Damage and Needs Assessment** on 27-28 February with the funding support from UNDP and Department of Disaster Prevention and Mitigation (DDPM), Thailand. The course mapped out improved methodologies for post-disaster damage and needs assessment and reporting, appropriate to the needs of disaster managers.

ADPC organized a three-week workshop on "**Earthquake Vulnerability and Multi-Hazard Risk Assessment: Geospatial Tools for Rehabilitation and Reconstruction Efforts**" from 13-31 March in Peshawar, Pakistan. The workshop was jointly organized by National Center of Excellence in Geology, University of Peshawar Pakistan, International Institute for Geo-information Sciences and Earth Observation (ITC), The Netherlands, UN University Japan, Integrated Center for Information on Mountain Development (ICIMOD) Kathmandu and ADPC.

**URBAN DISASTER RISK MANAGEMENT (UDRM) TEAM**

ADPC participated in the **International Workshop on Disaster Preparedness** from 13-15 February in Dhaka, Bangladesh, organized by the ActionAid International Tsunami Response Centre. Four case studies, developed under ADPC's Asian Urban Disaster Mitigation Programme, (AUDMP) were presented with a session on the follow-up on the progress made after Kobe Framework-World conference on Disaster Preparedness held in January 2005.

ADPC provided **Technical Assistance to the Government of Sri Lanka** for developing the National Disaster Management Plan (NDM Plan) in collaboration with UNDP Sri Lanka from 20-23 February 2006.

ADPC under the Program for Hydro-Meteorological Disaster Mitigation for Secondary Cities in Asia (PROMISE) organized a two-day **Curriculum Development Workshop** on Governance and Risk Management with the funding support from USAID/OFDA. Participants were representatives of the local partners in five targeted countries, Bangladesh, Pakistan, Philippines, Sri Lanka and Vietnam, of the PROMISE project. The workshop was held on 2-3 March 2006 at AIT Center Bangkok, Thailand.

ADPC under the PROMISE project organized a training course on "**Community Based Urban Disaster Risk Mitigation**" from 13-17 March 2006 in Kalutara, Sri Lanka. This training course was organized primarily for the staff members of SARVODAYA, the local partner institution for PROMISE Sri Lanka, and other stakeholders by ADPC with the funding support from USAID/OFDA.

Under the CASITA II program, ADPC organized a training course on **CBDRM** for the Masters students specializing in Geoinformation for Disaster Management at Department of Geography, University of Gadjah Madah, Jogjakarta, Indonesia from 21-23 March.

ADPC in collaboration with CARE-Bangladesh organized a training course on **Earthquake Vulnerability Reduction Course (EVRC)** from 27-31 March in Chittagong, Bangladesh. The course provided greater understanding of the causes and effects of earthquakes and tsunami and how to mitigate such impacts in order to reduce damage and loss of lives from these destructive events. Participants from CARE, Chittagong City Corporation, USAID, World Vision, SCF/USA, SHOUHARDO partner NGOs, Bangladesh Earthquake Society attended the course.

# Web resources



Emergency Management Australia  
<http://www.ema.gov.au>

Economic Commission for Latin America and the Caribbean  
<http://www.eclac.cl/default.asp?idioma=IN>

Humanitarian Practice Network, The Overseas Development Institute  
<http://www.odihpn.org>

Center for Research on the Epidemiology of Disasters, University of Louvain School of Public Health, Belgium  
<http://www.cred.be>

DesInventar  
<http://desinventar.org>



## Conference



**IAIA '06: Power, Poverty, and Sustainability 2006 - The Role of Impact Assessment.** Stavanger, Norway: 23-26 May 2006. Participants in this event will discuss how the various instruments of impact assessment – environmental impact assessment, strategic environmental assessment, sustainability assessment, health impact assessment, and social impact assessment can contribute in assisting developers, decision makers, development cooperation providers, and the public to integrate environmental, social, and other concerns in a variety of fields. For additional information, contact IAIA, 1330 23rd Street South, Suite C Fargo, ND USA 58103; (701) 297-7908; Email: [info@iaia.org](mailto:info@iaia.org); <http://www.iaia.org>.

# Reading



**Quick Response Report**  
**QR166** *Damage Assessment After the Paso Robles (San Simeon, California) Earthquake: Lessons for Emergency Management.* David A. McEntire and Jill Cope. 2004. 2/10/2004  
<http://www.colorado.edu/hazards/qr/qr166/qr166.html>

**A Bibliography**  
*Disasters by Design: A Reassessment of Natural Hazards in the United States - A Bibliography*  
<http://www.colorado.edu/hazards/assessbib.html>

**Special Report**  
*Caught in the Storm: The impact of Natural Disasters on Women*  
<http://www.globalfundforwomen.org/work/programs/natural-disasters.html>

# Bookmark

## Handbook for Estimating the Socio-Economic and Environmental Effects of Disasters - Economic Commission for Latin America and the Caribbean (ECLAC)

This new version of the ECLAC Handbook describes the methods required to assess the social, economic and environmental effects of disasters, breaking them down into direct damages and indirect losses and into overall and macroeconomics effects.  
<http://www.eclac.cl/cgi-bin/getProd.asp?xml=/publicaciones/xml/4/12774/P12774.xml&xsl=/mexico/tpl-i/p9f.xsl&base=/mexico/tpl/top-bottom.xsl>

## Flood Impact on Women & Girls CARE Cambodia

The research study leading to this report specifically highlights variety of perceptions of men and women about the emergency situation compared to normal, additional time women spend on sustaining basic livelihood and how this impacts on the health of women & girls, specific security concerns during emergencies, how family, village and commune gender relations influence community response to emergencies, community and cultural obstacles.  
<http://www.adpc.net/pdr-sea/publications/FLdWG%20Flood.pdf>

## The Economic Impact of the 26 December 2004 Earthquake and Indian Ocean Tsunami Under the study on Regional Analysis of the Socio-Economic Impacts of the Indian Ocean Tsunami

This report is a result of a technical cooperation project aimed at the formulation of proposals for collective disaster risk reduction that the countries may adopt. The concept and approach used in the methodology are unique. The impacts of disasters are measured in terms of damage and losses following a sector-by-sector approach to estimate the impact on individual sectors.  
<http://www.adpc.net/dms/DMS-07-Regionalstudy.html>

## Tsunami Thailand: One year later National response and contribution of International Partners

A year after the tsunami, this publication looks at the impact of the disaster, Thailand's response, and the role of international partners in relief and recovery efforts. It is an acknowledgement of the challenges that remain in ensuring a sustainable and equitable recovery. This report is a joint publication by the United Nations Country Team, with lead support from UNDP and the World Bank.  
<http://www.worldbank.or.th/WBSITE/EXTERNAL/COUNTRIES/EASTASIAPACIFICEXT/THAILANDEXTN/0,contentMDK:20780723~pagePK:141137~piPK:141127~theSitePK:333296,00.html>

## After the Tsunami: Rapid Environmental Assessment United Nations Environment Programme (UNEP)

This report provides a preliminary ground-level look at the tsunami's impact on various sectors of the region's environment. It highlights problems in need of immediate attention, underscoring the strong link between environment and sustainable livelihood and the need for improved early warning and disaster preparedness systems.  
[http://www.unep.org/tsunami/tsunami\\_rpt.asp](http://www.unep.org/tsunami/tsunami_rpt.asp)

## A People's Guide to Building Damages and Disaster Safe Construction - UNNATI

Is there a way of preventing, as far as possible, damages to existing houses in the wake of natural disasters? It provides knowledge about how buildings are affected during natural disasters, what makes them weak and what can be done to ensure that they can withstand forces of nature.  
<http://www.unnati.org/>

## Emergency Management Australia (EMA) Disaster Loss Assessment Guidelines

The guidelines provide a comprehensive method to assess the economic impact of a disaster in a regional context. These guidelines provide an explanation of the process of loss assessment and then the steps required to carry out an economic assessment of disaster losses.  
[www.ema.gov.au/.../rwpattach.nsf/VAP/\(383B7EDC29CDE21FBA276BBCE12CDC0\)~Manual+27A.pdf/\\$file/Manual+27A.pdf](http://www.ema.gov.au/.../rwpattach.nsf/VAP/(383B7EDC29CDE21FBA276BBCE12CDC0)~Manual+27A.pdf/$file/Manual+27A.pdf)



# Pictorial

## LEYTE MUDSLIDE TRAGEDY: MISSION FOR LIFE AND HOPE

PHILIPPINES 17 February 2006. A massive mudslide buried the village of Guinsaugon, Municipality of St. Bernard in the province of Southern Leyte. Ten days of heavy rain aggravated the mudslide engulfing hundreds of houses and a school packed with more than 200 students and teachers.

Initially, Information and communication management was the primary issue. Rescue and retrieval on site (Ground 0), relief, and rehabilitation in the evacuation centers were not coordinated. It created confusion and more stress to victims and affected villages. Accuracy of information and consistency in reporting was not organized, especially in disseminating information to local and international media.

ADPC in partnership with Telecoms Sans Frontieres (TSF) deployed a three-person module team (namely Simon Genin, TSF Mission Leader; Philipp Danao, ADPC Information and Knowledge Management Coordinator; and Federick John Abo, ADPC Public Health in Emergencies Technical Manager) mainly to support the United Nations Disaster Assessment Coordination (UNDAC) team. The team arrived in the ground on February 18, within 24 hours after the reported time of disaster, to assess and establish emergency communications. The team provided the main pipeline of information in the field and served as the primary internet and fax service for a large array of local/provincial governments and local/international NGOs.

One of the main objective of the team was to support the development of an information flow system that collected data, stored it on a main server and disseminated it (digitally and hard copy). The team also established a wireless network in the Operations Center that served as the primary mode of communication with the international community. The team developed a database of contact list and who's doing what where (and for how long), which the local authorities specifically requested for planning purposes. ADPC/TSF team also served as the Secretariat for Inter-agency Coordination Group and number of other clusters. In support of transfer to local authorities, ADPC/TSF configured internet connection in the Municipal Hall, provided by SMART, a local leading telecom company. The team provided a CD of all data collected during deployment to local authorities, NGOs and other actors in the field. (source: excerpts from ADPC Leyte Field Reports and UNDAC Site Reports 2006)





Theme for the next issue of the Asian Disaster Management News, April-June 2006:

## Emergency Response Challenges in Mountainous Terrain

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For further information please contact:

Communication Officer  
Asian Disaster Preparedness Center  
P.O.Box 4 Klong Luang Pathumthani  
12120 Thailand Tel: (66 2) 516 5900-10  
Fax: (66 2) 5354-5360, 4353 5350, 5382  
Email: roopa@adpc.net

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<http://www.adpc.net/infores/newsletter.html>

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