

Disaster Risk Management and Vulnerability Reduction: Protecting the Poor

By Dr. Suvit Yodmani

Paper Presented at The Asia and Pacific Forum on
Poverty

Organized by the Asian Development Bank

Dr. Suvit Yodmani is the Executive Director of the Asian Disaster Preparedness Center, Bangkok, Thailand. The paper was delivered at the “Social Protect Workshop 6: Protecting Communities – Social Funds and Disaster Management”

CONTENTS

Acronym	iii
List of Tables, List of Figures, List of Boxes	iv
Acknowledgement	v
Summary	vi
Introduction	1
Paradigm Shifts – From Relief and Response to Disaster Risk Management	2
Poverty and Vulnerability	4
Integrating Poverty Reduction Programs with Disaster Management Sector: some approaches	5
ADB’s Role in Disaster Management and Mitigation	15
Conclusion	16
References	17
Appendix A- Community Based Disaster Management Process	19
Appendix B:-Community Based Risk Assessment	27

Acronym

ADPC	Asian Disaster Preparedness Center
AUDMP	Asian Urban Disaster Mitigation Program
BUDMP	Bangladesh Urban Disaster Mitigation Project
CARE	Co-operative Assistance for Relief everywhere
CBDM	Community-based Approaches to Disaster Management
CBFMP	Community Based Flood Mitigation Project
DFID	Department for International Development
DMI	Disaster Mitigation Institute
ICRC	International Committee of the Red Cross
IFRC	International Federation of Red Cross and Red Crescent Society
JRC	Journalists Resource Center
KVERMP	Kathmandu Valley Earthquake Risk Management Project
NGO	Non Governmental Organization
SAARC	South Asian Association for Regional Co-operation
TRDP	Thurdeep Rural Development Program
UN	United Nations

List of Tables

Table 1	Tools of Community Risk Assessment	10
---------	------------------------------------	----

List of Figures

Figure 1	Evolution of Human Poverty and Risk Management Paradigms	3
Figure 2	The Vulnerability Context	6

List of Boxes

Box 1	ADPC Efforts in Improving Livelihood Options of the Vulnerable	7
Box2	Bangladesh Urban Disaster Mitigation Project	12
Box 3	Community Based Flood Mitigation Project in Cambodia	12
Box 4	Kathmandu Valley Earthquake Risk Management Project	13

Acknowledgement

This paper is a consolidated effort of many persons and I would like to acknowledge each and everyone's effort.

I would like to thank my colleagues Mr. David Hollister, Aloysius J. Rego, Rajesh Sharma, Zenaida Dellica, Merrick Chatfield and Kamal Kishore of Asian Disaster Preparedness Center for their valuable inputs to the substance and structure of this paper.

My special appreciation to Ms. Pallavi Mandke of Canadian Universities Consortium Urban Environment Management Project at Asian Institute of Technology, for substantive contribution to and the final compilation of the paper.

Summary

A paradigm shift in the development sector – from income poverty to human poverty – has been paralleled in the disaster management sector by a shift from seeing disasters as extreme events created by natural forces, to viewing them as manifestations of unresolved development problems. This has led to increased emphasis on integration of poverty reduction programs with other sectoral issues such as environmental management, gender and public health. However, examples of systematic long-term integration of such programs with the disaster management sector are few. Over the past few decades, there was an exponential increase in human and material losses from disaster events, though there was no clear evidence that the frequency of extreme hazard events had increased. This indicated that the rise in disasters and their consequences was related to a rise in people's vulnerability, induced by human-determined paths of development. An evolution in approaches – from relief and response to vulnerability analysis to risk management – has started influencing how disaster management programs are now being planned and financed. As it is becoming clear that the nature of people's vulnerability is complex and varied, linkages between poverty and vulnerability are being explored. Three approaches to doing this include a livelihood framework from the bilateral development aid context, community-based disaster management from that sector, and risk transfer and finance from multilateral development finance institutions. The Asian Development Bank (ADB) has been in the forefront of recognizing the adverse impact of disasters on development and has played a pioneering role in promoting the incorporation of disaster reduction in development planning. ADB can set an example by making disaster risk assessment an integral part of the proposal approval process and by adopting appropriate mitigation measures in project implementation. Poverty reduction and disaster reduction programs can mutually support each other by developing innovative, multi-dimensional, inter-sectoral approaches

I. Introduction

Poverty reduction has been one of the main objectives of development programs in many developing countries of the world for the last several decades. Over the years, the very definition of poverty has evolved from just looking at people's income to taking a more holistic view of their well being. Improved access to public health facilities, improved life expectancy and gender equity have become some of the essential indicators of the success of poverty reduction programs. This has led to increased emphasis on better integration of poverty reduction programs with other sectoral issues such as environmental management, gender development and public health. However, examples of systematic long-term integration of poverty reduction programs with disaster management sector have been very few. Kreimer and Arnold (2001) point out that “development efforts are focused on helping the poor in dealing with many of the risks they face in daily life – such as in employment, health care, transport, education, water and sanitation. But disaster risk traditionally has not been a priority on the development agenda. When carefully laid development plans were tragically interrupted by disasters the international community relied on organizations such as the United Nations and the IFRC to step in with relief services. When the emergency work was over, reconstruction efforts began to get the country ‘back on the development track’.” Clearly, most poverty reduction programs have left a lot to be desired in terms of integration with disaster management

II. Paradigm Shifts – From Relief and Response to Disaster Risk Management

Almost in parallel with the paradigm shift in poverty reduction programs -- from income poverty to human poverty -- the disaster management sector has also seen a paradigm shift. Disasters are no longer seen as extreme events created entirely by natural forces but as manifestations of unresolved problems of development. The disaster management practices have evolved from largely a top-down relief and response approach to a more inter-sectoral risk management approach. In the current paradigm of risk management approaches, there is more room than ever before for addressing the issues of risk reduction for the poor.

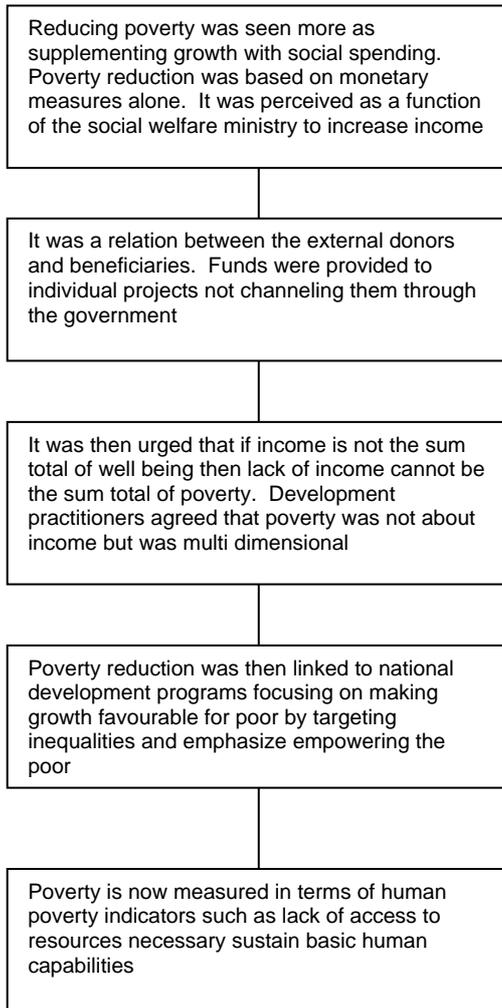
Till a few decades ago, disasters were viewed as one-off events and responded by governments and relief agencies without taking into account the social and economic implications and causes of these events. With significant advancement in our understanding of the natural processes that underlie the hazardous events, a more technocratic paradigm came into existence which believed that the “only way to deal with disasters was by public policy application of geophysical and engineering knowledge”. These approaches looked at disasters as exceptional events, not related to the ongoing social and developmental processes. Gradually this attitude changed to an emphasis on preparedness measures, such as stockpiling of relief goods, preparedness plans and a growing role for relief agencies such as the Red Cross. This “contingency planning” approach certainly improved the efficiency of relief agencies but left a lot to be desired in terms of appropriateness and effectiveness of relief.

Over the four decades from the sixties, till the nineties there was an exponential increase in human and material losses from disaster events, though there was no clear evidence that the frequency of extreme hazard events had increased. This indicated that the rise in disasters and their consequences was related to the rise in the vulnerability of people all over the world that was induced by the human determined path of development. Noteworthy also was the recognition that this increase in vulnerability was not uniform. There were large variations across regions, nations, provinces, cities, communities, socio-economic classes, castes and even genders. Fredrick Cuny (1983, 14) in his much acclaimed book *Disasters and Development* cites a classic example. An earthquake of magnitude 6.4 occurred in San Fernando, California in 1971. In a city of over seven million people, only fifty-eight deaths were reported. Two years later, a similar earthquake, registering a magnitude of 6.2 on the Richter scale, in Managua, Nicaragua reduced the center of the city to rubble and killed over six thousand people. Similar patterns can be seen in other recent disasters. From this realization that people's vulnerability is a key factor determining the impact of disasters on them, emphasis shifted to using "vulnerability analysis" as a tool in disaster management. In recent years, a more comprehensive approach that of disaster risk management has emerged. This approach has three distinct but inter-related components: hazard assessment, vulnerability analysis and enhancement of management capacity and is more closely integrated with the ongoing development processes. Disasters are no longer viewed as extreme events created entirely by natural forces but as unresolved problems of development. It is now recognized that risks (physical, social and economic) unmanaged (or mismanaged) for a long time lead to occurrence of disasters.

This evolution of approaches from relief and response to risk management has begun to influence the way disaster management programs are now being planned and financed. There are initiatives aimed at reducing social and economic vulnerability and investing in long-term mitigation activities. Unfortunately such initiatives aimed at prevention and mitigation are few, poorly funded and insignificant in comparison with money spent by donors and development banks on humanitarian assistance and relief, as well as on post disaster reconstruction.

Another weakness of such initiatives that they are often taken up in the formal sector of the economy, and bypass the poor and the most vulnerable sections of society. As Maskrey (1999, 86) points out, "in the year or so between the occurrence of a disaster and approved national reconstruction plans, many vulnerable communities revert to coping with risk, often in the same or worse conditions than before the disaster actually struck." Therefore, in the current paradigm of risk management approaches, there is more room than ever before for addressing the issues of risk reduction for the poor. This is also in consonance with the paradigm shift in the mainstream development practice, which is now characterized by emphasis on good governance, accountability and greater focus on bottom-up approaches.

Evolution of the Poverty Paradigm



Evolution of the Disaster Paradigm

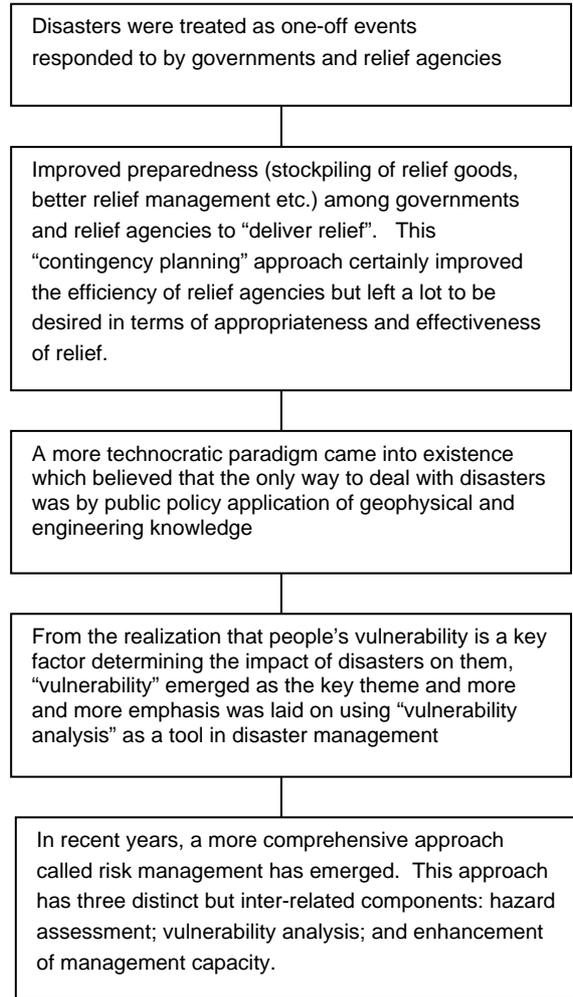


Figure 1
Evolution of Human Poverty and Risk Management Paradigms

As illustrated in Figure 1 development of commonalities can be clearly observed in the new approaches of disaster and poverty reduction: 1) The approaches developed to be more people centric, 2) development of a multi sectoral approach in planning and decision making, 3) increasing importance to improve access to resources, 4) contribute to the overall development process. In spite of these common elements the poverty and disaster reduction efforts have developed as parallel processes rather than as integral processes. This has perhaps been led by a lack of thorough understanding of their linkage and foresight of its benefits.

Within this context this paper attempts to:

1. Explore linkages between poverty and vulnerability;
2. Suggest strategies to integrate poverty reduction programs and disaster reduction; and
3. Provide examples of success stories in this area.

III. Poverty and Vulnerability

While it is clear that the poor are often the most affected in a disaster, it is too simplistic to assume that there is a direct and absolute correlation between poverty and vulnerability. Cannon (1994) points out that "it may be true that most of the suffering in disasters is experienced by poor people, it may not be the case that all poor suffer. Nor is it only the poor who suffer, the impact of hazards may well be a factor in creating newly impoverished people." Poverty, as an indicator of lack of access to resources and income opportunities, is only *one* of the several dimensions of vulnerability. While discussing the linkage between poverty and vulnerability Blaikie et al. (1994) point out that "vulnerability is a combination of characteristics of a person or group, *expressed in relation to hazard exposure* [author's emphasis] which derives from the social and economic condition of the individual, family, or community concerned. High levels of vulnerability imply a grave outcome in hazard events, but are a complex descriptive measure of people's lack or need. Vulnerability is a relative and specific term, always implying a vulnerability to a particular hazard."

In addition to the economic dimension, there are also other aspects of social positioning such as class, ethnicity, community structure, community decision making processes and political issues that determine poor people's vulnerability. A poor community may be economically vulnerable but at the same time may have social, cultural and political capacities to cope with disasters. Risk reduction strategies for the poor should work towards reducing economic vulnerability and at the same time capitalize on (and perhaps nurture) the inherent social and cultural capacities of the poor communities. It is imperative that while improving the economic resilience of such communities, the physical, social and political risks are also recognized and managed.

There is another aspect of vulnerability of the poor people, which is frequently ignored, that it is often local in nature. Disaster statistics collected and aggregated at provincial and national levels, do not capture the miseries of the poor and the most vulnerable. The impact assessments capture only the formal and well-defined sectors of the economy. As Maskrey (1999) points out, "the creeping impact of small scale disasters on the lives and livelihoods of vulnerable communities, whose economy is largely in the informal or subsistence sectors is rarely documented given that often the most vulnerable communities are those with the least assets to lose."

It is becoming clear that the nature of vulnerability of the poor is complex and varied. Hence there are no straightforward solution for risk reduction for the poor. It will require multi-dimensional approaches and innovative institutional arrangements to achieve the goal of risk reduction for the poor.

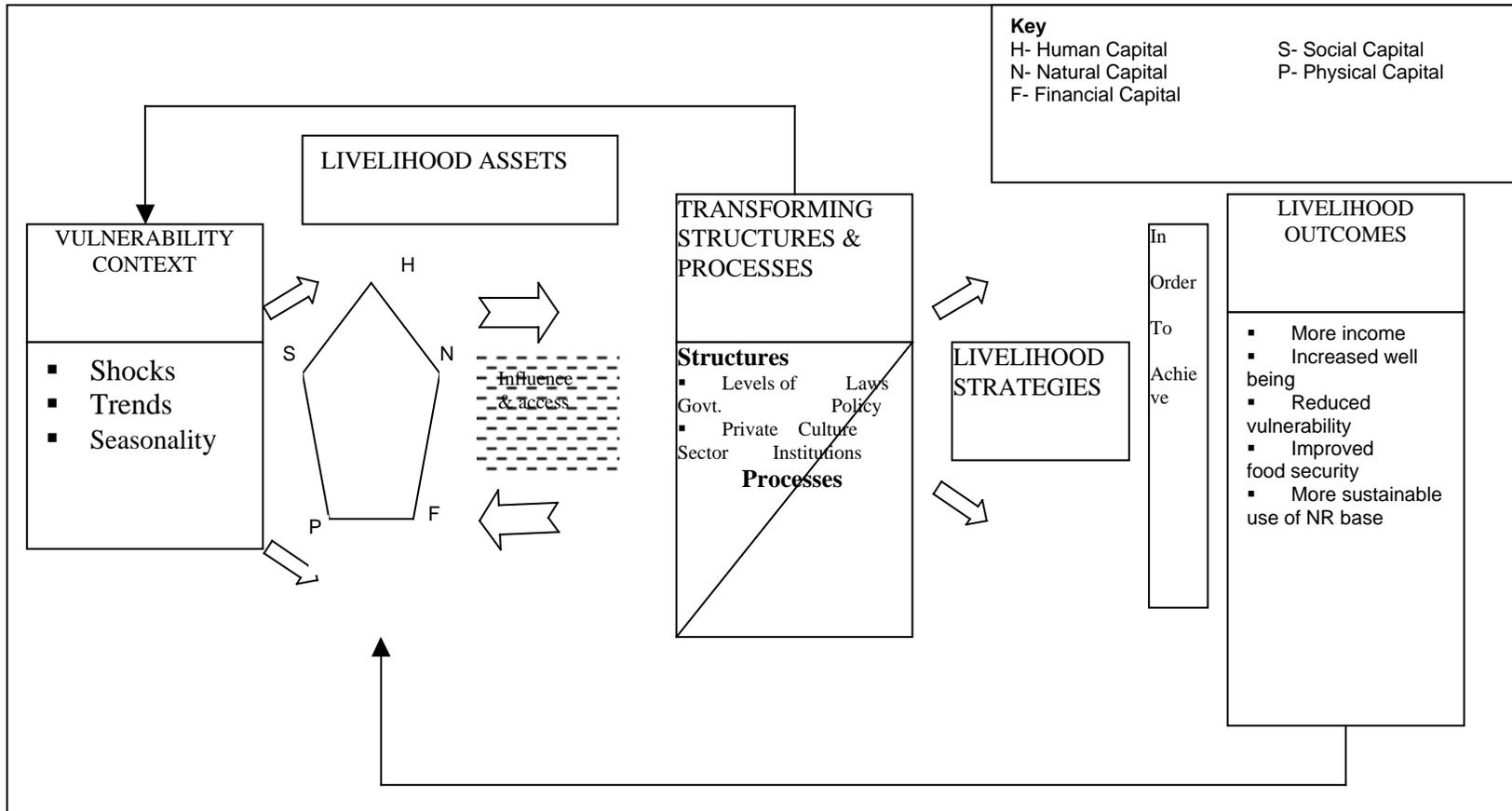
IV. Integrating Poverty Reduction Programs with Disaster Management Sector: Some Approaches

As mentioned earlier in this paper, there have been relatively few examples of systematic integration of poverty reduction and disaster reduction programs. This section of the paper presents three approaches that have evolved over the last several years in development and disaster management sectors. First, is the livelihood framework evolved in bilateral development aid context; the second is community-based disaster management evolved in disaster management sector; and the third risk transfer and finance, comes from multilateral development finance institutions.

IV. a Recognizing the Vulnerability Context of the Poor Within the Development Framework

Over the last few years a more holistic framework has emerged to assess the sustainability of livelihood strategies adopted by poor people. The work of Sustainable Rural Livelihoods Advisory Committee of DFID in this area is a good example here. The Committee has designed a livelihood framework, which recognizes 5 distinct elements, interactions which determine the extent of sustainability of livelihood strategies of a particular community. These 5 elements are:

- vulnerability context of poor people;
- their livelihood assets (human, social, physical, natural and financial capital);
- transforming structures (government, private sector) and processes (laws, institutions);
- livelihood strategies
- livelihood outcomes



Source: DFID (1999)

Figure 2
The Vulnerability Context

As seen in Figure 2 the vulnerability context frames the external environment including trends (population trends, resource trends), shocks (natural hazards, disease outbreak), and seasonality (market prices, employment opportunities). This approach captures the dynamic, complex nature of people's vulnerability. While trends capture the temporal continuum of vulnerability in positive or negative directions, shocks capture largely external, unexpected events such as natural disasters. More importantly this framework does not look at the vulnerability context in isolation, but links it with transforming structures and processes. Practical application of such a framework means that it not only describes the different aspects of people's vulnerability but also points to social, political and economic structures and processes, transformations which would help reduce vulnerability and thus help insure sustainable livelihood for the poor.

Managing Livelihood to Reduce Economic and Physical Vulnerability

Frequently disasters adversely affect the livelihoods of poor people by damaging their means of earning (destruction of the factory, loss of land due to erosion in flooding, destruction of the shop) and/or tools (loss of draught animals, plowing tools, etc). Mainstream disaster management responses frequently do not focus on rehabilitation of peoples' means of livelihood. Families, who lose their means of livelihood during a disaster, find their recovery from adverse effects become more unlikely and their vulnerability to future disasters more increased. It is also assumed that if people will have better sources of livelihoods and higher incomes, they will spend more on disaster risk management in order to save their property, because due to higher incomes they have savings to spend for this purpose. But if they do not have any savings then spending on disaster management, becomes the least priority in comparison to the chronic issues of survival. Diversity in the sources of livelihoods is very important for increasing people's capacity to cope and recover. For example, a family that has two different sources of income including a tract of land and a shop. If this family loses the crop and one draught animal due to a severe flooding event, it still has the shop. This family will be in a better position to sustain after damage to crops and to recover by buying another animal by mobilizing the savings from the shop in comparison to a family which has only one tract of land and loses the standing crop and one animal, and does not have any other source of income. Thus, investment on strengthening and diversifying the sources of livelihoods of the people of disaster prone areas can be an effective strategy for disaster risk reduction in the long run. ADPC has been involved in such initiatives in various countries of the South Asian region in collaboration with its partners.

ADPC Efforts in Improving Livelihood Options of the Vulnerable

The ADPC is involved in a joint initiative on "Livelihood Options for Disaster Risk Reduction in South Asia" which is being implemented in India, Nepal, Pakistan and Sri Lanka by partners of Duryog Nivaran, a South Asian regional network on disaster management.

The program proclaims that the relationship between livelihoods and disasters needs to be explored, in order to reduce people's vulnerabilities and strengthen their capacities to cope with disasters. Many times livelihoods of the poor are adversely affected by disasters. This affects people's ability to recover. It also makes them more vulnerable to any future disasters. Thus, there is a need to study how livelihoods of people are affected, what opportunities are available to strengthen people's livelihoods, and what actions could be taken at local and policy levels.

In this regard, the Disaster Mitigation Institute (DMI), Ahmedabad, Journalists Resource Center (JRC) and Thardeep Rural Development Program (TRDP), Pakistan and Intermediate Technology Development Group Nepal and Sri Lanka are conducting research in selected disaster prone regions in four countries. Along with looking into livelihood damage patterns, the studies are also identifying pilot projects for strengthening the livelihoods of selected households in the research areas. Completion of research and pilot projects will be followed by national level workshops, where findings will be shared with policy makers, NGOs, media, donors and other disaster management related agencies. Later a South Asian regional workshop is to be conducted to share national learning and promote regional cooperation in this regard. Key national policy-making agencies, regional agencies like SAARC secretariat, regional media, NGOs, donors, UN agencies and IFRC/ ICRC missions will be invited to this regional event.

IV. b Community-Based Disaster Management

Recognizing the need for vulnerability reduction for effective disaster management failures of a top down management approach becomes evident. This approach was unsuccessful in addressing the needs of vulnerable communities. Also better understanding of disasters and losses brings to light the fact that an increase in occurrence of disasters and disaster related loss is due to the exponential increase in occurrence of small and medium scale disasters. As a result many feel it is important to adopt a new strategy, which directly involves vulnerable people themselves in planning and implementation of mitigation measures. This bottom up approach has received wide acceptance because considered communities are the best judges of their own vulnerability and can make the best decisions regarding their well being.

What is the community based disaster management (CBDM) approach? The aim of CBDM is to reduce vulnerabilities and strengthen people's capacity to cope with hazards. A thorough assessment of a community's exposure to hazards and an analysis of their specific vulnerabilities and capacities is the basis for activities, projects and programs that can reduce disaster risks. Because a community is

involved in the whole process, their felt and real needs as well as inherent resources are considered. Therefore there is a greater likelihood that problems will be addressed with appropriate interventions.

People's participation is not only focused in processes but on content. The community should be able to directly gain resulting from improved disaster risk management. This in turn will contribute, to a progression towards safer conditions, security of livelihood and sustainable development. This underlines the point that the community is not only the primary actor but also the beneficiary of the risk reduction and development process.

Some authors differentiate between community participation and involvement. Community participation is generally taken to mean that a given community takes responsibility at all stages of a program including planning and implementation. Community "involvement" refers to a 'less than' ideal situation where the community is asked to participate in a program that has already been designed by someone else.

Main Characteristics of Community Based Disaster Management

Implementation of Community Based Disaster Management points to the following essential features:

- The community has a central role in long term and short term disaster management. The focus of attention in disaster management must be the local community.
- Disaster risk or vulnerability reduction is the foundation of CBDM. Refer to Appendix A for a detailed account on community based risk reduction process. The primary content of disaster management activities revolves around reducing vulnerable conditions and the root causes of vulnerability. The primary strategy of vulnerability reduction is by increasing a community's capacities, their resources and coping strategies.
- Linkage to the development process. Disasters are viewed as unmanaged development risks and unresolved problems of the development process. CBDM should lead to a general improvement of the quality of life of the vast majority of the poor people and of the natural environment. CBDM contributes to people's empowerment – to possess physical safety; to have more access and control of resources; to participate in decision making which affects their lives; to enjoy the benefits of a healthy environment.
- Community as a key resource in disaster risk reduction. The community is the key actor as well as the primary beneficiary of disaster risk reduction. Within the community, priority attention is given to the conditions of the most vulnerable as well as to their mobilization in the disaster risk reduction. The community participates in the whole process of disaster risk management from situational analysis to planning to implementation.
- Application of multi sectoral and multi disciplinary approaches. CBDM brings together the multitude of community stakeholders for disaster risk reduction to

expand its resource base. The local community level links up with the intermediate and national and even up to the international level to address the complexity of vulnerability issues. A wide range of approaches to disaster risk reduction is employed.

- CBDM as an involving and dynamic framework. Lessons learned from practice continue to build into the theory of CBDM. The sharing of experiences, methodologies and tools by communities and CBDM practitioners continues to enrich practice.

Before implementing CBDM it is important to know who in the community should be involved. The most vulnerable are the primary actors in a community. The focus should be at the household level. As all individuals, houses, organizations and services stand a chance of being affected they should all be involved for effective CBDM. But before working on disaster risk reduction differing perceptions, interests, and methodologies have to be recognized and a broad consensus on targets, strategies and methodologies have to be reached.

To enrich the community's involvement in risk reduction it is important to first assess the risk with the help of the community, Appendix B illustrates the process of community based risk assessment. There are specific tools and methods that can make the process of community risk assessment most effective. Table 2 summarizes these tools:

**Table 1
Tools of Community Risk Assessment**

Tool	Description
Review of secondary data	Collection of relevant information from published or unpublished sources
Direct observation	Systematic observation of people and relationships, objects, events, processes and recording these observations to get a better picture of the community
Semi-structured interviews	Informal discussions with the community members using a flexible guide of questions – interviews, group discussions or bunch of people sitting around the table (BOPSAT)
Drama, Role Play and Simulations	Acting out a particular situation
Diagramming and Visualization tools	Drawing maps, diagrams, etc. to illustrate, analyze, make relations or draw trends. Historical profile, mapping, modeling, transect, seasonal calendar, institutional and social network analysis, livelihood/ class analysis, problem tree, gendered resource mapping are some examples of diagrammatic tools

Strategies of Community Based Risk Reduction

- Self Insurance options:
 - Reinforcing people's existing livelihoods to increase or maintain current level of production and income – draft animal dispersal, irrigation (expansion, improvement in water management), soil fertility improvement, seed and life stock dispersal. This strategy seems to be effective for internal refugees returning to their abandoned lands, for former farm workers who cultivate and expand their occupied lands, and in cases where irrigation systems can be rehabilitated after earthquakes, floods and typhoons. The effect is that the period of food shortage is shortened by several months.
 - Reinforcing people's coping strategies to reduce risks – This means diversifying crops, promoting and production of disaster resistant and other indigenous crops. In this case if one crop fails the other will survive.
 - Strengthening social and organizational support structures, improved post harvest facilities and storage methods. This will result in increased reserves of food at household/community level, therefore number of food shortage months is decreased.
- Conducting seasonally based action: Several disasters are seasonal in nature. Effective methods to combat these disasters is to develop seasonal cycles of preparedness such as planting of disaster resistant crops, storage and post harvest facilities, seed banks, mobile resources, etc.
- Encouraging long-term investments: these are fall back resources in the community, examples: forest reserves, planting of trees around the house, establishment of village pharmacy, training of village health workers, education or functional literacy are all long term investments. They reduce people's long term vulnerability. It involves land use and management planning within the community.
- Strengthening social and organizational support structures to establish a community spirit of cooperation, through organizational development and management, counter disaster planning, disaster response committee formation, leadership training, functional literacy, day care services, etc. These support mechanisms help in terms of better decision making and managing community wide activities for evacuation and emergency response.
- Making health and sanitation services available at the community level, through capacity building of the community workers make first aid, mother and child care, supplementary feeding for malnourished children, promotion of low cost nutrition food, education and awareness generation for better hygiene and sanitation conditions. They will reduce risks of disease and epidemic.
- Conducting advocacy and campaigns to press government, from local to national continually regarding policies and issues that affect the local food security and nutrition situation and/or that form a barrier to solve the problems. It would stop external threats and block harmful policies and actions.

Bangladesh Urban Disaster Mitigation Project

Under the Asian Urban Disaster Mitigation Program (AUDMP) of ADPC, CARE Bangladesh is implementing the Bangladesh Urban Disaster Mitigation Project (BUDMP). The project will begin with the establishment of community-based flood mitigation and disaster preparedness system in the two demonstration project sites – the municipalities of Gaibandha and Tongi. Through this process, the project aims to improve the capacity and skills of the communities to manage the risks and apply mitigation skills in the urban areas. It is expected that the best practices and lessons learned from the two demonstration project sites will be replicated in other municipal areas of Bangladesh.

Source: AUDMP Briefing Notes (2000) and ADPC Web Site.

Community Based Flood Mitigation Project in Cambodia

The Community-Based Flood Mitigation and Preparedness Project (CBFMP) was initiated in 1998 as an effort to reduce the vulnerability of rural villagers to natural disasters. The CBFMP project's objective was to establish sustainable, replicable non-governmental mechanisms for disaster mitigation and preparedness.

The CBFMP program required that several agencies collaborate to oversee and implement the program, including a number of donor agencies that participated on a financial basis in order to ensure the completion of individual projects in the selected communities of the three provinces (Kandal, Prey Veng, and Kompong Cham).

Each community relied on traditional community processes in order to complete their respective projects. These processes involved village leaders, Wat committee members, monks, and village elders taking advisory and/or organizing roles in order to mobilize community resources. However, the main constraint that faced each community in their effort to complete their respective flood mitigation projects was with respect to the community's scarcity of material and financial resources.

Thus, for each of the flood mitigation projects in each community, a large proportion of the financial support had to come from outside the community. The cost-sharing funds were obtained from a variety of NGOs/donor agencies operating in Cambodia. None of the communities had previously received any form of financial aid for a project of this nature and this served as new experience for the CBFMP participants.

Source: AUDMP Briefing Notes (2000) and ADPC Web Site.

Kathmandu Valley Earthquake Risk Management Project

The Kathmandu Valley Risk Management Project, being implemented as a part of ADPC's Asian Urban Disaster Mitigation Program by Nepal Society for Earthquake Technology and Geo Hazards has also focused on enhancing the safety of rural and urban communities by retrofitting and reconstructing vulnerable school buildings. The project involves active participation of community members in vulnerability assessment and in local masons, traders and the local development committees in construction. Involvement in this project promotes the message of the need for seismic strengthening of all vulnerable buildings and develops the skills of masons and technical personnel in how to build safer buildings.

Source: AUDMP Briefing Notes (2000) and ADPC Web Site.

IV. c Risk Transfer and Finance

This section draws from the sources of World Bank, 2000 and ADPC's training material.

Risk Pool and Risk Management Strategies of Poor Households

Risk pools are small or large size groups that households can draw on for assistance in managing the impact of risks. Households may access the risks pools through a variety of formal and informal arrangements, which are determined by the nature of the risks and transaction costs associated with drawing on the pool (Kreimer, et. al, 2000).

Credit Markets

They are informal sources of lending and borrowing on the basis of a household's needs. Credit markets help in smoothening production and consumption shocks. These credits are repaid based on a random schedule of production. Free flow of information in this informal system helps in the process of scheduling repayments, fixing interest rates and play a direct role in insuring against the risk. This system is effective at protecting households from risks but not at the village level.

Support-led Interventions for Vulnerability Reduction and Mitigation

Appropriate public policy interventions are very important for reducing socioeconomic vulnerabilities. Increased access to resources, increased employment opportunities, increasing macroeconomic stability and other conscious policies made to improve quality of life are necessary. Improved and innovative financial instruments that provide households access to financial resources and thus help in reducing, sharing and transferring of risks is important.

Financial Resources for Mitigation and Investment

- Mitigation/vulnerability reduction fund: Emergency funds usually given to households after a disaster should be used to reduce risks. It can be used to subsidize insurance in an area or encourage reinsurance. Governments can

withdraw this facility once the situation has improved and the insurance companies can manage the risk exposure.

- **Self-Insurance:** Households can take a conscious decision to share some risk of loss. By agreeing to share losses individuals and companies become conscious of the need to implement mitigation measures.
- **Micro-credits:** Micro finance and rural banks are important sources of credit for the poor. However such an institution may be overwhelmed with credit demands at the time of a disaster.

Natural Disaster Insurance

As the government benefit programs for the affected are based more on equity than individual needs or ability to pay. On the other hand making disaster insurance through private providers spread the risk over a larger group, provide better-cost efficiency, discriminate between the needs of the different insured people, encourage loss reduction measures as a condition of insurance and also monitors the activities of the insured.

Group Based Insurance Programs

A group based insurance program can enlarge a risk pool and provide insurance at affordable price. As stated by Kreimer .et. al, 2000 “Large number of policy holders (a) reduce the potential of adverse selection – in which claims are higher than expected because only high risk households purchase the insurance and (b) increase the likelihood that the variance of actual claims will be closer to the expected mean used in calculating premiums.” Besides this the other advantages of group insurance are it is faster to get membership by insuring groups than individuals and it also reduces cost of administration, it provides appropriate mitigation incentives to the community – people come together and initiate improvements in their physical surroundings in order to qualify for the insurance

V. ADB'S Role in Disaster Management and Mitigation

The Asian Development Bank (ADB) has been in the forefront in recognizing the adverse impact of disasters on development and it has played a pioneering role in promoting the incorporation of disaster reduction in development planning. Loans extended by the Bank in the area of disaster mitigation and post-disaster rehabilitation was over US\$2bn (at real 1997 prices) during the ten year period of 1988-1998. Additionally, the Bank has made more than thirty disaster-related technical assistance (TA) loans/grants. ADPC has been proud to be associated with two RETAs and one national grant. One RETA studied disaster management practices in selected DMCs, organized a seminar and published two highly acclaimed handbooks, *Disaster Mitigation in Asia and the Pacific*, ADB 1991, and *Disaster Management: A Disaster Manager's Handbook*, ADB 1991 and *Disaster Mitigation: The Role of the Asian Development Bank*, ADB 1991. A second RETA supported the institutional strengthening of ADPC.

Seminal ADB papers on its role in disaster mitigation and its experience of post-disaster rehabilitation have focused on important future directions for the Bank in the field of disaster management as given below:

Being a major source of post-disaster rehabilitation funding, there is a clear need for the Bank's continued involvement in this field and to improve the performance of its loans for this purpose. Longer-term post disaster reconstruction programs should go beyond the status quo ante, be aimed at vulnerability reduction. Such programs should have broad sectoral/structural objectives and be well integrated into the long-term development programs of DMCs, thus benefiting from detailed planning studies and effective institutional support. In all operations funded by it the Bank should set an example by incorporating disaster risk assessment as an integral part of the approval process and adopting appropriate mitigation measures in project implementation.

The third TA supported by ADB is being currently implemented by ADPC to assess strengthening disaster Management and Mitigation in two of the largest Indian states of Uttar Pradesh and Uttaranchal. This ADB project, initiated under a post-disaster assistance following the Chamoli earthquake in 1999, is focused on advising the two state governments in developing new institutional arrangements, developing state and district level disaster management and mitigation plans and state wide Disaster Management Information System. The project is a pioneering new initiative by the ADB in proactively promoting disaster reduction measures in anticipation of future disasters and represents an innovative and exemplary new direction in development assistance funding. This thrust should be further continued in funding of innovative projects of this kind in other countries, provinces and more importantly at the community level. This will enable the Bank to effectively implement its poverty reduction agenda and continue its leadership role in disaster reduction activities.

VI. Conclusion

Over the past two decades both poverty reduction programs as well as disaster reduction programs have gone through a paradigm shift. Both have moved towards being establishing stronger linkages with sectoral issues. However, there has been relatively few examples of effective, systematic and long-term integration between disaster reduction and poverty reduction programs. There are tangible opportunities for integration between the two. This will require more research on understanding the nature of linkages between poverty and vulnerability in different social, political, economic and hazard-specific contexts. This understanding will lead to development of specific frameworks and methodologies for integration of poverty and disaster reduction programs. At present, livelihood frameworks that recognize people's vulnerability context, community-based disaster management approaches and risk transfer and finance mechanisms are some of the approaches that can be used for this integration. In the coming years, poverty reduction and disaster reduction programs will have to develop innovative, multi-dimensional, inter-sectoral approaches to mutually support each other.

References

- ADPC Web site, www.adpc.ait.ac.th, February 2001.
- ADPC, 2000. Community Based Disaster Management, Trainer's Guide (M2-05)
- ADPC, 2000. Community Based Disaster Management, Trainer's Guide (M3-01)
- AUDMP Briefing Notes, Compiled for the 5th Working Group Meeting of the Asian Urban Disaster Mitigation Program, Cambodia, 23-25 February 2000, Organized by Asian Disaster Preparedness Center, Bangkok, Thailand.
- Blakie, P., Cannon, T., Davis, I. and Wisner, B. (1994) At Risk: Natural Hazards, People's Vulnerability and Disasters, Routledge, London, UK.
- Cannon Terry (1994), Vulnerability Analysis and Natural Disasters, in A. Varley (ed.), Disasters, Development and Environment, Wiley, West Sussex, UK.
- DFID web site <http://www.dfid.gov.uk/>, April, 1999
- Kreimer Alcira, Margaret Arnold, 2001. The poor suffer the most', Our Planet, vol. 11, No.3, UNEP, Nairobi, Kenya.
- Kreimer Alcira, Margaret Arnold (ed), 2000. 'Managing Disaster Risk in Emerging Economies', Disaster Risk Management Series No. 2, World Bank, Washington D.C., USA.
- Maskrey, Andrew (1999), Reducing Global Disasters, in J. Ingleton (ed.), Natural Disaster Management, Tudor Rose, Leicester, UK.

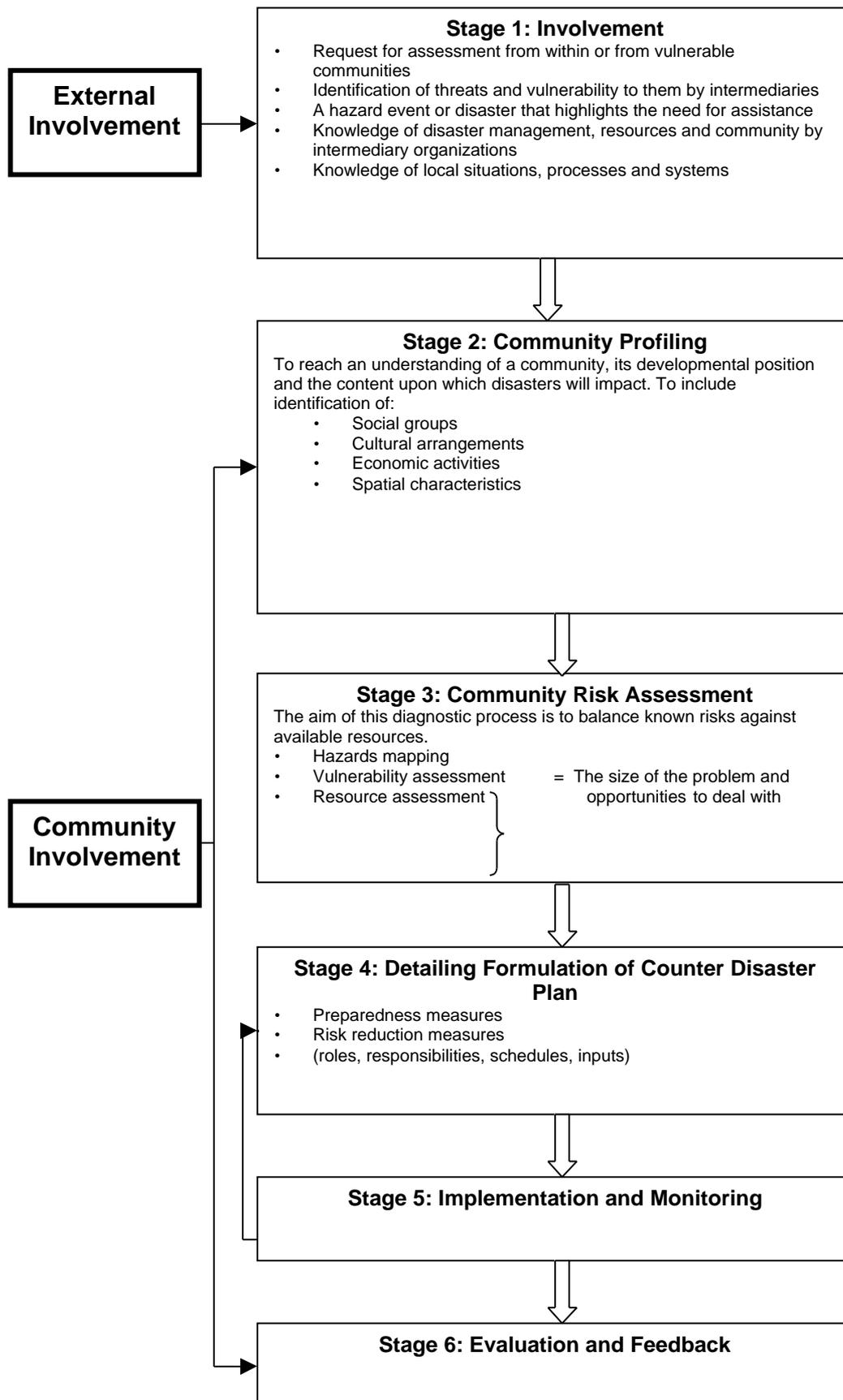
Appendix A**COMMUNITY-BASED DISASTER MANAGEMENT
PROCESS****COMMUNITY-BASED RISK REDUCTION PROCESS****I. Disaster Risk Reduction Process**

The foundation of community-based disaster management is disaster risk reduction. While the community undertakes the broad range of disaster management activities, including emergency response as necessary, the emphasis is on reducing disaster risks.

The disaster risk reduction process has six sequential stages, which can be operationalized before a disaster occurs or after one has happened to reduce future risks. Each stage grows out of the preceding stage and leads to further action. Together, the sequence can build up a planning and implementation system, which can become a powerful disaster risk reduction tool. The system or the process is presented in the diagram below. The stages in the risk reduction process are as follows:

1. Initiating the disaster risk reduction process
2. Community Profiling
3. Community Risk Assessment
4. Community Risk Reduction Planning
5. Implementation and Monitoring
6. Evaluation and Feedback

Community Based Risk Reduction Planning Process

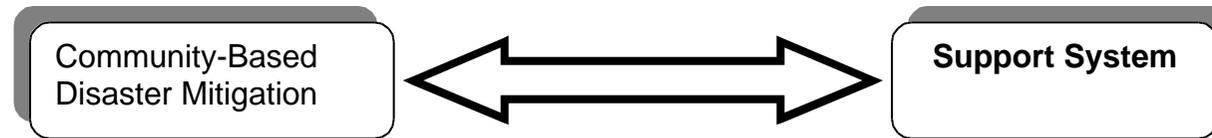


Phases and Roles in a Community Based Disaster Management Project^v

	Phasing In	Mobilization	Setting Agenda	Integration and Expansion	Phase-Over
O U T S I D E R S	Identification of threats and vulnerabilities	Entry and Immersion	Facilitating Training	Group Strengthening Facilitating linkages	Consulting
	Clarifying roles and objective	Rapport Building	Providing Material Services		
	Visiting Community	Learning	Linking with resources		Initiating project
	Planning Strategy	Community study	Group capability building	Preparedness measures	Facilitating
	Resource Inventory	Validating issues		Risk reduction measures	Controlling
	Organizing	Hazard Mapping	Risk reduction measures	Pressuring	
	Request Assistance Family Coping Community on going efforts	Problem ID Socio-Economic - Political Cultural Situation Biophysical Situation	Vulnerability Assessment Resource Assessment	Roles, responsibilities, schedules, inputs Implementing project	Negotiating Influencing other communities Reflecting Adjusting Expanding Sustaining
	Community Situational Analysis	Community Profiling	Community Risk Assessment	Counter Disaster Plan and Action	Evaluation / Feedback
	<i>STAGE 1</i>	<i>STAGE 2</i>	<i>STAGE 3</i>	<i>STAGE 4</i>	<i>STAGE 5</i>

Reference: Zen Delica, 1999, ADPC Course on Community-Based Approaches to Disaster Management, ADPC, AIT, Bangkok, Thailand and Regional Office for Asia, IIRR. 1998. Basic Community Development Training: A Participants Training Material. International Institute of Rural Reconstruction, Y.C. James Yen, Silang, Cavite, Philippines.

Community-Based Disaster Mitigation: From A Management Perspective



Management	Characteristics	Linking Services	Characteristics
Planning	<ul style="list-style-type: none"> • Conduct their own situational analysis (PLA and other tools) • Chart their goals, objectives/ vision • Develop their own plans 	<ul style="list-style-type: none"> • Community organizing • Training and education • Public awareness • Networking and coordination • Advocacy 	<ul style="list-style-type: none"> • Develop participatory tools • Act as animator/ facilitator • Orientation is based from the people
Implementation	<ul style="list-style-type: none"> • Design and implement projects • Organizational/ group growth and Development 	<ul style="list-style-type: none"> • Collaboration and partnership • Conflict resolution and negotiations 	<ul style="list-style-type: none"> • Program and technology development • Resource allocation and distribution (human, financial, technology and material)
Monitoring and Evaluation	<ul style="list-style-type: none"> • Develop community indicators and tools to measure 	<ul style="list-style-type: none"> • Meeting expectations • Area for improvement • Action reflection praxis 	<ul style="list-style-type: none"> • Impact indicators and tools to measure

1. Initiating the Disaster Reduction Process

How does a community get started with the disaster risk reduction framework? In some cases, several community members or an organization in the community approaches an intermediary organization for assistance after experiencing a disaster or in preparing for an impending disaster threat.

Presently, NGOs, disaster management agencies, the government and other intermediary organizations such as national or regional level people's organizations play a key role in initiating the process of community-based disaster management. They either respond to requests coming from vulnerable communities or identify vulnerable communities where disaster risk reduction programs should be prioritized. Criteria for the prioritization of vulnerable communities may include the following: most disaster prone area; most vulnerable to a particular hazard; least served by the government and/or NGOs; additional considerations such as possibility of replication or spread effects of the program to neighboring communities, presence of existing development projects or community partners.

In many instances, a probable hazard event or disaster threat can be turned into an opportunity to start a community-based disaster management program. When the knowledge, skills and experiences in disaster risk reduction, which are in communities are systematized and disseminated, there will be more community-to-community sharing on how to get started and implement community-based disaster management.

2. Community Profiling

Community profiling involves building up a picture of the nature, needs and resources of a community with the active participation of the community. It is an important preliminary step in any planning process, especially when outsiders (intermediary organizations) are involved. It usually involves building rapport/ trust with the community through interaction and gathering basic information or the surfacing of the general community profile.

It leads to an understanding of the community's development position and the context upon which disasters will impact. Basic elements of a community profile will include the following:

- social groups
- cultural arrangements
- economic activities
- spatial characteristics
- vulnerable households and groups

3. Community Risk Assessment

Community risk assessment is a diagnostic process to balance known disaster risks against available resources. Through the risk assessment process, the community comes to a common understanding of its disaster risks. The size of the problem as well as the resources and opportunities involved are identified and analyzed.

Community risk assessment has four components as follows:

- hazard assessment
- vulnerability assessment
- capacity assessment
- people's perception of the risks

4. Formulation of Disaster Risk Reduction Plan

Preparedness and mitigation measures to reduce disaster risks are identified. These risk reduction measures are not necessarily big projects. The important point is to start off the risk reduction process through community mobilization based on existing capacities and resources within the community's immediate reach.

Overall objectives, strategies are translated to operational plans and activities. The people, timetable, resources within and outside the community needed to turn the intent of the plan into reality are identified. Community targets in undertaking preparedness and mitigation measures in terms of particular capacities increased and vulnerabilities decreased.

At the planning stage, agreements with intermediary organizations are formalized regarding their supports in the risk reduction plan implementation and their expectations/requirements of resources, which they commit to mobilize. Outsiders are usually expected to assist the community in the following areas:

- community capability building through training and education activities and materials
- resource mobilization to supplement the community's efforts to generate resources to realize the risk reduction plan
- facilitate linkages with concerned government agencies and NGOs to access information, resources, etc.

5. Implementation and Monitoring

The formation and/or strengthening of a community disaster management machinery is usually helpful in the implementation of the risk reduction plan. A wide range of organizational arrangements vital in implementation of the plan include the following: -- a committee of an existing community organization, a disaster volunteers team, a community organization, a project management committee, a network of community organizations for disaster management, etc.

Besides monitoring the progress of the plan implementation, this core group motivates the community through translation of plan objectives and targets into disaster reduction activities. This group also amends targets and plans, when necessary, to keep on course with set objectives to reduce vulnerabilities and increase capacities in the immediate and long-term.

6. Evaluation and Feedback

Evaluation is concerned with the effects of the risk reduction measures in terms of reducing the vulnerability situation of the community. If vulnerability has not been significantly reduced, the reasons for this are analyzed. The significance of building on existing capacities and those, which have been actually increased, are also analyzed.

It is concerned with the difference the results of the risk reduction measures have made to the community situation and its overall quality of life. Lessons are drawn and best practices are shared with other groups and communities to promote the CBDM framework and strategy.

Source:

ADPC, 2000. Community Disaster Based Management, Trainer's Guide (M2-05).

Appendix B

COMMUNITY-BASED RISK ASSESSMENT

I. Disaster Risk

Risk is the probability of something happening in the future, which has a negative consequence. It is a prediction of suffering harm or loss or of meeting danger.

Although disaster risk is sometimes taken as synonymous with hazard, it has an additional implication of likelihood of a particular hazard to occur and cause damage or loss to a vulnerable community or group. Disaster Risk (or recipe for disaster) has been presented by Ward, 1999 as follows:

$$\text{Disaster Risk} = \frac{\text{Hazard} \times \text{Vulnerability}}{\text{Manageability}}$$

Manageability here stands for the degree to which a community can intervene and manage a hazard in order to reduce its potential impact. This implies that based on people's perception of their disaster risk, they are able to make decisions to adapt to, modify or ignore the risk.

Manageability is synonymous to Capacity so we can substitute to have the following disaster risk formula:

$$\text{Disaster Risk} = \frac{\text{Hazard} \times \text{Vulnerability}}{\text{Capacity}}$$

II. Disaster Risk Assessment

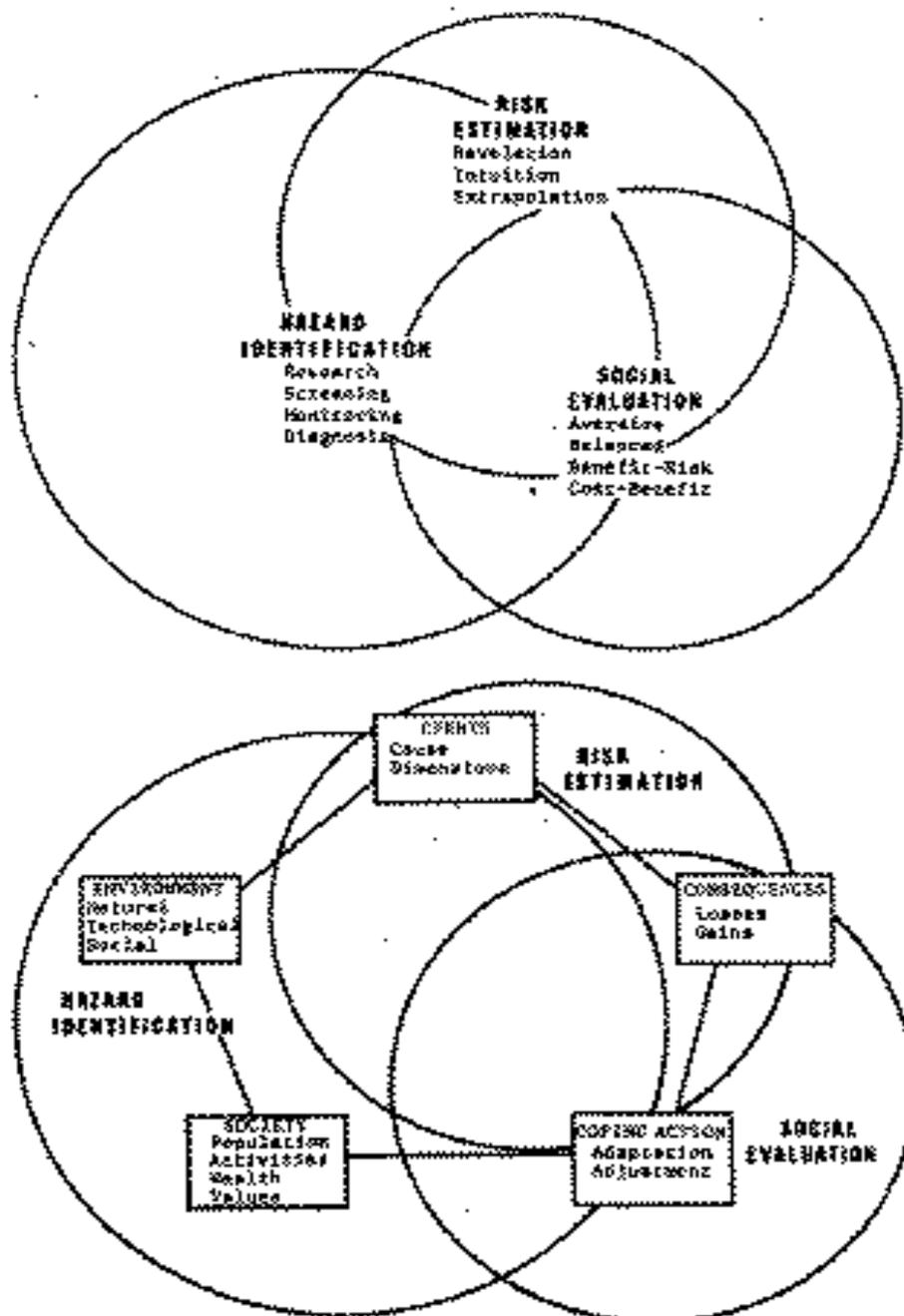
Assessment is a process (usually undertaken in phases) of collecting, interpreting and analyzing information from various sources.

Risk Assessment (also risk analysis or evaluation) has traditionally been done by economists, scientists and experts in insurance companies, government agencies on agriculture, environmental management, health, public works and highways, etc. who are concerned with estimating probable damages and proposing mitigation measures based on cost-benefit analysis.

The outputs of CBDM disaster risk assessment are quantitative estimates of probable loss of life, damage to property and the environment. Based on the criteria developed by the community, the risk measurement is then summarized as severe, moderate and minor or high, medium and low.

Kates (1978) describes risk assessment as an appraisal of the kinds and degrees of threat posed by a hazard. It includes hazard identification, the measurement of its threat and understanding the social meaning of such measurements. The key questions answered in risk assessment are the following: "What hazardous events may occur?" "What is the probability of each event?" "What is the loss created by each event?" "How important is the estimated risk?"

Risk assessment is an integral component of the process by which individuals, communities and societies cope with hazards. The figures below show the conventional risk assessment process.



III. Community-Based Disaster Risk Assessment

Community Risk Assessment is a participatory process of determining the nature, scope and magnitude of negative effects of hazards to the community and its households within an anticipated time period. It determines the probable or likely negative effect (damage and loss) on 'elements at risk' (people - lives and health; household and community structures, facilities and services – (houses, schools, hospitals, etc.); livelihood and economic activities (jobs, equipment, crops, livestock, etc.); lifelines – (access roads and bridges). Why particular households and groups are vulnerable to specific hazards and why others are not are also analyzed. The coping mechanisms and the resources (capacities) present in the community are also essential considerations in community risk assessment

Participation of community members is an essential component of community based risk assessment which determines the methodologies and tools used. Community risk assessment combines both scientific and empirical data concerning known hazards and other possible threats to the community. Although indigenous knowledge is vital, scientific data is especially important in a situation when the hazard has not yet been experienced by the community.

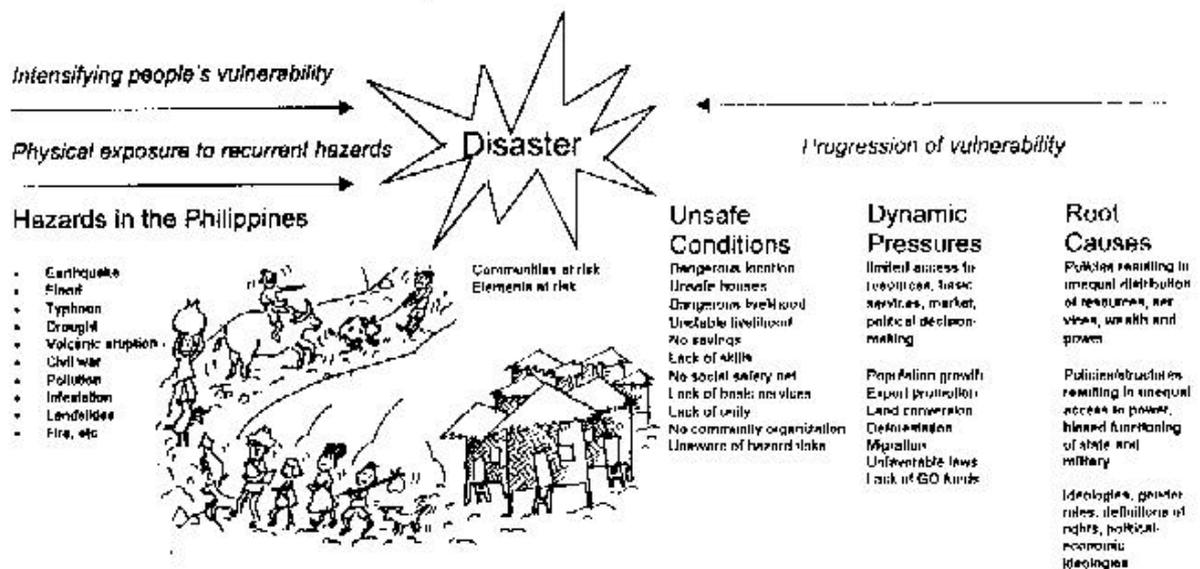
IV. Components of Risk Assessment

Community based risk assessment has four main inter-related steps. These are:

- *hazard assessment*: determines the likelihood of experiencing any natural or human-made hazard or threat in the community. Assessment includes the nature and behavior of each of the hazards the community is exposed to.
- *vulnerability assessment*: identifies what elements are at risk and why they are at risk (unsafe conditions resulting from dynamic pressures which are consequences of root or underlying causes)
- *capacities assessment*: identifies the people's coping strategies; resources available for preparedness, mitigation and emergency response; who has access to and control over these resources.
- *people's perception of risk*: identifies the perception of risks of the heterogeneous groups and sectors, which make up the community; measurement of the community's disaster risks based on people's perception.

The results of the community risk assessment is then summarized in tabular form using the Hazard Capacity Vulnerability Analysis. A sample of the summarized result of the community risk assessment process is shown below.

'Pressures' on the community that result in disasters: progression of vulnerability



Example HVCA of upland community in Philippines

Hazard assessment	Vulnerability Assessment	Capacity Assessment	People's Perception of Risk
<ul style="list-style-type: none"> • drought 1997-1998 due to El Niño; erratic rainfall • rat infestation during the drought period • epidemic of malaria during drought period • 'militarization' 1995-1996; bombing in villages 	<ul style="list-style-type: none"> • Steep terrain • Deforestation • No irrigation • Lack of farm tools and working animals • Lack of basic services • One harvest of corn per year • Children are malnourished • Chronic food shortage • Dependent on 'slash and burn' technique • Military claims area a their exercise terrain • Neglected by government • Isolated from outside world 	<ul style="list-style-type: none"> • Strong social network to rely on in times of crisis • Knowledge / skills to find and prepare wild crops • High motivation to learn new farming techniques • Some farmers shifted already to permanent farms with contour lines • Despite seasonal migration of male, they fulfil their obligations to the CBOs • Community organization set up rules for 'slash and burn' practices to avoid further deterioration of forest • Strong network of community organizations to defend land against military claim • Contact with supporting human rights NGOs and media 	<ul style="list-style-type: none"> • Although the military is still present in the area (threat still exist), the people regard drought as the major hazard. Even in normal times they face food shortage. Drought and its secondary hazards further undermine the basis for their survival. • Food shortage is identified as their main problem. Any hazard worsens the recoverability of their livelihood

V.Purpose of Community Risk Assessment:

Community Risk Assessment provides a systematic process for identifying, estimating, and ranking community risks.

Community Risk Assessment contributes to the community's awareness about potential risks. This is usually the contribution of outsiders who bring with them scientific and technical information on hazards which the community has not experienced before.

Community Risk Assessment is an essential precursor to a bottom up decision making process for development policies, strategies, plans, programs and projects in disaster risk reduction. More specifically they help:

- To prioritize community's risks which need to be reduced. The community has to address all its disaster risks but its actions and resources can be prioritized based on the frequency, extent of damage and other considerations which the community members decide on.
- To ensure that the risk reduction is going to be adequate and appropriate. Risk reduction planning should incorporate a balance between preparedness and long term mitigation measures.
- To ensure that risk reduction will be cost effective and sustainable. In many situations, the viable track to reduce vulnerabilities is through increasing the community's capacities. Existing material, social and attitudinal capacities should be built and areas and strategies for capacity building should be identified. The impact of various preparedness and mitigation measures on risks in the immediate and in the long-term can also be compared.
- To identify external resources which have to be tapped and risk reduction strategies to address vulnerabilities, which the community on its own cannot address.
- To have a yardstick to assess if the community is succeeding in reducing risk. Community risk assessment provides indicators to measure changes in people's vulnerability over time.

Community Risk Assessment provides the community and support agencies with disaster specific baseline data that can be integrated in a situational analysis for development planning purposes.

Community Risk Assessment provides support agencies with information that can be used for 'intelligent and informed estimates' in order to draft emergency appeals (even when the community is inaccessible during the emergency period). Furthermore, it provides the community and support agencies with baseline data which is useful in doing the 'damage, needs, capacities assessment' of the community for emergency response purposes.

Note

Community members and outsiders may have different perception of the community's disaster risks. The community risk assessment process provides a venue to come to a common understanding of local risk scenarios.

For Further Reading

Disaster Risk Assessment by Brian Ward

Turning Disasters into Development: Designing Strategies for Informed Decision Making in Community Development in Latin America by Andrew Maskrey

Source:

ADPC, 2000. *Community Based Disaster Management, Trainer's Guide* (M3-01)