

COMMUNITY BASED APPROACHES TO DISASTER MITIGATION

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EXECUTIVE SUMMARY

Community participation has been recognized as the additional element in disaster management necessary to reverse the worldwide trend of exponential increase in disaster occurrence of and loss from small- and medium-scale disasters, build a culture of safety, and ensure sustainable development for all. This paper gives a brief orientation on the why, what, who, when, how, and so what of community based disaster mitigation. Recent experiences and practices, particularly those in the Asian Urban Disaster Mitigation Program, showcase significant elements from which lessons are drawn. Positive impact affirms the validity of the community based approaches to disaster mitigation, notwithstanding the difficulties, complexities and challenges faced to initiate, sustain and replicate.

Major benefits of the community based risk assessment, mitigation planning and implementation processes underscored include building confidence, pride in being able to make a difference, and enhanced capabilities to pursue disaster preparedness, mitigation as well as bigger development responsibilities at the local level. Additionally, individual and community ownership, commitment and concerted actions in disaster mitigation, including resource mobilization produce a wide range of appropriate, innovative and do-able mitigation solutions, which are cost-effective and sustainable.

Good practices in the community based approaches to disaster mitigation highlight key success factors such as applying best practice methodologies of community development to community based disaster mitigation, tapping traditional organizational structures and mechanisms (including formal and informal community leaders), and capability building activities with the community disaster committees and volunteers. The importance of various forms and channels of public awareness and education using local dialects, values and culture and partnerships of the community with various stakeholders such as community based organizations, community leaders, local government units, higher level government, NGOs, less vulnerable groups, and donors were also noted.

1. Introduction

"The local community is taken as the primary focus of attention (in disaster reduction) since that is the common unit which is affected by disaster and, more importantly, responds to deal with the event." - Russell Dynes

Whether a disaster is major or minor, of national or local proportion, it is the people at the community or village level who suffer its adverse effects. They use coping and survival strategies to face and respond to the situation long before outside help from NGOs or the government arrives. They are interested to protect themselves from the damage and harm.

Moving from Appreciation to Commitment and Action - Why the community based approaches?

Within the last decade, growing recognition of the necessity of community participation for sustainable disaster reduction was translated into actions to realize community based disaster management. Parallel efforts in various regions worldwide called for a shift in perspective from the prevailing emergency management framework to disaster risk management to reverse the trend of exponential increase in disaster occurrence of and loss from small- and medium-scale disasters. These highlighted the need for proactive disaster management activities and the significant role of local communities. The community-based approach also corrected the defects of the top-down approach in development planning and disaster management which failed to address local needs, ignored the potential of indigenous resources and capacities, and may have even increased people's vulnerabilities.

Experiences in developing regions and countries now affirm the gains of community based disaster management. Although varying in contexts, the results of the commitment to undertake and the actual initiatives taken at the regional, country and local levels all point to the viability of the community based approaches in managing and reducing disaster risk.

Pioneering experiences in community based disaster mitigation (CBDMit) of PREDES and the Network for Social Studies on Disaster Prevention in Latin America (La Red) in Latin America as early as the 1980s were used to advocate for the alternative approach to disaster mitigation. Since 1994, Duryog Nivaran, a network of organizations and individuals in South Asia, has committed to promote and develop the alternative perspective in disaster management. In South Africa, Periperi (“partners enhancing resilience for people exposed to risks”), a network for risk reduction and sustainable development, gives priority to minimizing the impact of natural and other threats by strengthening the environmental, social, and economic resilience of vulnerable communities.

The Asian Disaster Preparedness Center (ADPC) started the Asian Urban Disaster Mitigation Program (AUDMP) in 1995 in collaboration with the USAID Office of Foreign Disaster Assistance to reduce the disaster vulnerability of urban populations, infrastructure, lifeline facilities, and shelter in targeted cities in South and Southeast Asia. Four AUDMP projects which have very discernable applications of the participatory approach are featured in the session on Community Based Approaches to Disaster Mitigation -- Community Based Urban Flood Mitigation in Bangladesh, Mitigating Flood Risk in Cambodian Communities; Experiences of Community Based Disaster Mitigation in Municipal Ward 34 of Kathmandu Metropolitan City; and Community Based Approaches to Landslide Disaster Reduction in Sri Lanka

ADPC also implements with DIPECHO the Partnerships for Disaster Reduction-South East Asia (PDR-SEA), which has taken on Community Based Disaster Management (CBDM) as a core strategy for disaster reduction and sustainable development. When combined with the AUDMP learning loop, the practices in CBDMit in PDR-SEA and other initiatives such as the Community Based Approaches to Rehabilitation and Mitigation: Experiences from Patanka Village of Gujarat offer the wellspring of learning on the concepts, approaches, interventions, methodologies, tools and practical tips/considerations for communities to improve safety and achieve livelihood security together with sustainable economic, social and physical development.

While in the pioneering experiences, PREDES and La Red talk about the community based approach to disaster mitigation, practices in various communities, countries and regions now showcase a wide range of community based approaches to disaster mitigation, clearly with community participation as the crucial and pivotal element.

Box 1. Learning from Initial Experiences in CBDMit in Latin America (Maskrey, 1989)

The top-down mitigation programs in Latin America had serious flaws such as failure to involve people since community participation was often limited to provision of labor in self-help projects, failure to address vulnerability as a complex relationship between people and their social, physical and economic environment, and the susceptibility to political manipulation by powerful groups.

In contrast, case studies on the piloting of the community based approach to disaster mitigation in the 1980s for drought, flood, and earthquake hazards highlighted the following benefits:

- Principal responsibility and authority for the development of the program rested with the community-based organization (CBO)
- Problems were correctly defined; responsive mitigation measures and strategies for recovery were worked out following disaster since people could express their real needs and priorities to the CBOs.
- Existence of CBOs allowed rapid and effective response to emergencies.
- The principal resource is people themselves and their local knowledge and expertise so programs had small financial inputs but produced large results.
- Programs were multi-sectoral, combining different activities (housing and agriculture; health and agriculture); hazards (flood and drought) and disaster phases (emergency and recovery)

Definitions of community vary and for the purposes of this paper, a simple operational definition is taken. A community is a group of individuals and households living in the same location and having the same hazard exposure, who can share the same objectives and goals in disaster risk reduction. The community referred to are local villages such as the Ward in Nepal, the Ban in Laos, the Commune in Vietnam, the Barangay in the Philippines. The community members may have varying perception of disaster risk depending on social class, education, age, gender, etc., and the community risk assessment and disaster risk reduction planning processes helps to unite the community in understanding of the risks and in preparedness, mitigation and prevention actions.

Community based disaster management (CBDM) is anchored in the disaster risk reduction framework. CBDM covers a broad range of interventions, measures, activities, projects and programs to reduce disaster risks, which are primarily designed by people in at-risk localities and are based on their urgent needs and capacities. Simply put, the aim of CBDM is to 1) reduce vulnerabilities and increase capacities of vulnerable groups and communities to cope with, prevent or minimize loss and damage to life, property, and the environment, 2) minimize human suffering, and 3) hasten recovery.

Through CBDM vulnerable groups and communities can be transformed to disaster resilient communities, which can withstand and recover from stresses and shocks from the natural/physical and socio-economic political environment. While resilience is a relatively new concept in CBDM, it is easily grasped and appreciated by communities when illustrated by the example of the bamboo, which sways with the battering of strong winds but stays rooted and weathers the typhoon. Key indicators are safety, livelihood security and sustainable economic, social and physical development (general well-being, health, education, amenities, natural and physical environment, etc.)

With the shifting of paradigms from reactive emergency management to disaster risk reduction, there is more stress on proactive pre-disaster interventions, which are usually categorized as prevention, mitigation, and preparedness. While natural hazards may not be prevented, human-induced hazards such as those associated with industries, technological failures, pollution, and civil strife can be prevented. Prevention covers measures to provide permanent protection from disasters or reduce the intensity/frequency of a hazardous event so that it does not become a disaster. These include safety standards in industries, poverty alleviation and assets redistribution schemes, and provision of basic needs and services such as preventive health care and education.

Mitigation reduces and limits the destructive and disruptive effects of hazards on the elements at risk. Measures range from the physical such as engineering works like bridges, protective dikes, embankments, and safe building design to the non-structural interventions such as community risk assessment, community risk reduction planning, public awareness, food security programs, group savings, cooperatives, crop insurance, strengthening community disaster management organizations and advocacy on disasters and development issues, legislation and land use zoning. Mitigation and prevention interventions are directly linked to development planning. "Disaster mitigation is intrinsic to sustainable development" (Twigg et al, 2000)

Preparedness involves measures taken in anticipation of a disaster to ensure that appropriate and effective actions are taken during the emergency such as setting up the systems for early warning, coordinative and institutional arrangements, evacuation and emergency operations management, public awareness, disaster and evacuation drills, and stockpiling. Emergency responses are measures undertaken to ensure survival and prevent further deterioration of the situation. These include search and rescue, immediate repair and restoration of critical facilities and utilities, conduct of damage needs and capacity assessment, food and non-food relief assistance, medical assistance, evacuation center management, and networking. Recovery covers rehabilitation and reconstruction and can be undertaken within the framework of mitigation and vulnerability reduction, and not just bringing back the situation to pre-disaster levels.

Box 2. Promoting CBMit in Asia (Duryog Nivaran and Twigg, 1994)

Duryog Nivaran, a network of organizations and individuals in South Asia, promotes community-based approaches to disaster mitigation. Together with ADPC and La Red, it has developed a CBDM training course for wider application of the alternative perspective in disaster management.

The experiences of the Disaster Mitigation Institute, a founding member of Duryog Nivaran, with poor communities indicate that programs which incorporate disaster mitigation with provisions for social security—work, food, water, and shelter security – and microfinance reduces their vulnerability to disaster risks.

Dominant Perspective	Alternative Perspective
Disasters/conflicts viewed as isolated events or aberrations in the normal path of development.	Disasters are unresolved problems arising from the very processes of development.
Linkages with conditions in society during normal times less analyzed.	Relationships/structures within society determine why certain groups of people are more vulnerable to disasters than others.
Technical/Law and Order solutions	Emphasis on solutions that change relationships/structures and attitudes in society that make people vulnerable.
Tendency to be top-down and inflexible in method. Less participation of people, who are treated as "victims."	Participation of people paramount in intervention strategies; people treated as "partners" in development. Builds on people's capacities to protect themselves against hazards.
Implementing agencies less accountable and their processes less transparent to people.	Ensuring accountability and transparency emphasized in implementation.
Interventions are made after the event occurs.	Mitigation of disasters/conflict as fundamental aim.
The objective of intervention is to return to the situation before the event.	Disasters/conflicts viewed as opportunities for social transformation.

What are some relevant models in CBDM and CBDMit?

Models and schemas help in conceptual simplification, especially at the community level. For CBDMit, the image that quickly comes to mind is that of the Chinese characters for the word crisis, which is composed of two characters -- danger and opportunity. Disaster mitigation and risk reduction offers the greatest opportunity for the integration of disaster management into the development programming process.

The prevailing model in disaster management is the disaster management continuum or cycle. While its intent is developmental, common interpretations tend to focus more on activities immediately before and after the onset of the disaster event.

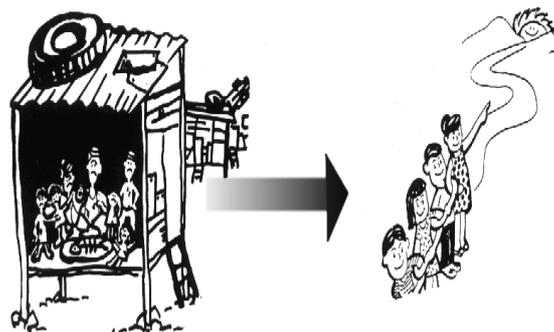
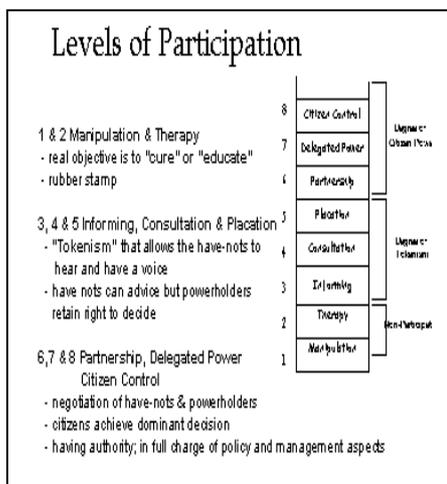
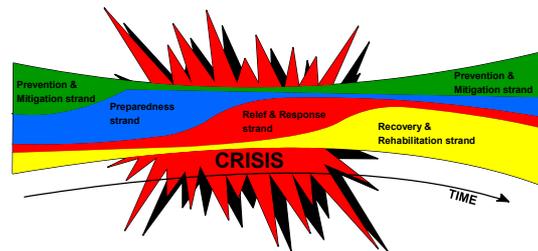
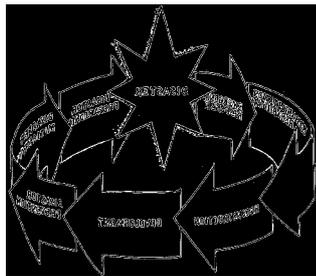
New models, which are relevant to CBDM and CBDMit are emerging. Such models include the Expand-Contract Model used in South African communities, which assumes that disaster intervention measures of disaster prevention, mitigation, response and recovery can be carried out at all times in a disaster-prone community. Relative weighing of each component “contracts” or “expands” depending on the relationship between the hazard and the vulnerability of the community. While the common notions for having mitigation measures is before and after a disaster, Twigg et al (2000) also specify that mitigation can take place at any time before, during or after a disaster.

The Disaster Crunch and Release Models (Blaikie et al, 1994) are useful in analyzing the complex relationships of factors, conditions and processes of vulnerabilities and in formulating strategies and measures to reduce disaster risk.

In development planning especially for housing programs and basic services delivery systems, reference is made of Arnstein's typology of eight levels on a ladder of citizen (community) participation to illustrate the quality of participation to aspire and work for. Ms. Arnstein equates citizen participation with the have-nots power. "It is the redistribution of power-that enables the have-not citizens, presently excluded from the political and economic processes to be deliberately included in the future." (Arnstein in Stein (ed), 1995) Each rung of the ladder corresponds to the extent of citizens' power in determining plans and programs. Manipulation and therapy of "participants" by powerholders are actually forms of non-participation (levels 1 and 2, respectively). Level 3 (informing), level 4 (consultation), and level 5 (placation) are forms of "tokenism" by the "haves" towards the "have-nots", where the have-nots have a voice in the process but still do not make decisions. Citizen power increases in the last three levels (6, 7 and 8) of citizen participation – partnership, delegated power and citizen control.

A similar 7-level scheme by Pretty et al is used by many NGOs -- 1. passive participation; 2. participation in information giving; 3. participation by consultation; 4. participation for material incentives; 5. functional participation; 6. interactive participation; and 7. self-mobilization.

The challenge posed for communities and organizations is to innovate and explore appropriate models and schemas based on their local contexts and organizational mandates.



How to transform at-risk communities to disaster resilient communities?

Before the community can be mobilized for disaster mitigation, they have to be organized first. Steps followed for the disaster management/mitigation are patterned after the basic methodology in community organizing for community development. This methodology covers consciousness raising, organization building and mobilization. Detailed steps are as follows:

1. Site entry and rapport building - process whereby the facilitator establishes rapport and constructive relationship with the people. Mutual respect and trust are the key elements that characterize effective integration
2. Community situational analysis - the process of gathering all relevant data about the community such as physical characteristics, demographic features, economic and socio-political aspects of the community
3. Identification of priority sector – the process of identifying the target groups or sector of the project or the most in need/most at risk.
4. Identification of natural leaders or “progressive members” – the process of selecting natural leader or “progressive members” of the identified priority group(s) or tapping existing structure/organization in the community. The core group serves as catalyst or prime mover in the formation of the group
5. Feedback/validation of results of community situation analysis - the purpose is to inform the people about the whole situation of the community and to fill in the gaps
6. Further analysis of priority problem/need/aspiration – the process whereby the community discuss and analyze their problem and transform it into community goals or aspirations
7. Planning of the solution/action - the process whereby the community plan how to solve their problems
8. Organization of the group – the role and responsibility of each member vis-à-vis the community activities and tasks are identified and agreed upon. Skills improvement is provided to the community organization and they are encouraged to forge links with other institutions.

In general, the goal of CBDM is to transform vulnerable or at-risk communities to disaster resilient communities, specifically through CBDMit. Although steps may vary from community contexts and organizational mandates, the process and requisites for disaster risk reduction can be generalized as follows:

1. Initiating the process - linkage and building rapport with community
2. Community Profiling - initial understanding of disaster situation and orientation on CBDM and CBDMit
3. Community Risk Assessment – participatory assessment of hazards, vulnerabilities, capacities and people’s perception of risks
4. Formulation of Initial Disaster Risk Reduction Plan - identification of appropriate mitigation and preparedness measures including public awareness, training and education
5. Formation of Community Disaster Response Organization - community organizing and mobilization, capability building in CBDMit and preparedness
6. Implementation of short-, medium-, and long-term risk reduction measures, activities, projects and programs - implementation strategies and mechanisms; organizational/institutional strengthening
7. Monitoring and Evaluation - continuous improvement of disaster risk reduction plan, documentation and dissemination of good practices for replication

Notwithstanding the order, the community volunteers, disaster management committee, and disaster response organization are the necessary interface or the channel for outsiders such as NGOs or government agencies to assist/support the community at-large. The community groups and organizations in disaster management are essential in sustaining the risk reduction process for the community to meet intended aims and targets.

Within this 7-step process, the formation and strengthening of community disaster response organization or community disaster management volunteers team is the key to mobilizing communities for sustainable disaster risk reduction. In many of the experiences of the AUDMP projects, this step comes even before the risk assessment/mapping and identification of mitigation solutions/action planning.

Box 3: Learning from the Process of CBFMP to mobilize communities in flood vulnerability reduction in Cambodia (AUDMP, 2001)

Floods have devastating impact on communities in many South East Asian countries. Cambodia is particularly susceptible to annual river flood during the monsoon season along two major watersheds, the Tonle Sap Lake and the Mekong River. Localized flood caused by monsoon thunderstorms also poses a serious threat. To reduce the vulnerability of rural villagers by building their capacities to plan and implement mitigation solutions, the Community-Based Flood Mitigation and Preparedness Project (CBFMP) has been implemented jointly since 1998 by AUDMP with the Cambodian Red Cross (CRC), Participating Agencies Cooperating Together (PACT) and the International Federation of Red Cross and Red Crescent Societies (IFRC) in 23 villages in 3 districts in 3 provinces – Kang Meas District in Kampong Cham, Kien Svay District in Kandal, and Peam Ro District in Prey Veng.

CBFMP relied on a network of Red Cross Volunteers (RCVs) and the Disaster Management Committees (DMCs) which were organized in each village to lead communities in identifying flood mitigation and preparedness measures and mobilizing local resources. By June 2000, the project has trained 7 trainers at the CRC headquarters and a total of 159 RCVs. Subsequently, village-level DMCs were organized and resources were mobilized to plan and implement local solutions. The RCVs and DMCs tapped local authorities such as leaders of communes, villages and village groups, *wat* (temple) committee members, monks and village elders to reach the villagers.

From the risk assessment and risk mapping, conducted in the 23 communities, villagers reached consensus on priority mitigation solutions. Opportunities presented by community gatherings at special events or traditional ceremonies were utilized to gather ideas and consensus on mitigation solutions and request for villages' contributions in cash or in kind. As a result, 24 flood mitigation project proposals (with cost not exceeding US\$1,500 per project) were presented by the communities to the CBFMP, which included proposed mitigation measures and local contributions in labor, materials and cash.

Mitigation solutions generally focused on water control structures necessary for livelihood, including repairing dams and dikes; cleaning of irrigation ditches, culverts and water gates; and improving access by raising road levels or constructing small bridges. By June 2000, 14 projects had already been completed. One year after the completion of CBFMP, replication of mitigation solutions in the project areas and in communities outside of the coverage of the project have been implemented.

The step-by-step process by which CBFMP reduced flood vulnerability through building capacities of communities to mitigate, prepare for and respond to disaster in a self-reliant and cooperative manner involved: (1) selecting project sites, targeting the most vulnerable communities; (2) selecting community members as volunteers and training them to work with communities in reducing vulnerabilities; (3) organizing communities and establishing village-level Disaster Management Committees (DMC) as a coordinating body; (4) identifying, estimating and ranking local disaster risks through risk mapping; (5) building consensus on mitigation solutions; (6) mobilization of resources and implementation of community mitigation solutions; (7) drawing lessons from implementation sharing lessons and learning from similar experiences -- broad range of mitigation measures, processes and requisites, tools and methodologies; and (8) replication & overall improvement of the CBDMit & preparedness system.

The DMC of Boeng Psauth Village in Peam Ro District, Prey Veng is composed of 7 villagers, including 2 RCVs, the village chief, 2 *wat* committee members and the chief of the Women's Association. After the completion of the village cement bridge mitigation project despite much difficulty, they recognized their weaknesses and suggested more training inputs on flood mitigation concepts and project planning and implementation.

2. Elements and Features of Community Based Disaster Mitigation

“Development is the process through which people increase their capacities for producing things they need and for managing their political and social lives as they desire, and at the same time (especially in disaster-prone areas) reduce their immediate and long-term vulnerabilities to events which threaten their economic and socio-political existence”-- Anderson and Woodrow. This view of development expresses succinctly the local and community aspirations in participation in disaster mitigation and risk reduction.

What are basic elements and features of CBDM and CBDMit?

The following basic elements and features of CBDM apply as well to the community-based approaches to mitigation:

- *people's participation* - community members are the main actors and propellers; they also directly share in the benefits of disaster risk reduction and development.
- *priority for the most vulnerable groups, families, and people in the community* – in the urban areas the vulnerable sectors are generally the urban poor and informal sector while in the rural areas, these are the subsistence farmers, fisherfolk and indigenous people; also vulnerable are the elderly, the differently abled, children and women (because of their care giving and social function roles)
- *risk reduction measures are community-specific* and are identified after an analysis of the community's disaster risk (hazards, vulnerabilities and capacities and perceptions of disaster risk)
- *existing capacities and coping mechanisms are recognized* - CBDMit builds upon and strengthens existing capacities and coping strategies
- *the aim is to reduce vulnerabilities by strengthening capacities; the goal is building disaster resilient communities*
- *links disaster risk reduction with development* - addresses vulnerable conditions and causes of vulnerabilities
- *outsiders have supporting and facilitating role*

Closely related to the elements and features cited above are the principles of CBDM and CBDMit activities and programs. These also serve as overall targets to work for and parameters/indicators to keep track of.

- *participatory process and content*: involvement of community members, particularly the most vulnerable sectors and groups in the whole process of risk assessment, identification of mitigation & preparedness measures, decision making, implementation; the community directly benefits from the risk reduction and development process
- *responsive*: based on the community's felt and urgent needs; considers the community's perception and prioritization of disaster risks and risk reduction measures so the community can claim ownership
- *integrated*: pre-, during and post-disaster measures are planned and implemented as necessary by the community; there is linkage of the community with other communities, organizations and government units/agencies at various levels especially for vulnerabilities which the local community can not address by itself
- *proactive*: stress on pre-disaster measures of prevention, mitigation and preparedness
- *comprehensive*: structural (hard, physical) and non-structural (soft, health, education, livelihood, organization, advocacy, etc) mitigation measures are undertaken; short-, medium-term and long-term measures to address vulnerabilities
- *multi-sectoral and multi-disciplinary*: considers roles and participation of all stakeholders in the community; combines indigenous/local knowledge and resources with science and technology and support from outsiders; addresses concerns of various stakeholders while upholding the basic interest of the most vulnerable sectors and groups
- *empowering*: people's options and capacities are increased; more access to and control of resources and basic social services through concerted action; more meaningful participation in

- decision making which affects their lives; more control over the natural and physical environment; participation in disaster mitigation and risk reduction develops the confidence of community members to participate in other development endeavors
- *developmental*: contributes to addressing and reducing the complex relation of conditions, factors and processes of vulnerabilities present in society

Box 4. Applying the Features of CDRN's CBDM in the Philippines to CBDMit (Heijmans & Victoria, 2001)

The Philippine Disaster Management Forum emerged from the Reflection Workshop on Community Based Disaster Management held in the Philippines in February 2002 through the auspices of the PDR-SEA program. It is composed of organizations and individuals implementing, supporting and advocating for CBDM. One of its members, the Citizens Disaster Response Center/Network, is recognized as a key organization which has implemented CBDM/CBDMit since 1984. The features of its citizenry-based development-oriented disaster response has found applications in many CBDM programs:

- The goal is to reduce people's vulnerability by increasing their capacities to prepare for, to cope with and to mitigate the adverse effects of disasters. Aware and organized communities can pressure government to implement policies and programs recognizing people's needs and interests and promoting a safer environment.
- People affected by disasters are active actors in rebuilding their life and livelihood. People's existing capacities are recognized and further strengthened.
- It addresses roots of people's vulnerabilities and contributes to transforming or removing structures generating inequity and underdevelopment.
- People's participation is essential in all phases of disaster management and contributes to building their capacities. Assessment of disaster threat situations is a continuous process before, during and after disaster events and involves community members with consideration of class, gender, age, culture, location, etc.
- Premium on building organizational capacity of most-vulnerable communities through formation of grassroots disaster response organizations
- The less vulnerable sectors are mobilized into a partnership with the vulnerable sectors in disaster management and development work

CDRC/N's mitigation measures are mostly non-structural in nature such as community organizing, food security nutrition improvement public awareness and advocacy..

Sustainability is a function of the convergence of the various elements and parameters above and the presence of an organizational mechanism, the Disaster Management Committee (DMC) or grassroots disaster response organization to see the risk reduction process through.. Replication follows from immediate results and benefits and success stories which show and tell that CBDM works!

Who Initiates? Who Sustains?

Since many disaster management agencies are by now influenced by the shift in paradigms to the disaster risk management framework, they usually initiate the CBDMit process with community project partners. On the other end, growing public awareness of disaster risks and the gains achieved in the CBDM/CBDMit approaches have spurred communities to seek out other communities and/or NGOs to assist them.

Where the initiative comes from is not so important. What matters is that after initiating the process, the community participates in the study of their disaster risks, action planning and decision making on mitigation and preparedness solutions and in the implementation stage. Community participation can be sustained if the risk reduction project responds to their immediate needs and they are involved in the

study and decision process to identify relevant, realistic and do-able mitigation and preparedness solutions. Relevance and community participation then create ownership, and with even small successes achieved, sustainability of the CBDMit process can be ensured.

Box 5. Ward 34 Disaster Management Committee leads and sustains risk reduction activities (AUDMP, 2001)

Nepal has a long history of destructive earthquakes. The Kathmandu Valley Risk Management Project (KVERMP) has been implemented since 1997 under AUDMP in partnership with the National Society for Earthquake Technology of Nepal (NSET).

Public awareness efforts of NSET resulted in increased media coverage on the vulnerability of Kathmandu Valley to a big quake in the future. Some residents of Ward 34 had read an article in the newspaper on a community disaster management training workshop at Ward 10 of Lalitpur Sub-Metropolitan City organized jointly by 2 Christian charity organizations and NSET. Subsequently, a 6-day CBDM training workshop was held on July 29 – Aug. 2, 1998 for Ward 34. Local residents, CBOs, NGOs as well as government officials at the municipal, district and national levels attended.

After the CBDM training, the Ward 34 DMC was established and continued risk reduction activities with the community. Household survey on vulnerability and further training for ward residents and students were conducted. These activities helped identify community member's needs and concerns, and gained their support and trust on DMC strategies and activities. Together with CBO volunteers, the DMC also prepared hazard maps for flood, fire and environmental degradation.

A DM Fund for emergency response set up to receive voluntary donations from the local residents has amounted to NT50,000 or US\$653 as of January 2002. Aside from the series of CBDM training workshops, the DMC conducted further training and provided technical assistance in safe construction and retrofitting in coordination with NSET for Ward 34 residents. They have also been asked by other wards and civic organizations to advice on hazard assessment and establishment of DMCs, conduct CBDM training workshops and give technical inputs in building construction.

The grassroots disaster management/response organizations (community based organizations, groups or volunteers) are the key to mobilize the community at large. These groups are the focal point for local leadership and responsibility in CBDM. Examples of these local disaster management corps are the Red Cross Volunteers (RCVs) and DMCs in the 23 villages by the CBDMFP Project in Cambodia; the DMCs in Ward 34 and Nagbahalal in the KVERMP Project in Nepal; CBOs in the communities along the Dolosbage Nalawalapitiya Road and Soysakele River Bank in the Nawalapitiya Urban Council in the Sri Lanka Multi-Hazard Urban Disaster Mitigation Project. (SLMUDMP)

Within these grassroots disaster management organizations/committees, the importance of grassroots leaders who would take pains to educate and motivate the members and community people to prepare for and mitigate disasters has to be underscored. These leaders work with the grassroots disaster management organizations to open up the minds of the community people to develop more creative and appropriate ways to reduce disaster risk.

Enabling Communities to Participate – Capacity Building and the Role of NGOs

Experiences of AUDMP in the participatory approach to disaster mitigation affirm the facilitative, supporting and catalytic role NGOs in the community risk reduction process. Communities are no longer just recipients/beneficiaries but are now partners in the disaster risk reduction and local development process. Clearly, the ownership is the communities' and NGOs should plan for project turn-over of the project as soon as possible. Capacity building and public awareness activities enables communities to increase participation and eventually, to sustain even on their own the CBDMit and preparedness activities.

Capacity building involves various training workshops with community members on the why, what and how of CBDM/Mit; the facilitation of the formation and organizational development of CBDMit volunteers, DMCs, and CBOs to include leadership training, study tours to other communities engaged in CBDM and government agencies; technical assistance and support in fund-raising; facilitation of contacts and networking to involve a wide range of stakeholders in the CBDMit process. Within this capacity building process, information made available to the people is an important means to empower communities.

Box 6. Capacity Building and Public Awareness in BUDMP Strengthens Community Participation (ISDR, 2001 & BUDMP, 2002)

Bangladesh is one of the most disaster-prone countries in the world. Cyclone, flood, storm surge, tornado, drought and famine strike with regularity and intensity. To reduce the vulnerability of flood prone communities in the municipalities of Tongi and Gaibandha, CARE-Bangladesh has implemented the Bangladesh Urban Disaster Mitigation Project (BUDMP) since July 2000. Its community based approach involved capacity building of local volunteers who later conducted the baseline surveys and vulnerability assessments with the community members. Five modules in Bengali were developed on Basic Disaster Management, Municipal Disaster Management Committee (MDMC), Volunteers Training including PRA tools, Training of Trainers and Participatory Monitoring and Evaluation. A total of 467 members of the Scheme Implementation Committee in the 2 municipalities were trained. Ideas sharing workshops and cross visits were organized. Some 255 civil society representatives received the training on Role of Civil Societies in Urban Disaster Management while 910 students and 55 teachers participated in the Orientation on Do's and Don'ts During Urban Flood.

Through this process, community groups recognized the importance of community participation and disaster mitigation. The results of the assessments formed the basis for the identification and prioritization of structural mitigation measures at the household and community level such as the raising of homesteads, tube wells, roads, community place, and cluster village raising as well as construction of new dams, drainage, and roads, distribution of new tube wells and installation of new latrines above flood level.

Collaboration with a range of stakeholders, including partner NGOs in the 2 municipalities and the Disaster Management Bureau of the Government of Bangladesh was undertaken to institutionalize and sustain disaster mitigation. One of the initial steps of BUMDP was to reactivate the Municipal Disaster Management Committees in the 2 municipalities. The MDMC members participated in the BUDMP training course, reviewed and approved the community Disaster Mitigation and Preparedness Action Plans.

BUDMP has emphasized the importance of awareness raising among community groups and other sectors in placing CBDM on the political agenda. Posters, billboards in vulnerable wards, signboard on rickshaws newsletters, bulletin, actual demonstration, cultural events, ideas sharing workshop, cross visits are among the various forms and venues used. The commemoration activities for the National Disaster Preparedness Day last March 29, 2001 was jointly organized by the Gaibandha and Tongi Municipality Disaster Management Committees, CARE Bangladesh and its partner NGOs. There were rallies and discussion forums followed by a series of performances under the theme of community based flood mitigation by community groups, volunteers and BUDMP personnel. In Gaibandha, an art competition to depict the flood situation of Bangladesh was organized for primary and secondary schools.

Aside from raising awareness on hazard exposure and its consequences and the appropriate preparedness and mitigation measures to undertake, public awareness focuses on information dissemination, gaining consensus, building interest and commitment to the actual community risk reduction assessment, action planning and implementation process at its various stages. From the experience of AUDMP, these can be successfully undertaken by utilizing the opportunities of traditional and special community events and gatherings.

The Government's Role in CBDMit

While NGOs can and should plan for soonest phase out in involvement in project activities, the government's role is integral in CBDMit. Government is a facilitator, , enabler, a partner or at the other end of the pole, a cause of vulnerability to address in CBDMit.

The decentralization of power and responsibility to provide basic development services from the national center to lower government units has augured well for CBDM/CBDMit to be integrated into the formal disaster management, development planning and urban management system. Although largely dependent on the local official's political will and development orientation, AUDMP experiences show that sustainable CBDMit can be achieved with local government support. When CBDMit is incorporated into the agenda, plans and programs of local government units, institutionalization and mainstreaming can be facilitated.

Box 7. Nawalapitiya Urban Council Facilitates CBDMit in 2 Landslide-prone Communities (ADPC, 2001; SLUMDMP, 2002)

Although Sri Lanka suffers most from the hazard of civil strife, natural hazards are also significant. The Sri Lanka Urban Multi-hazard Disaster Mitigation Project (SLUMDMP) has been implemented by AUDMP with the Centre for Housing Planning and Building (CHPB as the lead institution), the National Building Research Organization (NBRO) and the Urban Development Authority since October 1997 to reduce the vulnerability of Sri Lankan cities to landslide, flood, erosion, subsidence, pollution, and contamination of water supplies.

Focused on developing tools and skills to incorporate into urban development planning, some of the activities of the demonstration project in Ratnapura were replicated in Kandy and Nawalapitiya. After the completion of the Ratnapura demonstration project in February 2000, replication project activities have commenced and are now in progress in Colombo and cities along the Kelani River.

The Nawalapitiya Urban Council is located within Kandy District in the Central Province. Following the SLUMDMP risk assessment and action planning process to formulate a new Urban Development Plan in Nawalapitiya in 1998 and 1999, the city has decided to undertake the community based approach to mitigate landslide/rockfall hazard in search of innovative solutions despite budgetary constraints. The Chairman of the Nawalapitiya Urban Council facilitated the formation of community-based organizations for collective solutions for immediate local problems in 2 landslide-prone areas within the city.

Communities along the Dolosbage Nawalapitiya Road and Soysakele River Bank now have identified the hazards and vulnerabilities associated with their locations and have formulated action plans to mitigate adverse impacts. Women and senior citizens actively participate in decision-making. The communities' openness for supports from the outside, particularly the Nawalapitiya Urban Council, may provide opportunities to improve livelihood options through skills development programs and community credit and savings project to pool funds to meet future needs. Apart from the urban council, the Intermediate Technology Development Group (ITDG)-South Asia and NBRO are providing funding for this project. Mitigation measures include development of community forest, community forest fire break and construction of community drainage system.

Representatives from the Nawalapitiya Urban Council learned and shared their experiences in CBDM during the initial run of the CBDM course in Sri Lanka hosted by CHBP in September 2001 with support from the ITDG- South Asia and Duryog Nivaran. The SLUMDMP has helped to build a sense of awareness, preparedness, pro-activeness not among partner communities but also among the councilors and officials of the Nawalapitiya Urban Council towards management and mitigation of natural disasters.

In the SLUMDMP, the Nawalapitiya Urban Council in Kandy has taken on the participatory approach to have innovative solutions to landslide vulnerability mitigation in the face of financial constraints. Similar positive roles of local governments have been noted in the KVERMP where the Mayor of Lalitpur sub-Metropolitan City committed to conduct disaster awareness programs at the community level for all 22 wards of the city and introduce a two-step building permit system with mid-construction phase technical inspection to ensure safe construction techniques. In BUDMP, the reactivated Municipal Disaster Management Committees of the municipalities of Tongi and Gaibandha have reviewed the community mitigation action plans and have steered the celebration of National Disaster Preparedness Day with the community groups and NGOs.

At the national level, public awareness activities of KVERMP in Nepal has been greatly increased through the government designation of an Earthquake Safety Day at the request of NSET. In the first year of its celebration, 15 January 1999, NSET has organized with the government a national essay competition, a Kathmandu Valley-wide art competition of school children with Prime Minister giving away awards to winning children, lecture programs on earthquake risk management in other countries, an earthquake awareness march along streets of the city core of Kathmandu, and a 3-day exhibition..

Appropriate Methods to Enhance Community Participation

The CBDM/CBDMit process and content should lead to more partnerships, mobilization and self-reliance, and control and access to power, resources, basic services and decision making to solve community problems. The BUDMP team aptly says, “it is power sharing and voice gaining process of the community”.

The AUDMP projects subscribe to the higher levels of participation. Even as an evaluation of how really participatory is community participation in the CBDMit projects has not been made, the models for community participation should push AUDMP partners, NGOs, government units and supporters of the local risk reduction process to reflect, measure degree of community participation and improve their framework, styles and methods of relating with the community.

The CBDMP has cited a specific case where such failure to involve the community in decision making and control over implementation resulted in conflicting needs and expectations between the NGO and the community. Consequently, people’s livelihood was negatively impacted (soil used for the elevation of the road was taken from nearby rice fields and large trucks used to transport soil blocked the route) and trust in outsiders was reduced.

At the community level, the grassroots disaster response organization/ DMCs/volunteers should also take note of these models for community participation in relating with the other community members. These matters are also part of the capacity building and organizational development/strengthening of the local CBDM organization. The CBFMP has cited several cases where inadequate involvement of community members by the DMCs in decision making has resulted in problems in project development and design, mobilization of funds and labor for the project, and delays in timetable.

Participatory tools and methods in risk assessment and action planning helps to enhance community participation. Through these, differing perceptions of risk and solutions are surfaced by different sectors and groups within the community and other stakeholders and interest groups.

Participatory risk assessment and action planning tools have been adapted from participatory rural appraisal and participatory learning and action. Tools for hazard assessment include - hazard assessment matrix on the nature and behavior of hazards, hazard map, seasonal calendar, historical profile. Tools for vulnerability assessment include the vulnerability map (hazard map showing elements at risk), transect, seasonal calendar, historical profile, time line, institutional and social network analysis

(Venn diagram), problem tree, disaster crunch model, focus group discussion. For capacity assessment, in addition to the tools used in vulnerability assessment, resource mapping and gendered benefit analysis can be used. For people's perception of risk, ranking and scoring helps in the understanding of priorities. For action planning, the problem solution tree, visioning exercise and role plays which can stimulate discussion of the pros and cons of various alternatives can be used.

In AUDMP, the use of hazard and risk maps, together with the baseline survey encouraged participatory identification of problems and action planning in the communities. The risk map shows the geography (location of rivers and mountains), settlements and infrastructure, key community facilities and identifies the location of high-risk areas, resources (wells, boats, etc.) and safe places for evacuation. Although these maps are simple and need more technical improvement for designing structural mitigation works, they have been found to be useful for identifying problems and raising awareness. Some organizations and communities refer to this as the hazard and resource map.

While the importance of participatory tools, particularly community mapping exercises, cannot be denied, CBFMP also cautions that explanation to the community on the use various uses of tools, information to be gathered and maps should be made. While some basic information are already obvious to the community, outsiders may need these to be able to support the community in its risk reduction efforts. Aside from its internal processes, the community can use the community hazard and resource maps to generate outside support.

Participatory methods have been used even with low literacy groups with the use of a lot of visualization such as drawings, tables and locally available materials such as seeds, leaves, rocks. The Philippine National Red Cross in its Integrated Community Planning Program has combined higher technology with the participatory approach with the use of GPS for mapping. The community members do the initial hazard and resource map using the GPS equipment and then the digitized hazard and resource maps are produced in the PNRC national office. During the Forum on Good Practices in CBDM held by the Philippine Disaster Management Forum (PDMF) last July 26, 2002 to contribute to the Disaster Consciousness Month activities, it was noted that technology helps, but it can also destroy so the guideline is using methods appropriate to the needs and conditions in the communities. While use of technology may be appropriate, cost also becomes a consideration for its wider application in CBDMit.

Box 8: Local communities find combination of technology with participatory methods useful (PNRC, 2002)

The Philippine National Red Cross (PNRC) is a PDR-SEA partner and member of the PDMF. Well known for its blood banking and emergency response programs, PNRC has started to undertake the proactive and community based approach in disaster management starting 1994 with its Integrated Community Disaster Planning Program (ICDPP).

Its approach involves the formation of the Barangay (village) Disaster Action Team (BDAT) whose members are elected by the community assembly from among sectoral organizations. Usually, the Barangay Captain (village head) is also the Chair of the BDAT. The ICDPP provides intensive training for the BDAT who later on conduct the risk assessment and risk reduction planning with the community members. In its preparation of hazard and resource maps, the ICDPP uses GPS together with other participatory tools. The BDAT leads the community in preparing the maps and 3-dimensional models but the digitized maps are finalized in the PNRC central office. The digitized maps are the technical outputs of the ICDPP for turn-over to the municipal government to influence and improve land use planning. The BDAT members also use a lot of popular public awareness materials such as posters and comics on disaster preparedness for the process of problem identification and ranking solutions.

In Barangay Maasin of the town of Quezon in the island province of Palawan, the BDAT and community members have constructed a hanging bridge and health center and protected the mangroves areas from being converted into commercial fishponds. The community has provided the labor while Red Cross has provided the materials for the construction projects. Technical help in engineering design was provided by the municipal government. Since the project has been identified by the community as being urgent and they have worked so hard to see the construction projects to completion, they continue to manage and sustain the project. The hanging bridge took 5 months to construct and is now used during flood to have access to the village center and for children to continue schooling. The village health center has been nominated in provincial and regional competitions for excellence in service.

Replication and Sustainability

Replication follows from immediate results/benefits and success stories which show and tell that CBDMit works. Within and beyond the project areas, the indication that local initiatives can be sustained is the replication of the mitigation solutions. Initial and even small successes provide the springboard to sustain disaster preparedness and mitigation, even without a project with outside funding. Increased confidence and trust in concerted action can lead the community to address bigger problems.

There are many examples of replication in the CBFMP in Cambodia and the KVERMP in Nepal. Villagers in Peam Mean Chhey Commune, Prey Veng built 2 more bridges after constructing their first under the CBFMP. In Prek Andong Village of Kampong Cham, the success of the road elevation project led to many other projects with the prospect of support from the Province. Angkor Ban Village has taken on the CBFMP approach of Koh Ta Ngor II in also raising part of their road. After Sang Lech Village in Kampong Cham raised their road and constructed a berm to protect the road during the monsoon season, villagers in Khdey organized themselves to construct a berm in their part of the village along the same road.

Box 9: Replications of community initiatives in the School Earthquake Safety Project of KVERMP (AUDMP, 2002)

Rapid population growth, unplanned development, constructions that do not meet the building code requirements and a general lack of awareness about earthquake safety make Kathmandu Valley increasingly vulnerable to earthquakes. The School Earthquake Safety Program (SESP) component of the Kathmandu Valley Risk Management Project (KVERMP) involved participatory evaluation of the vulnerability of the schools, design of earthquake preparedness curriculum, and production of proposals to retrofit of the most at-risk buildings.

SESP incorporated community participation in the conduct of vulnerability assessment of 643 public schools in the Kathmandu Valley. 15 seminars were held with school headmasters (60% attendance was achieved) to teach them about earthquake risk, about the necessity of planning for earthquakes in their schools, and how to fill out the assessment survey. Criteria used to select the most at-risk buildings to pilot structural interventions also focused on community participation- most at-risk buildings, community showed good solidarity and willingness to contribute in kind and cash, the masons identified for the school retrofitting resided within the vicinity of the community.

One site was retrofitted in 1999 and 4 others in 2000-2001. The community became so involved in the project such that the mason training became a family affair held in the evenings; all labor was provided by the local community, funds and acquisition of materials for the SESP were generated by the communities themselves with support from NSET, and even school children helped carrying bamboo and sticks.

The project had such impact such that:

- homeowners within and outside the community were influenced to construct their houses using seismic-resistant features (2 houses each in Nangkhal and Alapot)
- neighboring community groups scheduled observation sessions of the school retrofitting process
- trained masons in Kathmandu Valley were sought to help in the earthquake-resistant reconstruction in Patanka Village in Gujjarat
- Gorkha District of Prithvinagaw Municipality in western Nepal has requested technical assistance in earthquake mitigation from NSET to provide technical support on reconstruction after damages were experience in the July 16,2001 earthquake in the western and central Nepal.

In the KVERMP in Nepal, Ward 34 has been requested by other wards to advice on hazard assessment and establishment of DMCs. They have also received requests to conduct CBDM training workshops (e.g. to the Lion's Club of Kathmandu Kingdom) and give technical inputs in building construction (e.g. King Come Sports Building). A DMC has been organized in Nagbahal, Ward 16, a traditional, high caste Newaral urban settlement in Lalitpur Sub-Municipality for public awareness and earthquake disaster management planning activities. The Mayor of Lalitpur Sub-Metropolitan City has also committed to conduct disaster awareness programs at the community level for all the 22 wards of the city and introduce a building permit system with a mid-construction phase technical inspection to ensure safe construction techniques.

3. CBDMit Definitely Advantageous Despite Complexities to Face

“As we completed our project, our community became closer. This is something I have not seen in a long time.” - Mr. Peng Eourn in a village covered by the CBDMP

Ownership Leads to Better Management and Sustainability

The results of the community based approaches to disaster mitigation are vulnerability reduction solutions which are more relevant and in tune with what people need and want. Because community members have been involved in the whole process of problem identification to ranking/prioritizing solutions, they have ownership of the project. Popular and appropriate methods and channels in public awareness and information dissemination ensure that community members are included in the information and decision making loop. Schemes for project implementation take into account preferences of the community, example when the community prefers the construction of safe areas per family near their homes rather than a collective shelter. Since they have ownership of the project and its results, they will manage, maintain and sustain it better. Community participation builds their confidence, skills and ability to cooperate. This enables them to tackle other challenges and bigger problems both in the individual, household and community level.

Box 10. Community Involvement in Earthquake Risk Reduction in Patanka Village (SEEDS, 2002)

“The experience in grassroots level mitigation have been sweet and sour! There's a lot we have learned which help us improve the scope and quality of our subsequent initiatives”. - Manu Gupta, Project Officer of SEEDS

Patanka Village was among the worst hit but least served villages following the Gujarat earthquake on January 26, 2001. Applying lessons from previous earthquake rehabilitation projects, SEEDS together with like-minded organizations decided to undertake a model village rehabilitation and mitigation project in Patanka. At the onset, a community workshop was convened for ideas exchange on how the community and outside organizations could work together and demonstration through construction of a prototype on earthquake resistant technology.

Intensive capacity building exercises strengthened people's knowledge about the risks they faced. Shake table demonstration tests helped in building their confidence in the safety of earthquake resistant structures. Community leaders were involved in the risk assessments. As part of the training of the local masons, trained masons from Nepal from the KVERMP stayed for 3 months in Patanka.

Subsequently, all construction was finally taken up by the house owners themselves. The community had a tremendous sense of ownership of the project. Because all family members were involved, all houses were reconstructed in record time. Cost of the house is half when compared to other rehabilitation interventions made when the external agency did everything, leaving very little scope for the villagers.

The evaluation of the CBFMP revealed that almost every villager took pride in what had been achieved in his or her community. Some villagers also expressed sentiments that the project had served to build community solidarity and bring people together. Experiences from the implementation of SLUMDMP also demonstrate the contribution of the community based mitigation activities in rekindling traditional support mechanisms in the community. The community disaster response organizations in the Philippines, like the grassroots disaster response organizations/committees of CDRC/N and the BDAT of the PNRC taps into and strengthens the traditional “bayanihan” or community spirit of mutual assistance in mobilizing communities in disaster mitigation and preparedness. While social alienation has been associated with urban life, the community based approaches to disaster mitigation has strengthened solidarity among community members.

A Wide Array of Relevant and Innovative Mitigation Solutions

A wide range of local innovative and do-able solutions to address and reduce local vulnerabilities results from the community based approaches in disaster mitigation by trusting and building capacity in identifying problems and risk assessment. Aside from public awareness, formation of the grassroots disaster volunteers organization and capacity building of the community and disaster management volunteers which are non-structural in nature, most of the solutions identified in the AUDMP project are structural in nature.

For the CBFMP, mitigation solutions include water control structures necessary for livelihood - repairing dams and dikes; cleaning out irrigation ditches, culverts and water gates; construction berms to protect the road during monsoon season; access - raising road levels, constructing small bridges; preventing contamination of drinking water - construction of higher well caps; building of safe areas for individual families near their homes; evacuation. For KVERMP, simplified earthquake scenario and risk management action plan; vulnerability assessment of schools in Kathmandu Valley, retrofitting of school buildings, curriculum for training of masons, guidelines for community disaster preparedness and planning for teachers, students and parents; Earthquake Safety Day. SEEDS has undertaken reconstruction after the 2000 Gujarat earthquake in the context of mitigation through retrofitting. The Nawalapitiya Urban Council of the SLUMDMP has undertaken development of community forest, community forest fire break and construction of community drainage system in 2 communities where skills development for diversified livelihood options and credit and savings programs are also being implemented by an NGO.

The BUDMP has successfully utilized various forms and venues of awareness raising among community groups and other sectors. The project has used the National Disaster Preparedness Day commemoration for rallies and discussion forums, series of performances under the theme of community based flood mitigation by community groups, volunteers and BUDMP personnel, an art competition to depict the flood situation for primary and secondary schools. Structural mitigation solutions include the raising of individual homesteads, tube wells, community place, cluster village and roads above flood level; construction of new drains, box culvert, U drain, six pillar houses above flood level; installation of new latrines above flood level.

PDR-SEA projects also include projects which improve the quality of the environment - reforestation, and protection of mangroves.

Other examples of non-structural mitigation solutions coming from communities in South Asia and the Philippines includes savings and credit programs, primary health care systems, food security program including sustainable agriculture, and advocacy to pressure government for more responsive policies.

Cascading Effects in Improved Safety, Livelihood and Well-being

The AUDMP experience demonstrates the cascading effects which even structural measures for physical safety have on the household and community social and economic life. While identified micro-projects in the CBFMP reduced the communities' physical vulnerability to flood, they also improved livelihood in terms of enhanced safety, ease of access and economic benefits. For example, the construction of an emergency evacuation route enhanced the safety of villagers and their livestock. Raising of roads and construction of bridges provided reliable transportation routed and increased accessibility, allowing students to travel to school and traders to transport their agricultural produce to local markets. New, enlarged or rebuilt culverts increased the community's control over water flow, enabling them to increase their rice crop yield, and for some communities, even harvest a second rice crop.

In the KVERMP, masons were able to increase their fees after the training for the masons which accompanied the retrofitting of at-risk buildings for improved safety. In Kavresthali, the project has opened a new livelihood option of making "stonecretes" when the fields are fallow. The villagers found that they could easily mold the dismantles dismantled stones from the schools to be reconstructed into hollow blocks which were even stronger than bricks.

Measuring the Impact of Community Based Disaster Mitigation

Foremost in the concern for impact is to have increased impact of community based disaster mitigation and how to bring this about.

The next concern is how to measure impact. In urban management, general impact indicators revolve around changes in the following dimensions: social and economic well-being of local population, the physical configuration and quality of the environment; and, local institutional/organizational capacity. A framework for the measurement of impact of CBDMit and the risk reduction process is increased in capacities and reduced vulnerabilities.

The BUDMP project has noted the use of participatory evaluation. During the community risk assessment baseline data for various areas (physical/material, social/organizational; motivational/attitudinal vulnerabilities) are gathered and can be used in the periodic monitoring of the local situation. The same participatory risk assessment tools and exercises can be used in the monitoring and evaluation process.

But aside from what can be measured, what do the people have to say? What are their perceived gains from the community risk reduction process?

Complexities to Face

Advantages far outweigh the difficulties to hurdle in undertaking the participatory approach to disaster mitigation. The experiences in implementing the community based approaches to disaster mitigation highlight the following complexities:

- recognizing and considering the interests (which in other instances translates into demands) of the various stakeholders in the community risk reduction process while ensuring the interests of vulnerable sectors/groups. Synchronizing efforts and strategies of the multi-stakeholders in the risk reduction process.
- the challenge itself and efforts invested to mobilize communities especially that community members do not get paid for their labor. This highlights the need for more public awareness and capability building activities to overcome barriers such as ignorance, fatalism, and pessimism.
- community organizing and mobilizing takes time - process of awareness raising, capacity building, strengthening grassroots disaster management organizations, community meetings entails time; activities have consideration of proper timing with production activities, social events, etc. The need for more volunteers and manpower to undertake and sustain community mobilization for risk reduction.

- continued development of tools, instruments, applicable technologies, mechanisms to put in place mitigation in both urban and rural communities.
- big funding requirements especially for materials used in structural measures and various schemes to mobilize resources
- donor (external and internal) concern for effectiveness and efficiency and the learning curve in building the culture of safety while funding commitments for mitigation projects are time-bound
- community participation in evaluation and measurement of the impact of the risk reduction process
- When the political environment is not enabling, non-structural mitigation such as lobby and advocacy work can have more confrontational approaches and forms than consensus building

4. Summary of Lessons, Practical Tips/Considerations and Issues Ahead

At AUDMP's seventh year of implementation of CBDMit, many lessons and practical tips/considerations can be drawn. Lessons from the implementation of the CBDMit by other initiatives have also been included into AUDMP's learning loop.

Lessons Learned

Based on our current good/best practices, the following benefits of the Community Based Approaches to Disaster Mitigation have been noted:

1. Community process and participation builds confidence, pride that they are able to make a difference and capabilities to pursue disaster mitigation and preparedness and bigger development responsibilities at the local level. This leads to empowerment.
2. Community involvement in risk assessment and risk reduction planning leads to ownership, commitment and individual and concerted actions in disaster mitigation, including resource mobilization;
3. Trusting and supporting the capacity building process results in a wide range of appropriate and do-able mitigation solutions;
4. Community Based Disaster Mitigation is cost effective, self-help and sustainable even if it is time consuming.

These benefits were achieved because of the following key success factors:

1. Applying best practice methodologies of community development to community based disaster mitigation. Significant among these are the bottom-up approach in development planning although the over-all results of our efforts in CBDMit shows the necessity and effectiveness of the meeting of the top-down with the bottom-up approaches.
2. Tapping of traditional organizational structures, mechanisms and formal and informal community leaders,
3. Capability building activities with the community disaster committees and volunteers,
4. Various forms and channels of public awareness, sensitizing and education using local dialects, values and culture,
5. Multi-stakeholder partnerships with clearly defined but complementary roles of the communities, community based organizations, community leaders, local government units, higher level government, NGOs, less vulnerable groups, donors and other groups. The community is clearly the propeller and main actor to sustain CBDMit, NGOs have facilitating and catalytic role while government has the role to enable and institutionalize

Challenges and Issues Ahead

Taking stock of where we are in CBDMit and the lessons we have learned, what next? After this Lessons Learned Workshop, where do we want to go in community-based approaches in disaster mitigation?

Presenters in the session on Community Based Approaches to Disaster Mitigation who represent the local government, the community and assisting NGOs are one in calling for continued and sustained involvement of and support to communities in developing mitigation solutions for sustainable disaster risk reduction and development.

How do we get there? We must trust communities and never underestimate local initiatives. We must commit and have political will. We must act, act and persist in our actions in building a culture of safety and ensuring development for all.

We take inspiration in turning all the possibilities into reality from what some community members and local government officials have to say about the relevance and gains of community based disaster preparedness and mitigation:

- “When disasters occur it is our community that is affected first. We realize it is important to be prepared because there is a gap between the disaster and the time external assistance arrives” - Mr. Bikash R. Dhakhwa of Ward 34 in the KVERMP in Nepal
- “Key driving force for the Disaster Management Committee are enthusiastic members/volunteers/advisors and the community people” - Mr. Murari Binod Pokhrel, Member-Secretary of Ward 34., Kathmandu Valley Metropolitan City in the KVERMP in Nepal
- “Community involvement and transparency are key in any initiatives.” - Mr. Raja Ram Suwal, school principal in the School Earthquake Safety Program in the KVERMP in Nepal
- “The greatest achievement of all is that the community has been able to realize Pro-activeness has more results than Reaction and Welfare.” - Mr. Gemunu Sumathipala, Ex-Chairman and Councilor of the Nawalapitiya Urban Council of SLUMDMP in Sri Lanka
- “As we completed our project, our community became closer. This is something I have not seen in a long time.” - Mr. Peng Eourn, a villager in the CBFMP in Cambodia

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CAMBODIAN COMMUNITY BASED FLOOD MITIGATION AND PREPAREDNESS PROJECT

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ABSTRACT

The Cambodian Community Based Flood Mitigation and Preparedness Project (CBFMP) was launched in September 1998 under the Asian Disaster Mitigation Program. It was jointly implemented by the Cambodian Red Cross, Pact and The International Federation of Red Cross and Red Crescent Societies.

The objective of the program was to establish sustainable, replicable non-government mechanisms for disaster mitigation and preparedness with a focus on flooding. This was accomplished through:

- empowering communities to develop solutions to flooding;
- providing communities with a higher degree of security from natural disasters;
- training local village volunteers in Disaster Preparedness concepts and techniques;
- establishing Village Disaster Committees to implement participatory processes for identifying solutions to reduce impact of natural hazards to their communities; and,
- mobilizing funds to create or refurbish disaster preparedness infrastructure.

Under the demonstration phase of the project, Red Cross volunteers were seen as the best vehicle to assist in implementing the project at the local level with target communities given their broad based network throughout the country. The Red Cross volunteers were trained in disaster preparedness techniques and supported local communities living along the country's two major watersheds of the Mekong River and Tonle Sap. The project was implemented in the three highly flood-prone provinces of Kompong Cham, Prey Veng and Kandal.

The project had the unique opportunity to measure the impact and gather lessons learned from implementation before and after one of the area's worst floods in four to seven decades that occurred in 2000. The three target provinces made up 48.9% of the people in the country affected by the flood and 58.4% of the deaths.

The major lessons learned from the project included:

- involve local level communities in developing solutions to flood preparedness;
- the use of community development best practice methodologies can enhance the success of community-based flood mitigation and preparedness projects;
- use traditional organizational structures in communities to assist in flood mitigation measures;
- ensure that community level project implementers are well trained in flood preparedness techniques and empowered to mobilize community members in developing solutions;
- where flood preparedness demands are greater than financial resources available, it is essential to train and mobilize local communities to seek for funding outside the community; and,
- it is important to develop relationships between communities, government national disaster management departments and donors focusing on disaster preparedness to instill sustainability measures for continued activity support.
- Distinguish between activities that are useful for community organizers and the community themselves

The demonstration showed that community involvement in flood preparedness is an essential component to flood mitigation. By involving community members it not only increases the likelihood of increased action by communities to help mitigate flood disaster but also brings communities together to address flood issues cooperatively. In the event of a flood, cooperative actions among communities can lead to a great probability of decreased damage, deaths and economic devastation in the affected communities.

Introduction and Background

The primary natural disasters in Cambodia are floods, droughts, and fires. Cambodia is particularly susceptible to flooding along two major watersheds, the Mekong River and Tonle Sap. The Mekong River bisects the eastern third of the country from north to south and annually causes the Tonle Sap River to reverse course, flooding the Tonle Sap communities and affecting the far northwestern regions of the country. Farmers depend on the surplus waters for rice cultivation and secondary crops and have devised extensive water management systems to trap and store the water. But in years of extreme flooding, the high waters can wash away dams, dikes and distribution structures, destroy crops and livestock, damage homes, places of worship, schools, clinics, roads and other community infrastructure plus cause loss of human life.

Cambodia's development challenge stems from the past decades of war and civil strife coupled with a concomitant incidence of poverty that often act as obstacles for people or government preparing for or responding to a disaster. Due to these hindrances, disaster preparedness challenges include:

- a lack of community attention to hazard monitoring, dissemination, preparedness and effective response measures;
- the absence of facilities, equipment and infrastructure that mitigate the impact of hazards;
- a poor understanding of the vulnerability of infrastructure to the effects of hazards;
- a limited understanding of practical and appropriate technologies;
- the absence of a core group of trainers and committed advocates for prevention and preparedness measures;
- inadequate or absent funding resources for disaster prevention and preparedness; and,
- inadequacies of the system for recording damage and post-disaster needs.

The Cambodian Community Based Flood Mitigation and Preparedness (CBFMP) Project was designed to address these challenges at the community level.

1. Floods in Cambodia prior to and during project implementation

Cambodia's chronic annual flooding reached serious levels in 1996. As a result of heavy rains in China and Laos, the Mekong River rose dramatically in mid-September, causing serious floods in six provinces along the river. Generally acknowledged to be the worst floods in 25 years, over 1.3 million of Cambodia's 12 million people were affected and nearly half of these required urgent emergency aid. The 1996 floods affected some 600,000 hectares of crops, 50,000 houses and seriously damaged such infrastructure and critical facilities as schools and other public buildings. The Ministry of Education, Youth and Sports (MOEYS) reported \$2 million damage to schools. The CRC and the National Committee for Disaster Management (NCDM), a cabinet-level institution of the Royal Government of Cambodia (RGC), attempted to cope with and respond to the calamity.

In 1997 there were early floods in Kratie and Kampong Cham while drought affected many provinces causing food shortage to people living in remote areas. Due to the change of water current of the Mekong River, there were landslides along the riverbank in Phnom Penh, Kandal, Kampong Cham and Prey Veng provinces. Typhoon Linda hit the island of Pou-Le-Wei causing destruction of houses along the coast and wreckage to fishing boats in the sea. In 1998 Cambodia experienced drought, with WFP feeding over 1,000,000 people a day.

The floods of the year 2000 were some of the most devastating in recent memory. These floods were characterized by some as the worst in 40 years and by others in 70 years. They were notable for their intensity and duration, starting as early as July (one to two months early) and not subsiding until middle to end of November. The floods resulted in 400 deaths, affected 3.6 million people, a considerable loss of livestock and extensive damage to infrastructure and personal property.

I. The Community Based Flood Mitigation and Preparedness Project

1. Goal and Objective of Project

The goal of the CBFMP project was to help reduce the vulnerability of Cambodian citizens to natural disasters, primarily floods, through the establishment of an integrated, community based disaster preparedness and mitigation system.

The objectives of the CBFMP project were:

- To develop a range of practical, low cost, community based preparedness and mitigation strategies using an integrated community based approach to identify flood related development needs.
- To establish a sustainable institutional framework for identifying and implementing those strategies during and after the demonstration project.
- To identify sustainable sources of funds (international, national and community resources) that support community-based preparedness and mitigation and can be applied at the village level in flood-prone communities.

2. Project Partners Agencies – description, roles and responsibilities

The project was jointly implemented by CRC, Pact and The Federation through a Management Committee chaired by the Federation which coordinated funding and project implementation issues.

CRC - The Cambodian Red Cross was chosen as the implementing partner due to their extensive network of 4,465 Cambodian Red Cross Volunteers (CRCVs) throughout the country. The Cambodian Red Cross (CRC) has traditionally served as an auxiliary to government in disaster management, particularly for relief. Since the reunification of CRC in 1994, the International Federation of Red Cross and Red Crescent Societies (IF) has provided technical and capacity building support to the CRC. In late 1996, with the assistance from the Federation, CRC began a transition from traditional disaster relief activities to the development with the Community Based Disaster Preparedness program (CBDP).

Prior to the project, the CRCVs had received training in Red Cross methodology and techniques mainly centered on Community-Based First Aid (CBFA). This project herald one of the first times when CRCVs would be directly involved in mobilizing communities to create solutions that would mitigate floods in the project area. The CRC managed funds received from Pact to recruit and train volunteers and staff in the community-based disaster preparedness and coordinate the implementation of local demonstration projects.

IFRC - The Federation provided project management support through the assignment of one Disaster Preparedness Delegate (DPD) to work with CRC and other parties in the implementation of the project and provided funding associated with the DPD to strengthen CRC staff capacity.

Pact/Cambodia - Pact was the recipient of grant funding from ADPC to implement the CBFMP. Pact also managed ADPC funds to coordinate the participation and support of local non-governmental organizations (NGOs) in the implementation of community-developed mitigation activities. The primary program was achieved through a sub-grant to the CRC to implement the project through training and supporting CRCVs.

3. Process – for launching the project

Once a strategic plan had been established, there was an orientation on the CBFMP Project for the Provincial Branch Staff of the CRC in Kampong Cham, Kandal and Prey Veng provinces. The Disaster Management Department (DMD) of the CRC was responsible for delivering training in Community Based Disaster Preparedness. To this end, CRC recruited two trainers and two

coordinators and conducted a three-day Training of Trainers for the DMD training team and the Provincial Branch Staff.

In addition, a local NGO, Social Services of Cambodia, was contracted to provide training in community organizing for the CRC training team. The goal was to build the capacity of CRC staff in project related technical areas who could then train the CRCVs in the targeted districts. The DMD training team developed a training curriculum based on the initial CBDP and incorporated technical resources from ADPC.

4. Project Components – Activities

A. Training, Resource Materials and Continuing Education

One of the core activities of the CBFMP was building the capacity of RCVs in disaster management and community organizing through providing a series of intensive training programs. The training modules included:

- 1) Red Cross Values and Volunteer Responsibilities
- 2) Disaster Management and Hazard Mapping
- 3) Leadership and Community Organizing

After the second module on disaster mitigation and hazard mapping, the volunteers returned to their communities to conduct a mapping exercise. This was intended to serve as an organizing and mobilizing tool. The volunteers used the maps to identify the hazards and vulnerability in the community. In addition, The CRC and Federation organized brainstorming and planning sessions once or twice a month for the trainers to further assist CRCVs. This was seen as a very beneficial follow up and continuous training strategy, which helped reinforce skills learned during the training courses.

During site visits and group meetings, CRC trainers and coordinators assisted communities and the CRCVs to develop solutions to mitigate the problems of flooding. In-service strengthening of training strategies and skills in CBDP for the CRC training team was reinforced by an ADPC facilitator in addition to two CRC staff who attended an ADPC training program in Bangkok. In addition, the Deputy Director of DMD attended the UDM-2 training course and a DMD trainer attended the Community Based Approach to Disaster Management course.

An important component of the project was to work through traditional community-based structures. In some cases, the CRCVs worked with existing village Disaster Committees and in other cases, where the village did not have a Disaster Committee, the CRCVs worked with other existing village community development groups and committees. Outside of CRCVs and the village project committee, project participants encompassed a wide spectrum of community members including men, women, students, monks, and the village elders.

B. Demonstration Project

After module three training was completed, the CRCVs returned to their villages to mobilize communities to identify flood hazards and develop solutions to address the problems. The end result was community-developed strategies. The communities were encouraged to first identify what the community itself could manage in the strategic plans from resources within the village and secondly, to develop proposals to address projects that would require additional financial resources. These proposals were submitted to CRC headquarters through the provincial branch structure.

The Management Committee received 23 proposed mitigation solutions. The Committee had developed very simple approval criteria including: it was a community-based preparedness activity; the project benefits had to reach a broad base of people within the community; there was a ceiling of US\$1,500 per community; and, the community had to commit at least 15% of cash or in-kind contribution. Reporting requirements and financial monitoring details were also developed. In cases where the proposal did not

satisfy the criteria, the proposals were sent back to the communities through the CRCVs with clear instructions for proposal revisions.

The community proposed activities generally focused on the water control structures necessary for livelihood (repairing dams and dikes, cleaning irrigation ditches, culverts and water gates) or access (raising road levels or constructing small bridges). Material contributions normally consisted of people bringing their tools or providing soil for increasing the height of roads. When local resources could not cover the cost of the proposals, additional fund-raising was conducted on the communities' behalf by Pact. Funds were disbursed to communities in two installments after an initial orientation to accounting for the treasurer of the local disaster committee.

C. Information and Networking

Stakeholder meetings were held to share lessons learned between project participants, NGOs, donors, and the RGC. DMD refined and revised the training manual, which was based on the initial CBDP curriculum and ADPC materials. The manual reflects lessons learned from the training experience and is available in both English and Khmer.

Pact contacted provincially-based NGOs in Prey Veng (Padek), Kampong Cham (Action Against Hunger, Save the Children Australia, House of Hope-Inner Change, United Nations High Commissioner for Human Rights) and Phnom Penh/Kandal (AusAID, American Red Cross, Oxfam, World Vision International, CWS, JVC, Christian Outreach, UNDP and Caritas Cambodia) for financial support of community solutions. Oxfam provided its funds through Nak Akphiwat Sahakoum (NAS), a local NGO. These additional stakeholders created a link between participating communities and donors that could continue beyond the project period and help ensure sustainability.

5. Results Achieved

At the time of project completion:

- 23 communities had developed flood mitigation and preparedness activities
- these solutions impacted 5,496 households in the project area
- 159 CRCVs had completed either Phase I and/or Phase II training in CBDMP
- 8 international NGOs had been mobilized to fund community-based proposals.

In addition, based on the project's success, CRC decided to extend CBDP training to 7 new target provinces in 2001 showing in-country commitment to replicate the methodology.

6. Lessons Learned

Over an 11-month period, two assessments were conducted by Pact to determine lessons learned. As a demonstration activity, the Management Committee felt was imperative to identify best practices so that the approach could be replicated in a more efficient and successful manner. The methodology was continually honed based on these lessons.

Major lessons learnt include:

Involve local level communities in developing solutions to flood preparedness

Government and NGOs are often the first approach structures used in flood preparedness. This project showed that communities can and are willing to take an active role in preparing themselves. Albeit, communities often need a catalyst to make this happen and in this case the CRCVs served that purpose. Communities offer disaster preparedness programs a plethora of resources and local level knowledge that can result in higher probabilities of programs success.

Distinguish between activities that are useful for community organizers and the community themselves

Programs often overlook the value of indigenous knowledge and solutions. Often a community knows the area best, has more accurate information on disaster patterns and areas, and can best prioritize what inputs will lead to the greatest benefit for disaster preparedness. For example, the mapping exercise conducted during the project provided more value to the CRCVs than to the community. The community members found the exercise to be a waste of their time since they knew the areas most prone to flooding based on historical knowledge and did not need to the mapping exercise to determine those areas. However, these types of Participatory Rural Appraisal (PRA) techniques can also serve the dual purpose of mobilizing and sensitizing the community. It is important to let community members know what is important as part of the project process and that their inputs, although seemingly invaluable to them, serve as necessary information for outsiders who desire to assist the community.

The use of community development best practice methodologies can enhance the success of community-based flood mitigation and preparedness projects

Community development best practices have been widely recorded over the past 20 years. For any disaster preparedness project that wishes to work in a community, it is important for the project staff to be well sensitized to community development issues and how to foster community participation. For example, most villagers have seasonal schedules that can greatly effect the level of effort they are willing to commit to a project. Planting and harvesting seasons are not good times to implement community based projects due to the heavy workload that farmers have in the fields. In this regard, the CBDMP project built the capacity of the CRCVs in community development and mobilization methods. Participation of the community members and the use of participatory methods is an essential component of community work and any project working with communities should have strong capacity in these areas.

Use traditional organizational structures in communities to assist in flood mitigation measures

All communities have organizational structures at the local level unless they have just emerged from civil strife and crisis. Some of these organizational structures are traditional, civic, religious or newly created by development or government agencies to efficiently implement programs. It may not be necessary for the disaster preparedness program to create new structures but should first look at existing structures and determine if they can take on the added responsibilities of a Disaster Committee. The traditional or local organizations structures present an invaluable resource to any disaster preparedness program and should be incorporated, when possible, into the design.

Ensure that community level project implementers are well trained in flood preparedness techniques and empowered to mobilize community members in developing solutions

One of the difficulties in the CBDMP project was the low capacity of the CRCVs in disaster preparedness methods. The project did build their capacity through extensive training. This training could have been even more intensive and ongoing to ensure better success. Community development organizers must be empowered to carry forward the tasks they have been given by a disaster preparedness program. They should feel that they have all the tools needed to bring about change at the local level and the added organizational support necessary. Roles of the community mobilizers should be well explained to the community so that responsibilities are clear. By working through a network like the Red Cross, the volunteers did have access to larger organization support through decentralized branches that could provide technical and logistical assistance. In a case like this, it is therefore equally important to build the capacity of the whole network and not just the community based workers. This institutional commitment will help ensure sustainability.

Where flood preparedness demands are greater than financial resources available, it is essential to train and mobilize local communities to seek funding outside the community

Not all community based flood preparedness solutions can be implemented only by the community due to financial restraints. Land that is prone to flooding tends to be occupied by some of the poorest people in the world. Therefore, they have limit access to financial and materials resources to implement projects, especially when it comes to infrastructure solutions such as bridges, culverts, embankments, etc. Flood preparedness programs should incorporate networking initiatives into the design whereby communities become linked to government and non-government agencies that can provide financial resources for higher-end, more material intensive solutions. Even so, in order to incorporate ownership at the community level, there are resources such as labor and local level materials that will always be available and should be a requirement for project approval.

It is important to develop relationships between communities, government national disaster management departments and donors focusing on disaster preparedness to instill sustainability measures for continued activity support

In addition to providing external resources, government agencies and non-government organizations can play a long-term role in assisting the community in disaster preparedness measures. A disaster preparedness program should bring these stakeholders to the table early in the project and work with the community to develop long-term relationships with them. A community-based disaster preparedness program is designed to act as a catalyst that will set into motion continued community action. The probability of the community continuing to determine flood preparedness measures increases when more stakeholders are involved and assist the community as they develop new measures that may need external assistance.

These best practice measures derived from lessons learned should be considered when initiating a community-based preparedness program. Communities are a vital component to disaster preparedness and even in a country like Cambodia, where traditional community structures were devastated during many years of civil strife, the project showed how integral the community can be to developing their own sustainable solutions.

7. Replication and Conclusion

The successful completion of demonstration activities in Cambodia offers several opportunities to promote and create favorable conditions for replication of the CRC's Community Based Disaster Preparedness (CBDP) program, both within CRC and among the broader non-governmental community in Cambodia as well as other countries..

The development of disaster preparedness training capacity within the CRC and delivery of the training to cover 150 Red Cross Volunteers (RCVs) has proved a success. Twenty-three communities have developed flood mitigation solutions. These activities exceeded the project design in both numbers of activities and in-kind contributions generated.

This program can be used as an example for other countries that desire to incorporate communities as an essential component to disaster mitigation and preparedness. The lessons learned present valuable design consideration that will help other programs implement successful programs wishing to bring community members to the table. Involving communities in disaster preparedness programs provides a venue for these communities to implement their own solutions thus inculcating ownership and an increased probability of sustainability.

COMMUNITY PARTICIPATION IN URBAN FLOOD MITIGATION UNDER BANGLADESH URBAN DISASTER MITIGATION PROJECT (BUDMP)

Monzu Morshed and Nurul Huda, CARE Bangladesh

What is Community and Community Participation?

A group in face to face contact having a harmony of interest and aspirations and bound by common values and objectives.

Community participation is the educational and empowering process in which the people, in partnership with those able to them, identify problems and needs and increasingly assume responsibility themselves to plan, manage, control and assess the collective action that are provided necessary. According to Mitchell's, he mentioned in his book "The Listening Legacy: Challenges for Participatory Approaches", Participatory methodologies depend on the people's idioms and way of seeing, especially when it comes to empowering a community to undertake sustainable development. The idea is that projects are not sustainable unless understood by the community in their own stipulations and through their own idioms.

Rationales for Community Participation:

Disasters are extraordinary events that generate collective stress and serious disruptions of activities of country's economy. Disaster, both natural and manmade retards the development process of a country. The most important decisive factor in any disaster is its disruptive impact that creates pervasive uncertainty, suffering and trauma. Due to its' geographical location Bangladesh is most disaster prone country in South Asia. The community ultimately faces the fury of any disaster. Hence the community people stricken by a disaster should be considered as taking action for itself not as having action taken for it. This presupposes of fundamental change compared with the usual notion that the responsibility of caring of disaster stricken community should be entirely taken over by outside assistance and the government. The notion is based on preconceived ideas, public panic and run away without having regard for others, some of them will be bewildered or act impulsively, and other will remain numb or stupefied, local organizations will be disorganized and unable to act effectively, there will be anti social behavior and looting. However experience of disasters shows the ways in which the people really behave differ greatly from the stereotyped ideas. Causes of panic are generally localized and short lived. The majority of people prefer to stay in the vulnerable area and generally take steps to protect their families and themselves. At times this attitude results in people taking an adamant stance against evacuation, when needed, creating extra risks for themselves as well as rescue workers.

From the perspective of public administration, disasters are mostly taken to be situations that require a massive coordinated deployment of organizational resources often exceeding the capability of the local communities where the events are taking place. The failure of administration on this front leads to such irrational behavior. There has been a total collapse of administrative machinery in providing the necessary assistance to the community, which is largely responsible for their irrational behavior.

The coping mechanisms of community are often undervalued and at time ignored too. But it is the responsibility of the community and local government in any disaster to assume primary roles in managing recovery, setting goals, establishing programs, developing priorities and distributing resources. Disasters are situations that are really require mobilization of capabilities and capacities of local communities.

There is a clear shift from super-imposed efforts to attain development or tackle any crisis that is directed towards the people at risk. Now the capacities, methods and ways through which people at risk manage and respond, find alternatives to crisis and stress is gaining importance. There is a realization gaining momentum that the global capacity to prepare for and respond to disaster and needs to be strengthened. The development of improved capacity arises from the need to inspire the principles of self-reliance and self help amongst the vulnerable communities.

It is mentioned here that The United Nations Conference on Environment and Development at Rio in 1992 stressed the need for capacity building for indigenous communities based on the adaptation and exchange of traditional experience, knowledge and resources- management practices, to ensure their sustainable development.

The capacities of community, which need to be strengthened include:

- Assessment
- Monitoring
- Early Warning and Preparedness System
- Identifying and working with those who need to assistance most
- Accurate and effective communication strategies
- Developing system for cooperation and collaboration among response groups in the recovery process
- Effective leadership in the implementation of preparedness and response program.

The following are the reasons to involve community in BUDMP implementation:

- To realize vulnerable situation and what to do for solving it
- To identify their risk and resources
- To identify their problems as well as prioritization and identification of mitigation measures by themselves.
- To create opportunities to participate in decision-making, planning, implementing with sharing responsibilities, supervision & monitoring and benefit sharing of development (mitigation measures).
- To assist community for taking lead role in discussion, analysis and facilitation
- To establish community based preparedness before a disaster strikes and reduce its' impact.
- To make sustain of project interventions
- To implement project in cost effective ways
- To raise public awareness on disaster mitigation.

Strategies and Area of Community Participation:

It is essential to give flesh one of the IDNDR's principle: "Preventive measures are most effective when they involve participation at all levels from the community through the national government to the regional and international level.

The strengthening of capacities of people at the local level requires a multi prolonged strategy through involvement of various actors at the local level, community based organizations, non government organizations, inter community groups, local government representatives and so on. In order to bring greater solidarity among different social groups, following strategies have been followed:

- Offer mutual support and solidarity
- Strengthen peoples' ability to face crisis
- Generate consciousness, awareness, discussion, and analysis of issues common concern
- Enable people demand and access to services offered by the government agencies
- Collective acquisition of skills and knowledge in varied spheres.

In order to strengthen capacities, more attentions were needed to involve community in following area for total disaster management system:

- In Decision Making
- Planning
- Implementation
- Resource Mobilization
- Benefit Sharing
- Monitoring and Evaluation.

How BUDMP involved community:

With the spontaneous assistance of respective Ward Commissioner- BUDMP team was introduced with the community at grassroots level. Community was involved in BUDMP thorough following steps:

- Step-1:** Exploring views of BUDMP's goal and objectives through rapport building with the community.
- Step-2:** MDMC picked up volunteers from community.
- Step-3:** Analysis of root causes of problems through PRA tools in the community and find out also consequences of each problem of locality.
- Step-4:** Enhance cohesiveness through self help-organization (CBO) and leadership
- Step-5:** Openness, criticism and sharing through feedback session at field level.
- Step-6:** Formulated mitigation plan through prioritizing activities, which come from vulnerability analysis.
- Step-7:** Prepared community to implement mitigation plan through formation of Scheme Implementation Committee (SIC) at ward level under the umbrella of MDMC.
- Step-8:** Implemented project activities through community's lead role.
- Step-9:** Community has been maintained and cultured all sorts of best practiced by BUDMP.

Problems Encountered in Community Participation:

There are many problems to bring actual community participation in developing country like Bangladesh. The development culture of the country follows top down approach, provide all agencies, both government and non-government, service oriented development rather than people oriented. So, dependency culture has been mixed in flesh and blood of the people of the country. Nonetheless some problems are illustrated below to bring actual community participation in urban context of Bangladesh:

- Lack of access to resources of maximum people (Economic Vulnerability)
- Disintegration of Social Pattern or individualistic attitude (Social Vulnerability)
- Degradation of the environment and inability to protect it (Ecological Vulnerability)
- Lack of strong national and local institutional structures (Organizational Vulnerability)
- Lack to access to information and knowledge (Educational Vulnerability)
- Lack of public awareness (Attitudinal and Motivational Vulnerability)
- Limited access to political power and representation (Political Vulnerability)
- Certain belief and customs (Cultural Vulnerability)
- Huge number of malnourished people and weak people in urban slum (Physical Vulnerability)

Lessons Learned:

- If the people conceive development programs and activities as reflecting their interests are they willing to become involved, and commit their own resources.
- Active participation of people aims to strengthen their confidence in their own capabilities and incite them to act on their own responsibility.
- Although it is huge time consuming and sometime lengthy, community participation is cost effective, self-help and sustainable process in development.
- Sometimes BUDMP team realizes, it is power sharing & voice gaining process of community.
- Cooping mechanism and indigenouse knowledge from community were very much useful in mitigation planning under BUDMP.
- A two-way information flow, both formal and informal, between project authority and potential beneficiaries, was established at the time of project planning start up.

COMMUNITY PARTICIPATION IN DISASTER MITIGATION IN NAWALAPITIYA URBAN COUNCIL, SRI LANKA

K.P.G. Sumathipala, Nawalapitiya Urban Council

1. INTRODUCTION

NAWALAPITIYA has been identified as a 4th order town in the urban hierarchy of the Central Province of SRI LANKA.

It is located in the picturesque central hills of eye-catching beauty of lush greenery, 40km away from KNDY- the last Kingdom of the country and 112km away from COLOMBO the capital.

As per the last census that was carried out in 2001, the population of NAWALAPITIYA is 14,000 and it attracts a floating population of nearly 10,000 daily. This indicates the potential of the town as a service and a commercial center in the Province, although it was originally started as a railway town in 1879.

The mixed agriculture consisting of tea (major export), paddy, vegetables, minor crops and foreign employment support the economic base.

The urban council area covers 262 hectares and the average population density is about 55 persons per ha.

2. BACKGROUND

The following important facts

The elevation 560m - 830m above MSL

The annual rainfall 4000 mm - 5000 mm

The temperature 19°C - 32°C

The flowing of the Mahaweli - the longest river - through the town created an atmosphere for some of the

Natural Hazards such as; Earth slips, Rock falling, Bush fires, Floods, Lightening, in NAWALAPITIYA urban area.

2.1 GENERAL APPROACH

Thus, a prime necessity had been created to look into and take action for the safety and care of the people.

The local authority that was elected in 1997 understood this problem vibrantly and thought that it should be addressed for the first time.

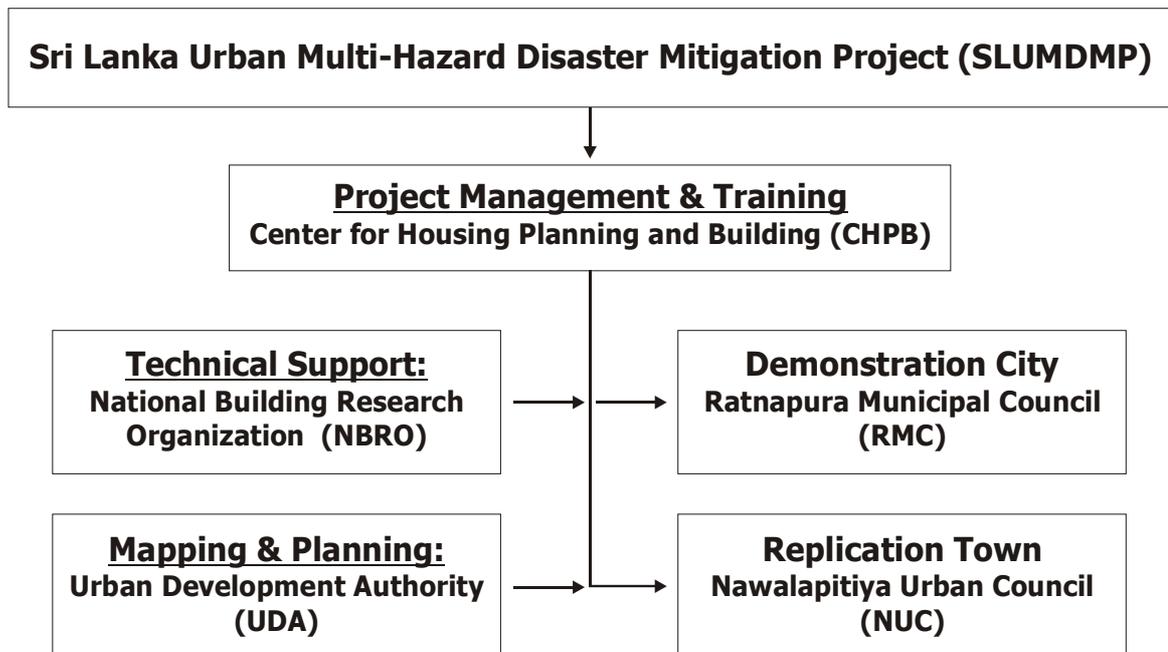
While the council was trying to find a Scientific Method as a remedy to this current issue, the Center for Housing Planning and Building (CHPB) came to us on the evening of the 22nd November 1997 and explained the Objectives of the Sri Lanka Urban Multi-Hazard Disaster Mitigation Project (SLUMDMP), why Nawalapitiya Urban Council (NUC) Area had been selected and the role of the Council.

The aim of the project was to establish mechanisms of Disaster Mitigation in Sri Lanka and build capacities of the Local Authority staff in Natural Disaster Mitigation.

The project was not a financial support. But something beyond, something deeper, something that built the sense of awareness, preparedness, pro-activeness among the councilors and the officials towards Management & Mitigation in Natural Disasters.

The main project activities were to implement a Demonstration Project in the Ratnapura Municipal Council (RMC) area, which was identified as the Demonstration City and a Replication Project in the Nawalapitiya Urban Council (NUC) Area as the **First Replicating Town**. It was, what made us ticking. We felt it that this concept was constructive and should be disseminated among our people for their safety.

2.2 SLUMDMP INVOLVEMENT



3 COMMUNITY PARTICIPATION IN DISASTER MITIGATION

3.1 LIVELIHOOD OPTIONS FOR DISASTER RISK REDUCTION PROJECT

The project coordinating office of the Integrated Technology Development Group (ITDG) an International Development Organization in the UK with NBRO came to NUC area for implementation of the above project in collaboration with CHPB - SLUMDMP

4 PROJECTS

4.1 Dolosbage Road Project (Pre-Disaster Community)

Prone to
Rock falling, Landslides, Bush fires

Project specific problems

4.2 Soysakelle Project (Post-Disaster Community)

Prone to
▪ Landslides, River bank erosion

Project specific problems

Unauthorized shanty dwellers mostly
Least infrastructure & other facilities
Congested

- High illiteracy
- Poverty
- People thought that it is fate
- The poverty
- Though the people were aware of the possibility and the occurrences of natural hazards, they were not aware of any planning tool available for mitigation.
- They were not prepared to learn due to the rare occurrences
- The social degradation
- They had other priorities than learning and collective approach
- The language barrier
- No political and community leadership and no NGO's and CBO's were involved
- The government, provincial and local authority officials were unaware of natural hazards and vulnerability and that these hazards were occurred in their respective areas too.
- The impact and the losses were minimum at times, so that they could be forgotten
- Attitudinal changes needed
- Reluctance to migrate to safer locations due to the reason that they are not provided with closer places to town to settle.
- No budgetary allocations were prepared
- Development applications
 - Building codes
 - Construction codes
 - NBRO investigations
 - Planning committee
- A vacant plot (6ha) had been identified by UDA for settlement under the development plan
 - This plot was an old landslide that nobody knew
 - Introduction of hazard zonation all understood of the vulnerability including UDA & NUC
- The construction contractors and craftsmen do not like to change their traditional methods.
- Preventive measures are very expensive so that they are being neglected.
- The destruction of property or life is not estimated before disasters.
- Low-income earners tend to construct in disaster prone areas due to low cost.
- The priorities of any individual may differ from one another.
- Sometimes higher lands are not belonging to the actual victims so any activity that takes place in highlands, aggravate vulnerability.
- It is not easy to integrate mitigatory measures actively into the existing institutional framework and do not consider prevention is also one of the duties.

COMMUNITY BASED DISASTER PREPAREDNESS: EFFORTS OF 34 WARD DISASTER MANAGEMENT COMMITTEE OF KMC

Murari Binod Pokhrel, National Society for Earthquake Technology

Introduction

General Overview

Emergency or disaster effects are severe in the world scenario. Every year thousands of people lose their lives along with livestock and infrastructure is irreparably damaged.

Asia is the most disaster prone region in the world. Emergencies / disasters / calamities are hindering sustainable broad – based development and economic activities. Uncontrolled population growth and rapidly growing cities / urban areas represent a growing vulnerability to disasters in this continent. Nepal is prone to many types of disasters.

Disaster situation of Nepal

Nepal, a landlocked country, lies between two large countries China and India. Topographically, Nepal is mountainous. The altitude of the country varies from 60 meters above the sea level in the south to 8,848 meters (Mount Everest – top of the world) in the north. The increase in altitude occurs within a short horizontal distance of 90 to 120 kilometers. Mountains and hills, which are geologically young, occupy about 65% of the total area of Nepal. Therefore the topography makes a high probability of disasters like glacier lake outburst flood (GLOF), hailstorm, thunderbolt, unseasoned flood (snow melt) etc. Most common disasters in Nepal are landslide, flood, epidemic, fire and earthquakes. Kathmandu is one of the five cities in the world to be under significant threat from seismic activity.

Nepal is divided into five geological regions: higher Himalayas, high mountains, middle mountain, siwalik and the terai (plain). The geological formation in each region is unique and different. The Himalayas and other mountain ranges have been formed from the collision of the Indian sub – continent (plate) with the Eurasian continent (Tibetan plate). The tectonic movement is still active as evidenced by major earthquakes even in this century. The mountains and hills are young and unconsolidated and are subject to massive erosion. It is known that there are 18 active seismic faults in Nepal.

In addition to its topographical and geological realities, Nepal's socioeconomic, environmental and demographic features also have a bearing on the frequency and impact of different disasters. High density of population in the municipality areas, acute deforestation, intensive agricultural practices, over grazing, inadequate and non – geo – friendly construction and development work have further enhanced the already existing high disaster risk and its possible magnitude of impact in Nepal. Although building code exists, the lack of awareness / enforcement of regulations, the codes are not implemented and that earthquake resistant houses are not built.

Why Disaster Mitigation and Preparedness is needed in communities in Nepal?

- Nepal lies under a highly seismic risk zone. The capital city is more vulnerable to earthquakes than other cities in the world.
- Within the past 13 years there have been accumulated losses of USD 175 million and deaths of 4,926 people due to landslide and floods only (source: A Technical Guideline on Landslide Mitigation Work, HMG / DPTC, 1999).
- The flood disasters occurred out of Kathmandu valley, in 1993 not only killed around 1500, damaged physical infrastructures but also people of capital suffered from no electricity, gas, food and many other utility services for weeks and weeks.

- The Government mechanisms so far are not sufficient to cope with all aspects of the disaster management cycle.
- Communities in general are not aware of disasters and majority of the people believe that all disasters are the spell of god.
- Since a couple of years, NSET and other institutions are creating disaster mitigation and preparedness awareness among the people of Nepal. There by there have been demands by the community people to organize DMP activities.

Organizational initiation

In the above context in August, 1998 a group of local people from Janasakti Youth Club consulted the staff of United Mission to Nepal to support them to conduct a disaster management work shop at 34 Ward of Kathmandu Metropolitan City (KMC). In collaboration of the Club and 34 Ward Office, UMN along with National Society for Earthquake Technology (NSET) – Nepal conducted 5 days long disaster management workshop from August 11 – 16, 1998. The Workshop ended with the formation of 34 Ward Disaster Management Committee (DMC), the first community level disaster management organization under Kathmandu Metropolitan City.

34 ward Disaster Management Committee (DMC)

- **Formation**

The fifteen members DMC is headed by local and legal authority: Ward Chairperson (Ward Chairman and members are the elected body) of 34 Ward. Where as the other members are: 4 remaining Ward members, 2 among the learned persons, 1 from schools, 1 from business societies, 1 among women's group, 2 represents Clubs, 1 from the disaster workers, chief of the Ward Police and a youth representative. Among them one person is working as a Member- secretary of the DMC.

- **Mission**

People cope with possible disasters in Kathmandu

- **Vision**

Local/community level organization in the field of disaster mitigation and preparedness will enable people to lessen the effects of disasters in their local areas.

- **Objective**

1. Campaign to aware disaster mitigation and preparedness among community people.
2. Follow and support to implement government policies in the field of DMP.
3. Prepare, develop and train professionals / workers / cadres / volunteers to work in disaster management activities.
4. Support communities to prepare hazard, vulnerability and resource maps of locality through community watching, disaster imagination games
5. (DIG) and even using Participatory / Rapid Rural Appraisal (PRA / RRA) modalities if needed.
6. Organize community survey, analyze survey data, prepare DMP plan for the Ward, disseminate widely, get consent and implement.
7. Seek support from national and international organizations to implement DMP activities.

Activities performed so far

1. Continuing awareness raising activities among clubs, schools, institutions and individuals
2. Established DM Trust (Agriculture Development Bank, Gausala account number: 261623).
3. Organized Kick – Off meeting, presented DMC plan of action, endorsed with some changes and being implemented.

4. Formed Advisory Committee of highly committed dignitaries of the community to let DMC go ahead effectively
5. Developed hazard, vulnerability and resource map of 34 Ward through community watching May 5 and September 21, 2001 and DIGs September 15 and 22, 2001 along with JICA experts, Urban Disaster Mitigation Training (NSET / ADPC organized) field work, May 22, 2001 and Earthquake Vulnerability Reduction for Cities (EVRC NSET/ADPC organized) Training May 22, 2002 and community involvement.
6. Survey form prepared, printed and circulated to the community people. Almost 1000 household's information is filled on the form. Its database is ready and consultant work is due for analyzing it.
7. Organizing 2 – 3 hours disaster sensitization sessions to schoolteacher / students, organization, clubs and members of DMC units.
8. Continuing support to organize 3 to 5 days Community Disaster Management Workshops. DMC so far has assisted three 3 days workshops and three 5 days long such workshops.
9. DMC is one of the active members to participate HMG Earthquake Safety Day Celebrations coordinated by NSET – Nepal every year from 1999-2002.
10. DMC started to form its DMC Units and Young Volunteers' Units. It is on line of clustering / localizing of DMC activities.

Future plans of DMC

1. Continue DMP awareness / sensitization sessions to teachers, students, volunteers, DMC units, organizations and community people (at least one person / house of 34 Ward)
2. Disaster Mitigation and Preparedness Workshops to various groups (3 – 5 days long)
3. Extend 34 Ward DMC units to make different clusters to ease implementation of DMP activities
4. Further train volunteers to work in disaster preparedness.
5. Prepare, develop, print, collect / or purchase and disseminate disaster preparedness materials to the concerns / community people
6. Analyze survey forms and prepare 34 Ward level disaster mitigation and preparedness plan and execute
7. Be linked with networks such as Disaster Preparedness Net Work
8. (DPNet), Sect oral Health / Food / Logistic Working Groups.
9. 34 ward DMC activities dissemination in other Wards of the valley
10. Demonstrate low cost / cost effective, environment friendly and appropriate building materials
11. Try to organize in country Training of Trainers (TOT) on DMP
12. Advocate to construct five Earthquake Resistant Houses for five wards/one each per Municipality in the valley
13. Lobby to implement one river embankment / training model mitigation program in the valley
14. Advocate / lobby to include DMP contents in the educational curricula
15. Encourage professionals to establish Institution / forum to work in Landslide and Floods Mitigation and Preparedness.

Driving force for DMC

1. Enthusiastic DMC members / volunteers, encouragement from Advisors and community people.
2. Support from outside: example World Seismic Safety Initiatives, ADPC
3. Cash, kind and resource persons regular support from NSET – Nepal
4. Moral support: from WHO, UNDP, LWF, UMN, KMC, Ministry of Home/ Health, Nepal Red Cross Society et.al.
5. Individual assistant: such as out of the WSSI fellowship amount, one well swisher is supporting DMC with financial assistance through NSET for the limited activities of DMC for the last two

years, ... Community Disaster Management brochure printing support from one of the Advisory Members

6. Foreign dignitaries who visited DMC highly encouraged DMC members, supported personally as well and committed to assist in future. Those people are from UNCRD Kobe Japan, Geo-Hazard International USA, WSSI, Roorkee University India, ADPC and AIT Bangkok, USAID / OFDA Washington DC, Inter Works European Consultation, WHO, JICA Study Team and OFDA Nepal.
7. DMC activities globally disseminated through the Safer Cities 1 (January 2002), the serial publication of Asian Disaster Preparedness Center. The DMC is highly obliged to ADPC, particularly Ms. Christine Apikul, the author of the series.

Constraints / issues

1. Man (professional / trained / semi-trained)
2. Money (from government, municipal, donor and others)
3. Materials (various audio visual equipments)
4. Still more disaster awareness is the need for the community people
5. Government including local authority is to finalize DMC structure
6. Real volunteers to work in DMP

Conclusion

34 Ward DMC is recognized in the country as well as in the region. There has been tremendous support to DMC from all corners of the society, except regular sort of financial backup from the Municipality. It has developed some capacity to work in the field of DMP. It likes to extend this sort of DMC through out the country. DMC seeks support from all stakeholders and commits to assist DMP activities widely.

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EMPOWERED INDIVIDUAL: CARING NEIGHBOURS MAKE THE BEST DISASTER MANAGERS

Manu Gupta, SEEDS, India

Key Words: Mitigation, Empowerment, Capacity Building, and Sustainability

ABSTRACT

Empowering individuals within disaster threatened communities is key to successful mitigation. The Gujarat Earthquake of 2001, provided an opportunity to introduce mitigation practices at community level as part of the rehabilitation programme. Fifteen agencies from India and abroad came together to adopt a model programme called 'Patanka Navjivan Yojana' (Patanka New Life Project). The project focused on disaster mitigation – making community safer against future disasters.

The project team learnt from the programme that investing on people's knowledge building rather than physical infrastructure, improving livelihood options, empowering individuals so that they can take care of their own needs, strengthening local institutions and partnering with local governments are among the key factors that ensure successful mitigation.

1. Empowering Communities: Need & Priorities

Following any disaster, the first seventy-two hours are most crucial. Depending on the scale and intensity of damage, the community could be left stranded until external assistance reaches them. The individual and his neighbour are the only ones who could help each other. A good mitigation and preparedness practice can make all the difference. The damaging effect of a disaster can be considerably reduced (even removed). Empowering individuals and small neighbourhoods is the key to successful mitigation programme.

However, mitigation programmes face large obstacles: There is limited education and awareness among stakeholders, a lack of confidence in disaster resistant practices and most importantly, most of the present interventions in community level disaster management are ad hoc with very limited scope for future sustainability.

In isolation, mitigation practices, find very few takers. Only when mitigation is linked to recent fresh experiences or to potential scenarios can they rouse interest and acceptability.

The earthquake of Gujarat, 2001 provided an opportunity to put on test a 'model' mitigation approach. A mitigation plan was consciously incorporated in the rehabilitation strategy. The expectation was to enhance the community's capacity to become resilient against future disasters without expecting any support from external agencies.

Fifteen agencies from India and abroad came together forming a Project Team to pool in their resources, skills and experiences and adopt a model strategy in a community in District Patan, lying 100 km from the epicenter of earthquake. The total funds available for carrying out the project were USD 250,000. A bulk of the funding has been possible by citizens of Kobe city, Japan, students and concerned citizens and corporate bodies at home (in India) and in US. This included reconstruction as well as capacity building programmes.

If the programme was to be successful. The community would sustain and actively adopt mitigation practices eternally and the community's actions would influence other villages in the neighbourhoods to adopt similar practices on their own.

Goal:

To Build a Standard Model for Disaster Resistant Community equipped with Safer and Sustainable livelihood, which well serves its own development needs and serves as a model for others.

Objectives:

The rehabilitation initiative is being undertaken with the following objectives:

- Focus on **Mitigation**: To make vulnerable communities **safer** from the future disasters.
- To strive alongside the community in identifying **suitable means of livelihood** for making itself independent.
- To **empower communities** so that it is aware of its own needs and is actively able to strive to achieve them
- To **establish suitable standards** for disaster resistant communities by assisting the community demonstrate its achievements in the post earthquake scenario.
- To develop valuable information on **implementation technology**, and disseminate it globally
- The initiative is being called “**Patanka Navjivan Yojana**” implying a new ‘life’ for Village Patanka that serves as a model for others.

2.0 The Patanka Navjivan Yojana (Patanka New Life Project): (PNY) From Relief to Development

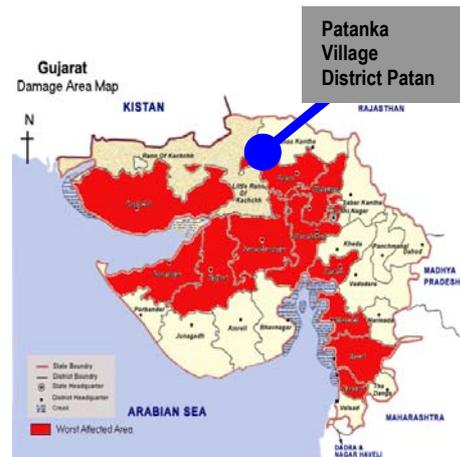
Patanka village is located in Patan District with 256 households. In the earthquake (Box1), more than half of the houses of the villages were completely destroyed.

Patanka is primarily a farming village however, there is a severe scarcity of water in the region that has forced people to look for alternative livelihoods.

The local buildings in the region are conventionally built of yellow sand stones and mud mortar. They are horizontally spread out . The house is typically designed with features such as a verandah and one room with storage space.

Patanka Navjivan Yojana was to be ‘model’ project. The following actions were planned :-

- Rehabilitation lives of the residents of Patanka providing safer houses, better infrastructure and greater livelihood security.
- Shake Table Demonstration for building local capacities in earthquake resistant construction
- Training & Capacity Building and monitoring its impact.
- Formulation of model for future post disaster rehabilitation programme.



Box 1 : The Earthquake of Gujarat, 2001:

The earthquake struck on the 26th of January, 2001 (magnitude 7.7, USGS). The devastation that took place in Gujarat State in Western India was unprecedented and so widespread that it took several hundred agencies to reach the affected villages in due time. As many as 13,000 people lost their lives. Thousands were injured. The loss was greater in the urban areas than the rural areas. People in rural areas had single storey tenements whereas those in urban areas stayed in multistoried apartment buildings. The latter gave way crushing lives as a result. Over 300,000 buildings collapsed and more than twice the number were severely damaged. This was a tragic blow to the region that was suffering from a drought conditions and the aftermath of cyclone in last 3 years. The devastation affected the area socially, economically and physically.

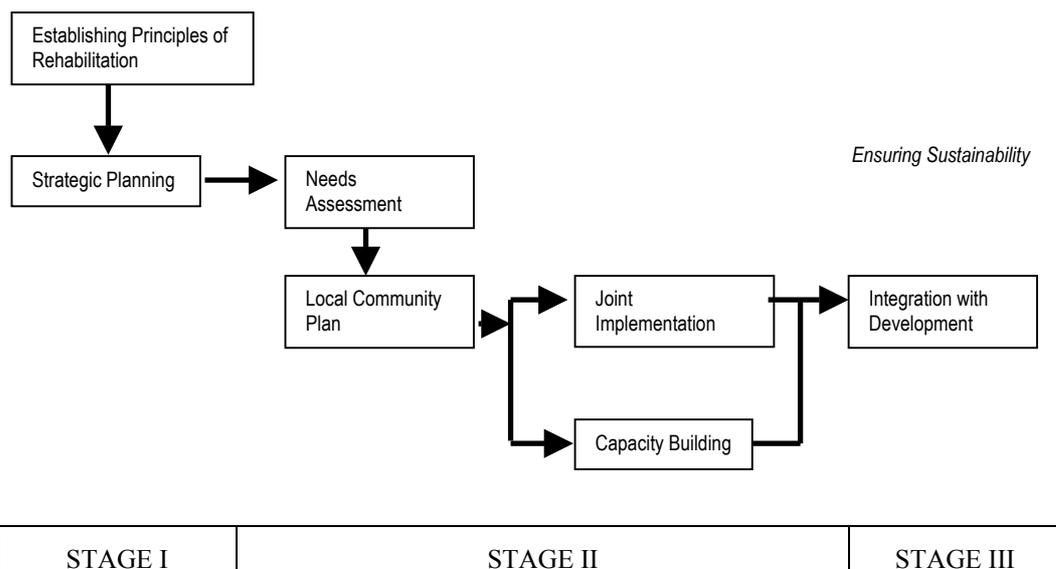
2.1 The Process

The entire programme was divided into three broad stages. The first stage, an overall plan was devised based on principles set for rehabilitation and mitigation. What would PNY seek to achieve ? This was done in the first weeks of the commencement of the project.

Members of the Project Team had studied the 1993, Latur Earthquake(Maharashtra, India) Rehabilitation programme in detail. Project Team had rich experience of addressing needs of the people following the 1995 Kobe Earthquake and subsequent disasters in Turkey and Taiwan. For example, it was found that application of safer building practices is the key point of effective Risk Management Process. This, in turn reflects a lack of appropriate risk communication amongst the citizens, local officials, and aid groups. Also, it was observed that in the rural communities, housing is mostly rooted in local culture and tradition, and climatic conditions. Safer Building Practices thus should be well linked to these factors and successful application of the process should have proper understanding among the community

In the second stage, an intensive interaction between the project team and the community enabled preparation of realistic community level plans, their implementation and building local capacities towards building disaster resilient community.

In the third stage being implemented currently, rehabilitation programmes are being integrated into ongoing government development programmes. This is aimed at ensuring sustainability of the efforts put in so far. The local government is being strengthened and the means for improved security to livelihood are being worked out.



Incorporating the principles stated above, an **overall plan** was evolved. The plan was in three parts. While the first part may be defined at the beginning of the project by the Project Team, the second and third parts can only be done after intensive dialogue with the community.

The three plans at three levels would be : **The Strategic Plan, The Local Community Plan and the Action Plan.**

a. **The Strategic Plan** : In the first part, the Project Team based on past experiences and available research drew a broad framework of Rehabilitation - The Mission, Aims and Objectives.

b. **The Local Community Plan** : In the second part, the Project Team actively consulted the community as well as the local government so that implementing strategies are culturally and environmentally compliant, acceptable to the people to whom they are addressed and are within the framework and guidelines laid down by the local government.

c. **Action Plan** : In the third part, the Project Team devised specific Action Plans for various components of the project, these were primarily based on local needs and existing capacities.

2.2 Implementation

Field presence for implementation first took place in form of Relief Operations carried out in the immediate aftermath of the earthquake. Relief operations provided a lot of pertinent information about the community – their living patterns, their clothing, their habits and customs, food habits etc. These provided useful inputs in the Planning stage while developing options that were culturally and environmentally compliant.

Actual implementation commenced with a community needs assessments exercise. A detailed damage assessment survey followed by a community level workshop.

The community workshop was a combination of “Dialogue, Demonstration & Training”. Dialogue was structured in which, community leaders, community women were addressed separately highlighting their specific needs. It was moderated by a third party (in this case, an NGO with long working experience in the area). Outcome of the workshop was produced as Workshop Resolution. In this case, strong leadership from the village enabled good quality results.

As part of the workshop, a practical demonstration and training exercise was also carried out in which the community was exposed to the available construction technology options with the help of a prototype that was constructed using and training the local manpower. The disadvantages and advantages of available options were also presented through and exhibition.

The workshop threw up interesting results. The project team learnt that while demonstrating good practices to local masons was one thing, making them understand and incorporate such practices in their day to day work was quite another. An inherent inertia to change existing mindsets, the house owners reluctance to invest extra amounts and the general non-availability of materials used for earthquake resistant construction (cement, steel) were contributing factors

2.2.1 Translating Needs into Action : The community workshop helped understand community needs and preferences. The project team concluded that existing capacities in earthquake safe construction were very low. The community was ready to build their house themselves however they needed guidance and support in form of building material that was not available locally. The area suffered from recurrent drought conditions, as a result, there was large-scale migration from the community. The rehabilitation Plan needed to include livelihood security issues. The community comprised various ethnic groups. Each had their own style of living. This was to be respected if the rehabilitation exercise was successful.

The Gujarat State Disaster Mitigation Authority (GSDMA), special body constituted in the aftermath of the earthquake and responsible for overall rehabilitation of the affected communities, advised the Project Team to restrict their quantum of assistance to each household to a maximum of USD 200 in kind.

GSDMA advised that since, the villagers would be getting their full compensation from the government, any further uncontrolled assistance would create local anomalies in the region.

The area is located in the Zone 5 (the highest hazard area) of Seismic hazard map of India, which indicates that the area is highly prone to possible future earthquakes. The extreme climatic condition and the socio-economic aspects of the area necessitate use of traditional building technologies to build the traditional housing made of stones, adobe and in some cases brick masonries in the rural areas. This had to be accompanied by appropriate awareness, training and capacity building among the local masons, engineers, and house owners. There was thus an urgent need for the integrated training program, where all different stakeholders should act together for the dissemination of technology

The Local Community Plan for Patanka village clearly identified that the most urgent need was to rebuild people's houses and help them restore their means of earning.

The Plan sought to provide:

- Safe living condition: earthquake resistant houses
- Continuous efforts: through awareness, confidence building and training
- Sustainable Livelihoods for both men & women: Livelihood Alternatives, Appropriate Training & Opportunities
- Improved quality of Life: Education, Health & Environment.
- Care for the Vulnerable: Senior citizens, Disabled
- Shared Living: Community Integration, Harmonious relationships with agencies outside
- Sustainable Future: Focusing on the future citizens, children

2.2.2 Involving the Government

In a democratic system the government and the community are directly accountable to each other, The community having exercised its right to vote has chosen the government it desires and the elected members are directly responsible for fulfilling all the needs of the community for which they were elected.

The role of external agencies in such a relationship should be to **strengthen the link** and not weaken it. Involving the government in rehabilitation process at the very beginning is crucial. For one, the government itself may be formulating guidelines for Rehabilitation to ensure uniform distribution of resources. The rehabilitation exercise for this one community should fall within the formulated government guidelines. Secondly, the government and the community will remain, the project team representing the aid agency will not. **Bringing the government and people face to face** with each other would ensure the community's acceptance for the aid agency and due recognition of the provisions made in the Plan.

In PNY, the local government and the State Government were consulted and kept informed about all developments that were taking place with the community.

A senior official from the local government (the deputy collector of the district) was invited to Patanka. The official and the headman of the village then explained the Local Community Plan to the village.

The Government Official reconfirmed the role of the Project Team and the scope of their involvement in the project. The official also conveyed directly to the community, the government regulations and conditions within which the aid agency had to act.

2.2.3 Ownership to the Community

Winning the trust of the community with whom the project team worked is critical for a **joint ownership** of the process. Unlike programme driven development initiatives, a rehabilitation exercise has to be

executed in the shortest possible time. Getting full community support in such a short time is difficult. The project team will need to make definite positive moves to win their trust. Usually a 'resolution' by the community leaders is sought; however all communities do not have strong leaderships. Weak leadership cause factions within the community and can potentially stall the rehabilitation process.

Initial moves to gain community's trust can also be done by setting good examples by the project team – where the community gets to see, feel and touch the proposed interventions before finally accepting the aid agency. A house as a "gift" to the most needy person of the village, or a 'community asset' are some of the **confidence building measures**.

In case of PNY the Local Community Plan suggested that a house would be gifted to the most needy person of the village. In case of Patanka, this home was for a widow, this was unanimously accepted by the community – In the first month of intervention everything was tested from material to technology to costs, available capacities etc. Making friends with the community during the process of construction helped. By the end of the first "gift" house, there were 40 Volunteer houses.

2.2.4 Capacity Building

Inadequate attention to capacity building can jeopardize any rehabilitation exercise. From, counseling people who have just experienced the trauma of a disaster to empowering them so that they can well take care of their own needs in case of any future disasters is the wide spectrum of activities that is included in capacity building.

If disaster resistant building technology is introduced, for it to replicate on its own – local masons need to be trained, and house owners influenced to such an extent that they **demand a safe house** without compromising on quality of construction.

Social mobilization towards addressing issues related to their personal development and betterment of the community on the whole requires specialized inputs.

For activities to be sustainable, strengthening existing democratic structures, as against creating new ones, would reap positive benefits. **Training in leadership** is also important.

A **social calendar** of activities ensures that good relationship with the community remains with the community.

In case of PNY, training and capacity building was emphasized. Training was imparted to local masons and carpenters who were hired by the house owners for reconstruction of the house. The project team realized that rather than holding classroom-training sessions for the workers, the best training could be provided in the field itself. Masons who had been trained in earthquake safe construction were brought in and served as master masons supervising the overall construction work in the community. These trained masons were from Nepal and did not know the local Gujarati language. However, the relationship worked very well as they could communicate to their Gujarati counterparts through the language of hands.

Within the first 4 months, local masons had picked up skills in earthquake safe construction. technologies including the retrofitting of existing houses, and to enhance the understanding of the performance of simple structures with and without the earthquake resisting features under the impact of an earthquake.

There was also a need to make the community aware of the advantages of adopting earthquake resistant construction. A unique series of "Shake Table Demonstrations' were carried out. These tests were aimed at building people's confidence in earthquake resistant building

2.2. 5 Joint Action Planning & Implementation

At the action planning and implementation stage **one to one dialogue** with individual household enables products that incorporate individual household preferences. This is critical as it ensures empowering individuals.

In case of PNY, an action plan included reconstructing fully collapsed houses. It was decided that within the ceiling provided by the government, each householder would get USD 200 worth of cement and steel. The labour and basic construction material was to be provided by the household. The Project Team trained householders as well as the labour employed by them. While ceiling on expenditure was set, individual households had the freedom to incorporate their own preferences in design. Further, Quality was ensured through regular and thorough monitoring of construction activity of each household. Progress was recorded in a specially designed family card. This would also record the material made available to each family as this was done in installments.

3.0 Ensuring Sustainability : Key to successful Mitigation

In PNY, sustainability is being ensured in many different ways :

a. Focusing in people's knowledge more than physical infrastructure: Capacity building exercises in the project have brought confidence to the house owners on earthquake resistant building technology. Trained local masons have made it possible for them to make their present houses and possible future ones using the same technology.

b. Improving livelihood options: As an extension to the same, A pool of trained masons in the community have led to creation of a "mason's guild" that would now market its own services not just within Patanka but to all other neighbouring villages as well. This is a useful livelihood opportunity in a region where agricultural produce is not enough to sustain households.

c. Empowering Individuals: Having taken part in the reconstruction themselves, each individual household is fully aware about disaster resistant construction. Moreover, as a result of their interaction with the project team, their own traditional knowledge base and practices were successfully incorporated in the reconstruction process. It can be safely assumed that future construction activities undertaken by them would incorporate the same features that they learnt when the project team was present. This would be the best proof of a successful mitigation practice.

d. Strengthening Local Institutions: Local institutions and community leaders played a pivotal role in the rehabilitation process. Having understood and implemented the programme jointly with the Project Team, the Panchayat (local elected government) strongly feel the need to incorporate risk reduction in all future development activities.

e. Partnership with the Government: Development programmes in the region are sponsored by the government and implemented by their local offices. Having involved them through the process and contributed in increasing their own capacity insofar disaster risk reduction practices are concerned. Future, development practices are expected to incorporate risk reduction strategies. At least, the elected local governments as strong advocates, would ensure this.

4.0 Conclusions

The Patanka experiment has been provided valuable lessons for introducing measures on mitigation at community level. Most important of which has been the need to address the capacity and the motivation of individual households, supplemented by strengthened community structures.

Also, the exercise in mitigation witnessed cooperation of multilateral agencies at another level. Building on each other's strengths and resources with the objective of strengthening the vulnerable community has proved to be a unique and exhilarating experience.

This lessons learnt from the experience are now being applied elsewhere in India, the trained masons from Patanka are now traveling over thousand kilometers to train fellow masons in other parts of the country. Locally a mason from Patanka attracts higher wages. The community driven reconstruction in Patanka has been the fastest in the region and at half the cost when compared to other agency supported contractor driven approaches.

The challenge now lies in seeing the same results in other parts of the region and the country - Disaster resilient communities who can serve their own needs.