Program Completion Report

Asian Urban Disaster Mitigation Program

Cooperative Grant Agreement 940-1008-A-00-5531-00
Period Covered: 17 October 1995 to 31 May 2000

And

Cooperative Grant Agreement 386-A-00-00-00068-00
Period Covered: 1 May 2000 to 31 December 2003

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CONTENT

SECTION 1 **Program Summary - AUDMP Achievements, Lessons Learned and Future Directions**

SECTION 2 **AUDMP – Program Completion Report**

SECTION 3 **AUDMP Financial Report - Summary**

Acronyms

ADB	Asian Development Bank
ADMIT	Asian Disaster Mitigation Training Network
ADPC	Asian Disaster Preparedness Center
ADRC	Asian Disaster Reduction Center
AIT	Asian Institute of Technology
AUDMiN	Asian Urban Disaster Mitigation Network
AUDMP	Asian Urban Disaster Mitigation Program
AusAID	Australian Agency for International Development
CASITA	Capacity Building in Asia using Information Technology Applications
CBDM	Community-based Disaster Management
CBO	Community-based Organization
CHPB	Center for Housing, Planning and Building
CTO	Cognizant Technical Officer
FEMA	Federal Emergency Management Agency
GOI	Government of India
HSMI	Human Settlement Management Institute
IDNDR	International Decade for Natural Disaster Reduction
ISDR	International Strategy for Disaster Reduction
ITB	Institute of technology Bandung
LOP	Life of the Program
MRC	Mekong River Commission
NGO	Non-governmental Organization
OAS	Organization of American States
OFDA	Office of Foreign Disaster Assistance
PMP	Prevention, Mitigation and Preparedness
PID	Project Identification Document
RHUDO	Regional Housing and Urban Development Office
RUDO	Regional Urban Development Office
RCC	Regional Consultative Committee
SLUMDMP	Sri Lanka Urban Multi-Hazard Disaster Mitigation Project
TRMCE	Training, Resource Materials and Continuing Education
TUGI	The Urban Governance Initiative
USAID	United States Agency for International Development

SECTION 1 – Program Summary

AUDMP Achievements, Lessons Learned and Future Directions

I. Executive Summary: The Asian Urban Disaster Mitigation Program (AUDMP) - An OFDA Disaster Mitigation Success Story

The Asian Urban Disaster Mitigation Program (AUDMP) implemented by the Asian Disaster Preparedness Center (ADPC) is an OFDA disaster mitigation success story. Due to its design, effective implementation, and duration over a remarkable nearly ten-year period, the program contributed substantially to the present recognition in the countries of the region of the importance of disaster mitigation to the process of sustainable development and economic growth and stability. AUDMP identified specific models that work in the Asian context to reduce vulnerability to disasters and documented those models in detail to support their replication in many other communities and countries. It established strong networks of regional and national disaster mitigation professionals and experts who can continue to help replicate disaster mitigation models unique to the Asian context throughout the region. AUDMP implementation partners now represent a network of diverse Asian institutions that can continue to promote disaster mitigation in their home countries as well as in neighboring countries. The program built the capacity of ADPC to be able to support regional disaster mitigation initiatives in Asia through these networks of institutions and professionals both technically as well as at policy decision making at the highest levels of government.

ADPC is now positioning itself to continue to support disaster mitigation initiatives throughout Asia with its *Asia 2020 Strategy*. ADPC developed the *Asia 2020 Strategy* to be able to continue providing support in the ways that have worked the most effectively based on lessons learned from AUDMP. The strategy consists of the following three distinct programmatic thrusts that will be supported by the ADPC Urban Disaster Risk Management Team and its network of regional and international disaster mitigation professionals.

- Policy and Technical Support for Disaster Mitigation Programs and Emergency Management and Response Planning – Community by Community
- Development and Implementation of Public Awareness and Risk Communication Strategies
- Knowledge Development and Capacity Building

Policy and Technical Support for Disaster Mitigation Programs and Emergency Management and Response Planning - Community by Community in 100 Asian Towns and Cities: Working at the local level through partners ADPD will continue to support disaster mitigation initiatives. Given the solid start this work has achieved in the region, ADPC hopes to obtain the resources necessary to continue and more importantly, expand this critical local level support community-by-community, town-by-town and province-by-province throughout Asia. For this strategy, ADPC has set a target of 100 Asian towns and cities where it plans to help develop comprehensive disaster management, response planning and mitigation programs. While the effort will result in decidedly local activities on the front lines of disaster preparedness and mitigation, each one will be carefully tied to *national level policy dialogue focused on exploring the implications of underlying factors that lead to disasters such as population growth and high densities, vulnerable human settlement patterns, environmental degradation, climate change and extreme weather events and unplanned, unrestricted economic development.*

Development and Implementation of Public Awareness and Risk Communication Strategies in ten (10) Disaster Prone Asian Countries: One of the most important areas that must be more fully developed throughout Asia is that of Public Awareness. While headway has been made, experience in this area is still thin compared with its importance in making disaster mitigation understood and broadly supported when compared with other competing development demands. From experience gained during the implementation of AUDMP, ADPC has developed guidelines

and training courses specifically targeted at governmental decision makers, NGOs and media groups to expand their skills at identifying the key messages needed and them implementing public awareness and risk communication program.

Knowledge Development and Capacity Building: Carrying on its long tradition as a knowledge development and capacity building institution and based on experience gained during from the AUDMP and other programs during the last 10 years, ADPC has made the strategic commitment to broaden and deepen this aspect of its activities through the implementation of the following Knowledge Development and Capacity Building strategic objectives:

- Publication of "How-to" Resources
- Support of Regular Regional Sharing of Best Practices
- Continued Action Research to Develop Best Practices
- Conversion of Mitigation Training Courses to Higher Education Courses
- Continued and Expanded Training Course Offerings

The ADPC Urban Disaster Risk Management Team: ADPC has established a unit called the Urban Disaster Risk Management Team. This team of professionals drawn from throughout Asia consists of an in-house group of individuals with a general knowledge of disaster mitigation approaches along with a specific area of expertise in the subject. More than this however, ADPC has formalized its relationship with national partners whose disaster mitigation expertise was further developed during the AUDMP programs based on practical experiences of implementing projects. Most importantly, ADPC has also made a strategic commitment in its on-going, long-term vision and strategic planning process to provide this kind of support to the region. As a result, *the ADPC Urban Disaster Risk Management Team represents the only significant, regionally indigenous focal point of a network of expertise that can provide the broad range of technical support needed for new mitigation initiatives community-by- community and country-by-country throughout Asia.*

Asia 2020 Strategy: This significant, strategic commitment represents the almost two decades of institutional experience gained by ADPC since its establishment in 1986 the last half of which was primarily focused on disaster mitigation. ADPC recognizes the need to continue the most successful elements of the program for another decade and has developed an institutional plan and established the team of professionals and institutions to do so. ADPC needs and deserves resources to implement this institutional initiative in order to ensure that the solid foundation established through the AUDMP is built upon and spread over the coming decade. The OFDA APS should consider the ADPC 2020 Strategy while developing programmatic descriptions for project proposals from ADPC.

II. Pre-Program Disaster Mitigation Context

Worldwide Context: Worldwide, in the late 1980's and early 1990's, a relatively small group of academics, development professionals and enlightened practitioners were aware that larger and larger amounts of money were being spent on disaster relief and response while little was being done in the development process to prevent or mitigate the potential effects of disasters. This awareness led to an initiative within the United Nations to initiate the International Decade of Natural Disaster Reduction. The decade was initially intended to focus on the scientific and technical aspects of disaster mitigation.

Asian and ADPC Context: At the same time the state of disaster mitigation in Asia was such that there were few regulatory requirements, little information, no projects and only a couple of

training courses for structural engineers. Each country did have an ad-hoc technical capacity for disaster mitigation limited to a select few, but broad awareness of the importance of disaster mitigation as a part of the development process was very low. ADPC, established in 1986 at the Asian Institute of Technology in Bangkok, was, at the time of its establishment, the only regional center of its kind in the world that provided regional disaster management training and technical assistance. ADPC knew well this small, ad-hoc network of people interested in urban disaster mitigation in Asia. They consisted mostly of technical people such as engineers or seismologists, almost no city planners and few NGO's.

The political and governmental focus at the national and local levels at the time was focused chiefly on relief and response after disasters. The tools, methodology and process to decrease vulnerability to disaster, while beginning to appear in publications of limited circulation, were not widely known or practiced, and what little mitigation work was being practiced, focused primarily on structural and technical solutions rather than on making those solutions a normal, integrated part of the development process. The economy was booming, urban population growth and migration was increasing. Industrialization and infrastructure investment was at an all time high. Clearly, as ADPC was pointing out over and over in its training courses, disaster vulnerability throughout Asia was likely to be growing at least as fast if not even faster. In this context, ADPC's courses and technical assistance in the late 80's and early 90's were primarily focused on disaster management and preparedness in general, but always contained the underlying message that disaster mitigation *must* become the a major focus of the development process in Asia. The problem was though, that ADPC's audience at the time consisted primarily of disaster managers *not* the development planners and practitioners that needed to hear and learn to apply this message.

USA Context: In the USA, with the exception of some states like Florida and California where the frequency of hurricanes and earthquakes is relatively high, disaster management practice was still primarily focused on disaster relief and response operations. In fact the US Government unknowingly encouraged the growth vulnerability in the development process for years through a flood insurance program that provided insurance for development of houses on flood prone property.

USAID Context: However, in Washington, OFDA had just evaluated twenty years of program funding and concluded that about 40% of their funding went to mitigation programs. From this study came the decision to set up the Prevention, Mitigation and Preparedness (PMP) office that would develop and support disaster mitigation efforts. Through this office, OFDA signed an MOU with the USAID, Office of Housing and Urban Development, through which they had agreed to jointly fund urban mitigation initiatives, the first of which was through RHUDO/Caribbean to the OAS to implement a disaster mitigation project for the Caribbean region, which OFDA feared was "too process oriented". At the same time, OFDA was also considering the development of regional disaster mitigation project proposals for South America, Africa and Asia.

In Asia, RHUDO/Bangkok was working with ADPC where they hoped to field an urban disaster mitigation advisor who would work with the center to develop and implement the Asian regional project. A commonly held view by many at OFDA outside their PMP program staff was that disasters in Asia were rural and urban disasters were historically uncommon. On the other hand looking forward, the RHUDO/Asia office in Bangkok could see the growing vulnerability and was very interested in linking the project to its Housing Guarantee Loan programs recognizing that these infrastructure investment programs resulted in billions worth of potentially vulnerable urban infrastructure. Meanwhile most USAID Missions the RHUDO's worked with in Asia, except the Philippines and Bangladesh, were dubious (if not downright hostile) towards the idea

of a regional program on disaster mitigation. The Missions reasonably asked, "If the communities we work with in Asian cities are struggling to deal with *conditionalities* such as garbage collection and sewer systems, how can we assume they will be interested in dealing with distant *eventualities* such as disasters?"

OFDA/PMP and RHUDO/Asia wanted a very pragmatic program that resulted in *measurable* physical, social or economic *change* that was project oriented and concrete. They wanted a project whose purpose was to decrease the disaster vulnerability of communities and people in urban areas, to decrease the vulnerability of infrastructure, shelter and critical lifelines, and to promote replication and adaptation of successful mitigation projects. They wanted a project that resulted in real change in its target countries. ADPC, the only regional disaster management center of its kind in Asia, had recognized the need for such a disaster mitigation program in Asia for years. The Asian Urban Disaster Mitigation Program (AUDMP) was born.

III. Initial Program Design and Implementation

Effectively, the conceptualization of the Asian Urban Disaster Mitigation Program (AUDMP) began in January 1993 and culminated in the acceptance of a Project Identification Document (PID) by OFDA/PMP in October 1994. The project was designed in detail and approved for funding during the following year. Initial mobilization and implementation took place from October 1995 until mid 1998 when the Mid-Term Evaluation was done.

Initial Program Design
Between October 94 and October 95 a project design team was assembled consisting of ADPC senior staff and three international disaster mitigation experts that worked on the design of AUDMP. The team developed an overall program design and through country visits to India, Indonesia, Sri Lanka, the Philippines and Nepal, identified by OFDA/PMP and RHUDO/Asia as the five initial target countries, the team developed initial scenarios for what were called National Demonstration Projects. The basic program design assumptions for the demonstration projects were essentially the following straightforward guiding principles:

- Each country has the technical expertise to do disaster mitigation
- Each country has the institutional capacity to do disaster mitigation
- Keep it simple with a standard approach flexibly adaptable to the diversity of Asia
- Keep it simple with the focus on secondary towns and municipalities (not mega cities)
- Keep it simple with a preference for starting with one disaster and expanding from there
- Focus on simple, common sense mitigation measures integrated into the normal urban development process not just on science, technology or complicated GIS mapping
- Focus on communities with high vulnerabilities not just the most recent disaster

Technical Expertise: It was assumed that the necessary technical expertise existed in each country. Even though this expertise was known to consist primarily of small ad-hoc groups ADPC was comfortable with this assumption that was further confirmed as the project was initiated.

Institutional Capacity: It was also assumed that organizations and institutions existed in each country that ADPC could partner with that could implement each project. This assumption, while essentially true, turned out to be more difficult to put into practice during the project design stage. As was pointed out several times, there is no "Ministry of Disaster Mitigation" in any country and most NGO or private sector organizations working on disaster issues were organized around relief, response and preparedness – not mitigation. Mitigation, especially in the context of urban

development, was essentially a new concept and organizations connected with it were just beginning to incorporate the concept into their policy and process, but few had organizational arms or branches that focused on disaster mitigation especially in the urban sector and if they did they were very new.

Flexibly Adaptable Standard Project Design Approach: Another basic concept was the assumption that demonstration projects in each country would be unique to the cultural, governmental and social diversity of Asia. While a standard approach was foreseen of designing each project around a consistent set of project components which included demonstration projects, training, information and policy change it was assumed that the projects would be as diverse as the Asian context. This was born out in the diversity of the projects. However, it was later seen that more flexibility should have been used in the design and implementation particularly of the training and policy change components.

Secondary Towns Focus: The basic program design assumption was that documented examples of disaster mitigation programs existed for major cities in developed countries such as Japan, New Zealand or the US, but little had been done or documented in the towns and cities of Asia's developing countries. The project was designed to implement projects that demonstrated how to do disaster mitigation as an integrated part of the urban development process in specific towns and secondary cities in five target countries. It was assumed that focusing on secondary towns and cities rather than mega cities would offer a greater chance for achieving success and real measurable change. For example, the program would target demonstration projects in secondary towns and municipalities such as Davao or Cebu rather than Metro Manila or in Baroda rather than New Delhi. The assumption being that these communities would be more manageable and simpler in an institutional sense.

Most importantly, on a regional basis, secondary towns represented (and still do) the fastest growing area of vulnerability in the region because this is where the majority of urban migration, growth and investment was (and still is) actually taking place. While mega cities exhibit a multitude of problems that need to be solved, the solutions are far more complex to implement or even identify. Also, there was a strong devolution and decentralization movement in all the target countries (except Indonesia which soon changed) that would quickly result in far greater responsibility at the municipal level for making disaster mitigation a part of their development process.

Start With One Hazard Type: In order to keep the projects focused and reasonably simple, it was assumed that each should start with a focus on one hazard type after a fairly simple initial assessment of the potential impact of all hazard types. While conventional wisdom is that a community must take a multi-hazard mitigation approach it was assumed that this would overly complicate the process with the risk of transferring the focus to analysis rather than mitigation actions. It was also assumed that this process was new and assessing the vulnerability to one hazard is complicated and once completed, the projects could eventually expand to include other hazards. A second step that was taken to avoid this risk was to make the projects a two step process starting with a hazard assessment but withholding further funding until a clear disaster mitigation action plan along with in-kind funding for it was identified.

Simple Mitigation Measures Integrated Into Development Process: It was assumed that mitigation measures should be simple, straightforward and something that could become a part of the normal development process. This meant that financially sustainable mitigation measures must be identified that were not one of a kind, project funded actions. The project specifically did not fund the mitigation measure itself, but would fund the processes required to assess the hazard and vulnerability or the process needed to permanently establish and fund a mitigation process.

Focus on Highly Vulnerable Communities: Finally, it was initially thought that the most effective demonstration projects would be ones initiated in communities with a high vulnerability to a particular hazard but that had not just had a disaster of that type. The thinking here goes against the conventional wisdom that disasters create opportunities to do disaster mitigation. It was assumed, for example, that the program should not demonstrate that communities that had just been flooded for the first time should immediately implement a flood mitigation project just because of the recent flood. Instead it was thought that the project should demonstrate the need for communities to assess their vulnerability to potential hazards and take action based on the greatest risk identified by this assessment not a knee jerk reaction to a recent disaster that the community may actually have a lower level of vulnerability to.

Initial Program Implementation (Phase I)

ADPC initiated the Asian Urban Disaster Mitigation Program (AUDMP) in October 1995. Funding available for the 5 country regional program was limited to $4.4 million over a four-year period. The project funding mechanism was a Cooperative Agreement between ADPC/AIT and USAID in which USAID shared in the overall program management and guidance with ADPC/AIT who also managed program implementation.

Worldwide and Asian Context of Disaster Mitigation: United Nation's IDNDR was well underway having just had the Yokahama Conference a year earlier. Little had changed in the overall Asian disaster mitigation, economic or growth scenario since the program design process described in the previous pages. However, a major earthquake had just devastated Kobe and parts of Osaka, Japan as a reminder that even Japan with all its technical and financial might could also be brought to its knees by devastating disasters.

ADPC Institutional and Management Changes: A year before AUDMP started, ADPC held a large, regional workshop funded by ADB to consider ways to encourage its institutional and financial growth as a regional center in Asia. The workshop underscored the excellent reputation ADPC had developed in the region as well as the need for ADPC to spin off from its host university AIT - a theme that had also been identified in several earlier studies. Over the course of the year leading up to the start of AUDMP, the ADPC Director, Terry Jeggle, resigned, was temporarily replaced by an ADPC Senior Management Team and was then permanently replaced by a new Director selected by AIT with funding from AusAID. The new Director, John Barret, was charged with making ADPC financially independent. Just prior to the initiation of AUDMP, Barrett held an ADPC institutional strategy staff retreat and developed a solid strategy for growth that positively embraced AUDMP. Over the course of the next several years this institutional strategy and the growing recognition by both institutions of the diverging institutional mandates and management requirements of AIT and ADPC led to the initiation, under Barrett's leadership, of a process that would lead eventually to ADPC's independence.

Overall AUDMP Management (Cooperative Approach): The program was funded by USAID through a Cooperative Agreement mechanism which meant that OFDA/PMP, Urban Programs in Washington and RHUDO/Asia all were to have a substantial role in the overall guidance and management decisions of the program. Practically speaking, this resulted in the establishment of a regular bi-annual management review of the program by what came to be known as the Core Group that consisted of key representatives from the USAID agencies responsible for managing the program funding which included OFDA/PMP based in Washington, Urban Programs (Pre/ENV/UP) based in Washington, RHUDO/Bangkok and ADPC as the implementing organization. The primary USAID management, fiscal responsibility and the Cognizant Technical Officer (CTO) was housed initially with RHUDO/Bangkok.

Program Implementation Team: ADPC initiated AUDMP with a Senior Program Manager, an Information Manager and administrative support staff. The limited funding that OFDA had available for the program meant that it had been designed with a lean implementation staff that would have to rely heavily on its partners and specialized technical inputs to design and implement in-country projects. The training component of the project was to be developed and delivered by ADPC's Training Section.

Monitoring and Evaluation: Very early in the program the Monitoring and Evaluation (M&E) system was developed based on the required "Managing for Results" process used at the time throughout USAID. This system has documented measurable results based on the stated program goals and objectives since the beginning of the project. Although it does not perfectly capture all the nuances of the project's success, unintended successes or the intangible results that have to do with institutional development in the countries, the region and at ADPC, it has documented the regularly achieved results of targets set initially and then revised after the mid-term project evaluation.

Project Partner Selection Process: In all program target countries, each project design began with joint visits to USAID Missions by RHUDO/Asia representatives working in those countries, the OFDA Senior Regional Advisor and the ADPC/AUDMP Program Manager to discuss initial project designs compatible with Mission programs. From this visit potential collaborating organizations from government, NGO's and the private sector were preliminarily identified and a project partner(s) selected to design and implement the national demonstration project. The partner selected was seen early on as the most significant step in the process in terms of project success or failure and this perception was proved to be true through the life of the project.

One of the key challenges to this process was marrying the in-country needs, goals and objectives of the project, the USAID Mission, OFDA, RHUDO, ADPC and the selected project implementation partner. This did not always lead to the best selection of partners, although on the whole it was relatively much more successful than it could have been had it been done less carefully. Regarding selection of the partner institution itself, the biggest challenge was finding an institution with the correct mix of community, local government, national government and NGO contacts along with enough *combined urban development and disaster management knowledge and expertise* to be able to quickly learn how to successfully implement the demonstration project. Finding such an organization was almost impossible because most organizations had either a relief and response orientation, or a development focus with knowledge of a very limited technical part of disaster mitigation (i.e. seismic engineering, hydrometeorology, etc).

National Demonstration Project Design: Once the Project Implementation Partner was identified a project design would be prepared and submitted to ADPC/AUDMP for review. This cycle would be repeated until both ADPC and the Project Implementation Partner were satisfied that it would be successful and meet the project design criteria defined in an RFP that formed the basis for the project design. The project design document was then circulated to the Core Group for review and comments that would be incorporated in the project design before implementation. This process was relatively successful and seemed to result in good final proposals and projects.

Information and Networking Program Development: The initial project Information and Networking strategy was designed and underway by the middle of 1996. It primarily focused on collecting existing information on urban disaster mitigation best practices that could be made available to Project Implementation Partners who were looking for models upon which to base their projects. This strategy included searching for information specifically requested by partners as well as the development of a basic library of information needed to support all the projects. Where this did not exist experts on little known areas were identified and brought in to assist

partners adapt such models for local use. An early example of this is the Multiple Hazard Mapping and Risk Assessment methodology developed by Linda Noson for the Sri Lankan municipalities to use under the SLUMDMP project. These methodologies would in turn become a part of the information available to all partners involved with the program.

Training and Technical Support Program Development: Within the first year, based on the original proposal that included the four new regional courses listed below, ADPC's Training Section developed the initially straightforward training program and presented this to the Core Group. The basic principle was to develop the four regional courses that would be tested at ADPC and then adapt them for use throughout the region and in the target countries as appropriate. The first course renamed Urban Disaster Mitigation (UDM-1) was offered in October 1997, the second year of the program and was an overview of disaster mitigation.

- Risk Management and Mitigation for Urban Professionals
- Hazard, Vulnerability and Risk Assessment
- Mitigation for Earthquakes
- Mitigation for Floods and Landslides

The Training and Technical Support Program component also included administrative systems for fielding technical expertise from ADPC or elsewhere needed to provide technical inputs necessary to fill knowledge gaps of the implementing partners. Linda Noson's technical input mentioned above is good early example of this support.

IV. Mid-Term Evaluation and Mid-Course Corrections

Toward the end of 1997 the newly recruited OFDA/PMP Director initiated program evaluations of the two OFDA/PMP funded regional disaster mitigation programs operating in the Caribbean and Asia in order to assess the need to end, continue or expand funding. This evaluation for the AUDMP was a very positive process that identified strengths that should be supported and weaknesses that should be changed or redirected. However, this period was also hallmarked by a number of upheavals that well illustrated the Chinese curse "May you live in interesting times".

The Changing Disaster Mitigation Context

Changes were beginning to take place in general awareness about disaster mitigation or vulnerability reduction that was starting to show up in institutional changes taking place.

Worldwide Context: National and regional meetings to review progress made in disaster reduction were in the planning stages as the end of the UN-IDNDR was quickly drawing near. There was a simultaneous growth of disaster management networks and consortiums such as the new World Bank Consortium. Other regional centers in South America, Africa and Asia focused on disaster management and mitigation were beginning to emerge or were in the planning process.

Asian Context: In Asia, the Japanese Government had initiated the process of establishing a disaster management center. In Manila, three ADPC senior staff that had resigned from ADPC due to complexity of negotiations with AIT over independence attempted to establish a center based on the ADPC model under the assumption that there so much work to be done in Asia there would be more than enough room for three disaster management centers. A new disaster mitigation program was initiated with Japanese and UN funding called RADIUS that was designed around similar principles as the AUDMP and resulted in the implementation and documentation of demonstration projects but focused on earthquake mitigation. AUDMP staff

and to a larger extent, AUDMP national demonstration project partners (especially Nepal and Indonesia) were involved in designing, refining and implementing the program. ADPC was invited to jointly host and subsequently helped host the UN-IDNDR Asia conference with UNGRID, UNDP and UN-IDNDR, which among other things, showcased AUDMP accomplishments. Asia experienced major upheavals with the end of the economic boom resulting in a large economic bust and associated currency devaluation in many of the AUDMP target countries as well as ADPC's host country Thailand. Major political transformations took place in Indonesia, Cambodia, Vietnam and Lao PDR that suddenly made it possible to consider initiating projects in Cambodia, Vietnam and Lao PDR and completely changed the previously stable top down style of government of Indonesia in a way that had a significant negative impact on the demonstration project.

ADPC Institutional Context: The sudden loss in March 1998 of three senior staff through resignations led to major upheavals in the management of ADPC and between ADPC and AIT. Until a new Director was found, AIT temporarily turned ADPC's day-to-day management over to a three-person management team advised by Founding ADPC Director, Brian Ward. That committee included the AUDMP Program Manager. While this obviously had a short-term negative effect on the AUDMP as well as on ADPC as a whole, the long-term outcome was that this act probably quickened the process that eventually led to ADPC's independence – an independence that was amicably granted in August 1999 in an MOU between ADPC and AIT and then formalized by a "novation" process required by USAID in which all contractual, financial and legal responsibilities were transferred from AIT to the new ADPC foundation. This important step from which ADPC emerged as a newly created international foundation was achieved under the wise guidance of an interim transition board consisting of AIT, USAID/OFDA, AusAID and DANIDA, UNEP and others. Fortunately for ADPC, out of this process, Dr. Suvit Yodmani (then UNEP Director) was selected as the new Executive Director of ADPC starting in April 1999. Prior to independence Dr. Suvit immediately began working to ensure ADPC's financial soundness and stability. Just after independence, ADPC's latent potential resulted in an explosion of new projects and financial support that was a pleasant, though not complete surprise to those closely involved with the center. Within his first 4 months, Dr. Suvit lead a strategy session with all ADPC staff to reorganize the center and to ensure that all staff shared a common vision of ADPC's future. This led ultimately to a new vision of ADPC's regional role that expanded from that of being essentially a technical resource center into an organization that would begin positioning itself to facilitate change at the highest levels of governmental and decision making circles. This also led to the initiation of the process required to make ADPC a fully international organization. This now nearly completed process will result in the legal declaration, by an Act of Parliament of the Royal Government of Thailand and seconded by numerous other governments of the region, that ADPC is an autonomous, international organization.

USA Context: It was not until after a bad public response to FEMA's Hurricane Andrew relief and response operations that it became clear at the highest governmental levels in the US, that something had to change. This started with James Lee Witt's appointment by the new Clinton Administration to head FEMA. FEMA recognized the unsustainable way disasters were viewed as relief and response operations and initiated an important trend toward making the states responsible for development that reduces rather than increases vulnerability. A significant nationwide project called Project Impact was designed by FEMA shortly after the AUDMP was designed. It was based on the same basic principles and also aimed itself at demonstrating state-by-state, sustainable disaster mitigation programs that eventually would reduce the economic losses suffered in the USA. This approach has since survived a change of political parties.

USAID/OFDA/RHUDO Context: At this same time, OFDA was, as a matter of policy, beginning to integrate disaster mitigation approaches into all its activities including relief and response

efforts. RHUDO had expanded from a single regional office in Bangkok to include two more in Indonesia and India. However, the Housing Guarantee Program, the primary housing and infrastructure loan program historically implemented by the RHUDO's was at the beginning of a process of being phased out by USAID and their was a shift from the original focus on housing itself, to a focus on infrastructure as a stimulator of community and municipal development. As a result, the RHUDO's became RUDO's (Regional Urban Development Offices). However, along with their mission counterparts, they had also long before begun to increase their emphasis on the importance of disaster mitigation in the urban development process tied to their urban development grant programs. Likewise, USAID Mission awareness and keen programmatic interest in disaster mitigation was also on the rise soon making AUDMP a much very welcome program at all USAID Missions

Mid-Term Evaluation Overview

The basic outcome and message of the mid-term evaluation was that AUDMP was under-funded and understaffed but, despite these constraints, was beginning to achieve the initially intended results and promised to be an overall success. Therefore the evaluation team recommended that, if available, additional resources should be provided to build ADPC's AUDMP management team to do more than administer the program. They recommended a larger management team capable of providing substantive support to each project by providing much more direct technical assistance and help in actual project implementation especially in new, less well known areas of experience. This substantive support would result in a transformation of the information program networking and policy support, inclusion of community based disaster mitigation efforts, support for social marketing and public awareness programs, a redirection and expansion of the originally planned training program and an enhanced effort to ensure that the target country programs were sustainable and replicated elsewhere.

Another very significant decision made at that time was to expand the project to include the five additional target countries of Bangladesh, Cambodia, Lao PDR, Thailand and China. However, expansion to include China was based on an assumption that additional funding could be leveraged from the National Science Foundation under a special program.

Resulting Overall Changes

The overall changes to the program resulting from the mid-term evaluation and the decision to expand the number of target countries were as follows:

Program Management Team Expansion: The AUDMP management team at ADPC expanded from a staff of three professionals and one administrative support staff to a staff of eight professionals and two administrative support staff. This allowed the ADPC program staff in Bangkok to grow from a mostly administrative role to a technical support role or from a reactive to a pro-active role with project partners. It allowed program components to grow from efforts limited to minimal support of the target country activities into mini-projects in support of country activities themselves.

Information Program - Transition from Partner Support to Collection/Documentation Role: The information program transformed from the earlier described basic program to one that was much more proactive in developing materials to distribute to other implementation partners throughout the program as well as other organizations interested in replication of AUDMP disaster mitigation methodologies. This component became much more focused on helping project partners in each target country document its successes and failures (what to do and what not to do) for use in ensuring both the sustainability and the replicability of each project in each country (see sustainability and replicability discussion below).

Networking & Policy Support - Transition from Partner Support to Proactive Process, Increased Focus on Development of National Policy Workshops and Addition of a Public Awareness/Social Marketing Activity: The project was to increase its focus on networking with the addition of an ADPC staff member to focus on and provide support to this aspect of the project. It was also agreed that ADPC would work closely with each project implementation partner to initiate dialogues and meetings that would support policy change. This matched well with ADPC's new vision of itself as an agent of policy change. Annual working group meetings were planned to be held in the target countries to help bring a focus to the issue and project and a large, end of project conference was planned. Finally, based on the recognition of its importance to the demonstration projects and inspired by AIDS public awareness campaigns, it was agreed that an effort would be made to include this as a component of each project as a part of long-term sustainability and replication.

Training Program – Increased Focus on Providing Support for In-Country Training Programs: Up until this point the primary focus of the training program had been on the development of the courses identified in the original project design. These courses were being developed and tested at the regional level and would then be adapted for use at the national level. This was seen to be too unrelated to the national demonstration projects. It was agreed that a strong effort would be made to develop courses more specifically related to the needs of the national demonstration projects

Sustainablity and Replicability: These important project objectives were defined as follows:

> Sustainablity - Will national demonstration projects be continued in that given place?
> Replicability - Will national demonstration projects be continued in other places?

Sustainablity had long been an objective of the project and a renewed effort evidenced in the increased management team support for the national demonstration projects, the new public awareness programs, etc., were seen as efforts to enhance ongoing work towards sustainability. *Replicability*, on the other hand, was a newly brought out program objective related to sustainability at the national level that would be applied primarily to the national demonstration projects in an effort to ensure that not only would a national demonstration project be sustainable in and of itself, but that it, or something similar, would be repeated in other places in that target country. A third phase was added to the national demonstration projects, which was a proposal for a set of activities to ensure replicability. In addition, other programmatic components, such as the strengthened support for policy change and public awareness campaigns were seen to be supportive of replicablity.

OFDA's Decade Long Support for the Demonstrating Urban Disaster Mitigation in Asia

One of the most innovative ideas that came out of this evaluation was the decision to increase the life of the program to what ultimately has become a decade of support for disaster mitigation in Asia. In hindsight, this commitment was made incrementally, but one of the most important commitments to causing real change is sustained commitment of resources over a long period of time. Normally the life of a typical development program does not exceed four or five years. A quick two to three years represents the norm. The effect of this long time period on the institutions involved with the AUDMP program, including ADPC, has made the program far more significant and long lasting simply because of its decade long duration that has allowed institutional learning to be fully absorbed.

Finally, when the AUDMP program began, it was the only one of its kind in Asia. When it started, very little mitigation work was being done to reduce vulnerability in any sector in Asia with the exception of the most developed countries of Asia like Japan giving the impression that

not much could be done without Japans high level of development. AUDMP has since demonstrated that much can be done within any developmental context the practicality and has also been the for-runner and model for numerous other disaster mitigation initiatives in the region.

V. Overview of Disaster Mitigation Today and AUDMP Achievements

Introduction

The Asian Urban Disaster Mitigation Program *(AUDMP) has made a significant contribution to establishing disaster mitigation as an integrated part of the development process in Asia in ways unique to the cultural, social and local context of each target country*. At the beginning of the program this was a very new concept in the urban sector. It is now a well-established, much more commonly understood concept. Most importantly, information products are available and still becoming available that will support the replication of program efforts in interested communities in the same as well as other countries.

In terms of *value for money*, OFDA can count the program among its success stories as a program that made a big impact for a small investment of its annual budget over a relatively long period of time – time that was needed to make an effective start on a relatively new development initiative. Overall, the AUDMP national demonstration projects and regional activities supported and enhanced decentralization, transparency and sustainable, economically sound development patterns being established at the time throughout Asia that will continue to contribute to the stability of Asia and the rest of the world. Stated in terms of direct economic benefits to the US government that provided the program funds, *AUDMP and the changes it has helped put in place will continue to contribute to building stable national partners in Asia for years to come*.

Disaster Mitigation Context Today

Much has changed in the context of disaster mitigation today compared to the early 1990s, especially in the Asia region that can, in no small part, be attributed to the impact of the AUDMP.

Worldwide Context: The UN-IDNDR was brought to a close and the UN-International Secretariat for Disaster Reduction (ISDR) has been established to carry on follow-up activities. ADPC was invited to serve on the advisory council of this organization as a representative of the Asia region. A number of regional disaster management centers similar to ADPC now exist throughout the world.

Asian Context: There is now a strong awareness on the part of development professionals about the need and importance of disaster mitigation as an integrated component of the development process that did not exist a decade earlier. While it is true that a number of other factors have also contributed to this awareness, a good deal of this change should be credited to ADPC and the AUDMP program funded and supported by OFDA/USAID.

Based on ADPC's first hand experience working at the highest levels with its partner representatives of the national government disaster management focal points, it is clear that at the national policy level, a great deal of effort is being put into making disaster mitigation high on the national agenda. For example, three dynamic regional leaders in this are India, Sri Lanka and the Philippines each of which are setting good examples for other countries in the region by their creative and ambitious programs. Their examples along with those of other countries represent good Asian models for disaster mitigation and can only serve to inspire and spur the region on to greater heights.

It is also important to note that the UN has established two disaster mitigation technical support offices, one for South Asia and one for Southeast Asia to provide technical assistance through its Missions in the region to ensure that national development programs it supports have an integrated disaster vulnerability reduction components. Along with this the EU has established programs and fielded program officers to support disaster mitigation in Asia as well.

ADPC Context: ADPC is seen in Asia as an important ally and resource for information, training, policy change and open access to a network of experienced disaster management and mitigation experts throughout the region. In great part this is due to the opportunities presented during the implementation of the AUDMP. There are now two significant disaster management centers in Asia that include ADPC and ADRC. ADRC is a Japanese Government initiative that is still in the process of establishing its mandate and purpose with its partners. Both have an important role to play and have established a working relationship through MOU with each other directly as well as with the UN-ISDR as a tri-partite regional body.

Over the last decade, ADPC has grown from a staff of around 14 in the early 90's, peaked at almost 60 and has stabilized today with a staff of around 40. The center's greatest human resource though is still its networks of disaster management professionals throughout Asia and the world. ADPC is still depended upon in Asia to provide sound technical assistance to its partners along with a broad range of disaster mitigation and management information products and training courses. ADPC's partnerships and networks have expanded enormously. One of the most significant contributions to this was the AUDMP program.

USA Context: Similar changes have taken place in the USA. FEMA'S Project Impact, based upon many of the same principles of the AUDMP, still continues to focus on natural disaster management and mitigation. The projects principles have been institutionalized as evidenced by recent well-publicized decisions taken against allowing development in vulnerable flood prone areas that not too long ago would have proceeded unchecked.

USAID/OFDA/RUDO's Context: OFDA has for sometime now made mitigation an integral component of all its programs and overall way of thinking, doing away with the need for a stand-alone PMP program as was the case in the early 90's. While the RUDO's programs have been absorbed into more Mission programs, several USAID Missions in Asia (representing over a third of the AUDMP target countries) have made disaster reduction one of their Strategic Objectives including Bangladesh, India, the Philippines and Vietnam and all USAID Missions in Asia recognize the important role disaster management and mitigation plays in the development process of Asian countries and factor this into their programs.

Program Achievements

The program goals set out initially and modified during the mid-term program adjustment process have been met or exceeded. This achievement has been measured and documented in the monitoring and evaluation process designed and established in conjunction with USAID. All agreed upon performance indicators were at least met (or in only two cases are just about to be met) or were exceeded over the life of the program (LOP). These indicators are summarized to date as follows:

- 10 of 10 targeted operational plans developed with resources from national collaborating institutions to carry out mitigation measures and demonstration activities after the program ends
- 21 of 25 targeted replications or adaptations of mitigation skills and procedures promoted in AUDMP demonstration activities by other organizations, communities or countries in Asia (more to come)

- 26% ($1.1 million) of the 20% targeted of the total USAID investment from non-AUDMP funding sources attracted by program and demonstration activities
- 43,000 Households potentially benefiting from AUDMP sponsored activities to reduce disaster vulnerability
- 23 of 10 targeted new or improved assessment methods and guidelines/standards used for public and private sector development
- 5 of 8 targeted emergency preparedness and response plans written or revised to reflect improved information on hazards and vulnerability
- 95% of public and private sector professionals with AUDMP initiated disaster mitigation training who are employed and using the knowledge gained in fields impacting disaster management or urban development of the 75% targeted
- 12 institutions where AUDMP initiated training and professional development course modules are institutionalized of the 12 targeted
- 5 regional networks, 209 organizations and 1,760 disaster mitigation professionals participating in the AUDMP regional information and contact network established during the program that started with 33 organizations
- 6 policies (of 2 targeted) established or revised to facilitate action, regulation, enforcement and or incentives for disaster mitigation and vulnerability reduction

ADPC, through the AUDMP and based on the AUDMP model through other programs and resources, is still making significant contributions to the following efforts that without a specific further funding strategy will come to an end: Even though a good start has been made, continued support in these areas is needed to ensure that the effect of the program is firmly established for all time to come. These contributions include:

- Demonstration of Disaster Mitigation Methodologies Appropriate To The Diverse Asian Cultural, Social and Local Context
- Documentation and Dissemination of Disaster Mitigation Methodologies Appropriate To The Diverse Asian Cultural, Social and Local Context
- Establishment of New Disaster Mitigation Networks
- Expansion of Existing Disaster Mitigation Networks
- Establishment of Regular Training Programs at the National Level Resulting in Well Trained Professionals Working In the Field
- Development of New and Enhancement of Existing Disaster Mitigation Policy, Regulations and Plans

Demonstration of Disaster Mitigation Methodologies Appropriate To The Diverse Asian Cultural, Social and Local Context: The AUDMP together with its target country partners are still working to further strengthen the sustainability of demonstration projects as well as the replication of those projects. The demonstrations have not only underscored how to do this in the targeted communities, but have resulted in over twenty new or improved specific methodologies that are unique to the national and/or regional context of Asia. The national demonstration programs and the institutions that implemented them are still operating and helping institutionalize disaster mitigation policies, procedures and regulations at the local level and demonstrating practical disaster mitigation measures that can be applied over and over again (replicated) throughout each target country. More importantly, these methodologies have been and must continue to be transferred from country to country by the disaster mitigation professionals that are involved with implementing them. An excellent example of this is the social marketing programs started in Nepal whose principles were transferred through the AUDMP network to Indonesia and then on to other target countries like Bangladesh. There is no greater influence on individual communities than that of another similar community explaining what worked for them and how it worked.

Documentation and Dissemination of Disaster Mitigation Methodologies Appropriate To The Diverse Asian Cultural, Social and Local Context: The AUDMP together with its target country partners have developed a wide range of information products to document all aspects of the program and each project. The documentation itself, along with the experience of doing it well, has been growing and maturing. Examples of these products include videos (documentaries as well as dramatic public awareness videos), case studies, working papers, and more. This documentation has been going on from early in the program, because in the long-term, in addition to the impact of the demonstration of disaster mitigation methodologies, this documentation will become the permanent record of these uniquely Asian experiences that can be used again and again to show similar communities how disaster mitigation programs can be integrated into their own development processes. These experiences are continuing and many more communities have shown interest in adapting them to their own unique context. Sustained and enlarged support for this will be important.

Establishment of New Disaster Mitigation Networks: The AUDMP has influenced or frequently played a significant role in the establishment of the following new disaster mitigation networks that ADPC participates in along with many others not listed. These networks represent a powerful resource group of disaster mitigation professionals that advocate vulnerability reduction throughout their communities, nations and regions.

RCC - Regional Consultative Committee on Disaster Management
ISDR Asia Partnership (ADPC/ADRC/UN-ISDR)
AUDMiN
ADMIT
World Bank Consortium
ISDR Working Group
Many National Networks

Expansion of Existing Disaster Mitigation Networks: The AUDMP has influenced or played a significant role in the expansion or strengthening or revised/new policies of the following networks that existed as the program began that ADPC now participates in.

Mekong River Commission (MRC)
CITYNET
TUGI

Establishment of Regular Training Programs at the National Level Resulting in Well Trained Professionals Working In the Field: In addition to developing and running eight new disaster mitigation courses as a part of the ADPC offering of fee based regional courses the AUDMP and ADPC was instrumental in the establishment of the following fee based courses at the following selection of illustrative institutions.

HSMI - Human Settlements Management Institute, New Delhi, India
    Urban Disaster Mitigation Course
ITB - Institute of Technology Bandung
    Urban Disaster Mitigation Course
Pokhara University
    Earthquake Vulnerability Reduction Course
CHPB - Center for Housing, Planning and Building
    National Disaster Mitigation Course
    Community Based Disaster Mitigation Course

AUDMP has institutionalized a significant number of fee based training courses at ADPC and other institutions that will continue to be given on a fee basis, that has already trained nearly 2,000 disaster mitigation professionals almost all of whom are still working in the field. This number of trainees will continue to grow and influence disaster mitigation decisions for years to come. Based on experience gained under AUDMP an important new initiative to establish university level network called CASITA has recently been initiated by ADPC

Development of New and Enhancement of Existing Disaster Mitigation Policy, Regulations and Plans: The AUDMP has at least influenced or sometimes played a very significant causal role in the development and implementation of disaster mitigation policy, regulations or operational mitigation plans. The following is an illustrative selection of this.

> *Mitigation Policy:* In Sri Lanka a national act was passed to establish National Physical Planning Department with its own disaster mitigation unit to help integrate disaster mitigation into the national land use planning policy directly as a result of the AUDMP. The Royal Government of Nepal has established a national day to observe the importance of earthquake mitigation and has established a national committee to organize this annual event. Likewise, Bangladesh has instituted a national disaster safety day and Sri Lanka's President plans soon to declare a national disaster safety day. In Indonesia, the fourth largest country in the world, the government has agreed to include an urban disaster mitigation component into its national development policy.
>
> In Thailand, the Royal Thai Government has established the Department of Disaster Mitigation and Prevention. In Sri Lanka, the GOSL is considering how to convert an ADPC study of long term disaster mitigation needs done as a result of the AUDMP program into policy and institutional change. In India, due in part to the influence of the AUDMP, the GOI has just undertaken a major, almost $2 billion effort using World Bank, ADB, UN, USAID and other funds to transform India's disaster management and mitigation system which will take the next ten years to implement.
>
> *Operational Mitigation Plans:* Naga City, Philippines developed a disaster mitigation implementation plan for the city that is still being implemented. Ward 34 of the Municipality of Kathmandu, Nepal developed an earthquake preparedness plan. The city of Bandung, Indonesia has established and is implementing a flood and earthquake mitigation plan. Flood mitigation plans have been developed and implemented for the Bangladesh municipalities of Gaibandha and Tongi. Nawalapitiya and Ratnapura in Sri Lanka both developed and are implementing multi-hazard mitigation plans.
>
> *Regulations:* In Lao PDR, a new fire code is being drafted based on the experiences gained from the AUDMP demonstration project.

Indirect Institutional Achievements That Make ADPC The Perfect Vehicle for Regional Disaster Management Change

AUDMP played a *very significant role* in providing ADPC with the opportunity to grow into the premier disaster mitigation advocate and focal point of an Asian network of disaster mitigation expertise, transferable skills and best practice information products. AUDMP was the largest, most visible program underway at ADPC during the institutional turmoil of its transition to independence. The importance of this program continuing sent a strong message about ADPC'S staying power to ADPC partners and other funding organizations that *cannot* be underestimated. As a result, AUDMP, in concert with several other smaller OFDA funded programs, had a direct

influence over the interest shown by other donor organizations in funding still more regional disaster mitigation programs at ADPC. These include programs funded by the AusAID, DANIDA, DIPECHO (EU) World Bank, ADB, and others, some of which are still going on now along with new ones.

As ADPC the began ramping up AUDMP's professional staff and activities based on the agreed mid-term course corrections and once several other large disaster management and mitigation projects were funded at ADPC by other donors due to ADPC's independence from AIT, ADPC truly became the key point of confluence for almost all disaster mitigation thinking in Asia. These factors contributed immensely to ADPC being seen as the key regional resource on disaster mitigation by many national government agencies and most NGO's working on disaster related issues in Asia.

VI. Lessons Learned

As the program draws to a close it is important to summarize the impact of the Asian Urban Disaster Mitigation Program (AUDMP). One of the most significant aspects of the programs was that, in a world where most development programs last a short three to four years, *the AUDMP activities have spanned an entire decade*. This alone is significant because of the simple length of time the program effort was sustained has resulted in a stronger impact.

Overall Lessons Learned from the Program Perspective

There were a number of broad disaster mitigation axioms that that were reconfirmed and supported by the experience of implementing the program, its demonstration projects, information and awareness programs, training, and policy change activities *or* that came directly out of the AUDMP experience itself. They were:

- All Disasters Are Manmade And The Direct Result Of Development Patterns
- Specific Mitigation Measures are Hazard Dependent
- Government Partnership and Cooperation Is Essential
- Decentralization, Devolution And Transparency Enhance Disaster Mitigation
- Disaster Mitigation is a Core Function of Government at All Levels
- Resources Will Be Attracted As Responsibility is Decentralized and Expertise and Political Will Are Strengthened through Training and Capacity Building
- Small Enthusiastic, Field Oriented Groups Make the Most Successful Institutional Partners
- Cross Sectoral, Multi-Disciplinary Partnership is Essential To Success
- Mitigation Measures Are Unique to the National, Cultural, Social, Economic and Local Context
- Mitigation is Most Effective When Fully Integrated in the Development Process
- Anticipate the Impact of Present Hazards on Future Development

In the following summary paragraphs, broad lessons learned from the AUDMP are summarized that either reconfirm fairly universally applicable disaster mitigation lessons or represent a few new universally applicable lessons.

All Disasters Are Manmade And The Direct Result Of Development Patterns: One lesson that was underscored time and time again through the AUDMP was that it is the development patterns of our communities regardless of size from small town to big city, in which vulnerability to a given potential disaster grows not because of the hazard. The term "natural hazards" gives the impression that it is the earthquake or flood that is dangerous when in fact it is the development

without consideration of these natural phenomena that is the real danger. This was the basic principle that was at work when the decision was made, NOT to let the Baroda community know of the growing vulnerability to chemical hazards because the hazard itself is manmade making it impossible to blame nature for the vulnerability.

Specific Mitigation Measures are Hazard Dependent: The measures taken to reduce the vulnerability to a given hazard or disaster uniquely tied to the hazard type because a development pattern vulnerable to one type of hazard may not be to another. For example, underground utilities may be less likely to be damaged by hurricane winds than pole-mounted utilities while the opposite is true for floods.

Intra and Inter-Governmental Partnership and Cooperation Is Essential: Disaster mitigation crosses all aspects of human activities regarding health, development, construction practices, economics, industrialization, housing, social interaction, etc. Therefore all parts of government have a role to play in vulnerability reduction both in terms of mitigation as well as preparedness and emergency response. Each appropriate part of government, whether local or national, must be made a partner in the disaster mitigation process or the process will be substantially incomplete.

Disaster Mitigation is a Core Function of Government at All Levels: Collaboration of the various parts of government both vertically and horizontally was shown to be necessary to ensure a comprehensive approach to disaster mitigation.

Decentralization, Devolution And Transparency Enhance Disaster Mitigation: Disaster mitigation is best done at the local level and by development and sharing of sensitive information about the vulnerability of physical or economic components of a society. Decentralization and devolution support and are engendered by the need to do disaster mitigation. While national and provincial political will and policies are needed, the actual development decisions and changes to these decisions are best made in the context of the local level communities not at higher levels. Transparency of information is critical to disaster mitigation because political fears of making sensitive information know have been shown to be not only unfounded, but to actually undermine the recognition of the need for safe development practices.

Resources Will Be Attracted As Responsibility is Decentralized and Expertise and Political Will Are Strengthened through Training and Capacity Building: Once information about vulnerability is clearly defined and expertise is increased, solutions were found that frequently had a low or no cost at all. Even when there is a high cost, if it is an efficient solution resources were found to support it that would not have been had the problem been unidentified. When it was clear from the public presentation of the results of a risk and vulnerability assessment that new mobile phone towers were being constructed without regard to their structural resistance to earthquakes in Nepal resources to reverse this trend were immediately found and applied and lines set aside for future use only in emergencies that otherwise would not have been.

Small Enthusiastic, Field Oriented Groups Make the Most Successful Institutional Partners: When selecting partners to implement a disaster mitigation program with, seek out the smaller, lean and mean organizations that are passionate about their work. The comfort of large institutions like universities or government agencies does not offer the most fertile ground for inciting change. Even if a government agency must be the focal point, find or set up a small, field oriented component of individuals that are field oriented and passionate about the issue.

Cross Sectoral, Multi-Disciplinary Partnership is Essential To Success: No single individual, profession, academic area of study, governmental department or organization has a comprehensive view of the systems that result in disaster. Disaster mitigation done well requires

that it be integrated into the development process of a society as it consists of all human activities and requires the broadest possible view to achieve success. The farmer, produce processor, distributor, wholesaler, merchants, the hydro-meteorologist and many others must learn to understand each other in order to apply their parts of the picture to reduce the vulnerability of a crop to floods and of an urban area to shortages and economic damage due to the flood.

Mitigation Measures Are Unique to the National, Cultural, Social, Economic and Local Context: Solutions that work in one community can not be transferred directly to another without first adjusting them for the national, cultural, social, economic or local conditions of the second community. Basic principles of social marketing can be repeated, but the wording of the message, even the language and pictures will be completely different in a different community.

Mitigation is Most Effective When Fully Integrated in the Development Process: It was said during the AUDMP that hazard maps do not save lives. This means that, although this initial, first step of analysis and assessment of hazard information for a community is useless unless it is used in a holistic way by many different parts of a community including the relief and response planners, structural engineers, school teachers and their students, and the local town planners all of whom play a different role in the development process and will use the hazard information in a different way than the others.

Anticipate the Impact of Present Hazards on Future Development: The biggest mistake a community can make is to look back historically at disasters and their community to make decisions about their communities future. Looking back may give an impression of a smaller, less vulnerable community and of a lower return rate of a hazard that is now more likely due to development al or environmental changes for example Kathmandu was much smaller and constructed of different building types when it experienced an earthquake many years ago. Therefore, assuming that the same number of people will be injured or killed and the same amount of damage would occur gives a completely inaccurate picture of what will happen now or in the future given the larger population and more dangerous construction systems. Looking forward to what a community will become is what gives a more complete picture of what may happen during any given disaster type.

Selected Lessons Learned about Specific Disaster Mitigation Models Appropriate to the Asian Context

The AUDMP was a learning tool for all concerned. At the beginning of the program, understanding of disaster mitigation practice was still limited to what had been successful as experiments in other parts of the world or region in very different contexts. Like new subject areas, the theory about what could and should be done, frequently preceded full development of models for how the actual practice should be done. AUDMP was focused on more fully developing known models and doing this in the context of the program target countries in Asia. Some of those models and examples of how they were applied in the projects follow:

Policy, Legal and Institutional Arrangements: Sound policies and legislation that facilitate disaster mitigation and institutional arrangements that clearly define lines of responsibilities and inter/intra-relationships of government agencies, NGO's the private sector organizations, private individuals, etc. must be in place in advance of a disaster to ensure that disaster mitigation is integrated into the development process and that preparedness planning is interrelated. Disaster management offices and committees at the national and local levels must be in place to support such policies and legislation. In the AUDMP, the following selected examples illustrate this:

> Bangladesh – At the community level, the disaster management committees for the municipalities of Gaibandha and Tongi had to be revitalized and made operational again in

order to support the disaster mitigation efforts that were planned to be a part of the AUDMP projects there. One of the most significant changes made in the policy approach of these committees was the inclusion of disaster mitigation in addition to preparedness, relief and response so that a "Total Risk Management" approach was embraced. Once the committees had information that formed the basis for making decisions and influencing development patterns, they became dynamic action oriented groups.

Sri Lanka - After the AUDMP program was underway with its first project in the municipality of Ratnapura and this first demonstration program almost completed it became obvious to the provincial and national government agencies involved in is implementation that the provincial and national policy and regulatory framework did not adequately support the process. Therefore, after several more years of hard work, an Act was passed by parliament to establish a National Physical Planning Council with its own disaster mitigation unit that was designed to support similar programs in other municipalities that also included a better definition of the roles, relationships and lines of responsibility between all the governmental players at all levels of decision making.

Hazard Mapping and Risk Assessment: Comprehensive risk assessment is a critical starting point and basis for essential decision-making and design of both mitigation programs and emergency response planning. In risk assessment, an evaluation of the potential impact of the hazard event(s) and their return rate, an assessment of physical, social and economic vulnerability, potential damage and an assessment of a community's capacity to address the vulnerabilities representing the greatest risks must be made simultaneously. In the AUDMP, each project applied each of these components to the risk assessment process. Some selected examples and the lessons learned from them follow:

Bangladesh and Cambodia - Community based flood mapping and risk assessment was carried out representing similar approaches adapted to very different community and social conditions. A common lesson here was that flood mitigation for communities affected regularly by floods is very tangible to those communities and very compatible with a very small scale community based approach

In Nepal and Indonesia initially different technical approaches were taken to the earthquake risk assessment of Kathmandu Valley and Bandung (both valleys ringed by mountains) with the exception that both were intended to be rapid, low cost assessment that would be affordable to cities in developing countries. Previous models only included work done at a very high cost and high degree of technical accuracy that was, if truth were told, unaffordable in the developed countries of the USA, Japan and New Zealand where they took place. These two approaches were both taken as models or starting points for the international RADIUS earthquake mitigation project and have become the basic methodology for rapid appraisals that get much more quickly and inexpensively to the most important exercise of determining what mitigation and emergency preparedness actions should be taken. In some of the RADIUS projects, the assessment process was compressed even more than in Nepal or Indonesia.

Capacity Building: From early in the program, most of the AUDMP demonstration projects had components of Public Awareness Raising. However, once awareness and interest is raised, the development of skills and knowledge that can translate this awareness in to real change must be provided. In the AUDMP, this process of capacity building included identifying, developing and enhancing existing capabilities, skills and coping mechanisms of the communities where the project was taking place.

Both formal training/skills development and informal education processes were used to achieve this. The program developed generic curricula applicable in the Asian context that was adapted or "localized" for institutionalization at training institutions in the demonstration countries. Examples of courses that were institutionalized in the appropriate countries include flood mitigation, landslide mitigation, earthquake vulnerability reduction, technological hazard mitigation and community based disaster mitigation courses. This course material is also being converted to college level course material and will be made a part of course offerings at universities throughout the region.

There were also specific skills development courses that evolved out of specific needs of the country projects such as courses on safer building construction for masons, training of journalists to use accurate information about earthquakes, training teachers how best to present information to school children about disaster risks and actions that could mitigate them or teaching community based hazard mapping to volunteers who would be working with local communities to assess its hazards and vulnerabilities.

> Nepal – Some of the earliest work in this area came from the training of a cadre of masons to construct buildings to be more earthquake resistant. This group of masons was then used in other communities to transfer the skills to more masons. Ultimately, a group of these masons were sent to Gujarat after an earthquake to train masons there on seismically resistant reconstruction

Mitigation Planning and Implementation: Once a hazard and risk assessment has revealed the vulnerabilities that exist in a community, a plan to reduce these vulnerabilities must be developed and implemented. This plan was the focus of the second phase of the AUDMP. The three main approaches to mitigation planning that were used in AUDMP pilot projects included plans developed by government, grassroots-citizen led plans and integrated public/private plans. The AUDMP experience showed that the most effective approach was an integrated partnership of government officials, NGO's, civil society groups, community based organizations and the private sector.

Promotion of Safer Building Construction: This basic model is one of the oldest and most well known of the menu of mitigation measures that can be applied. Before the beginning of the AUDMP, much had been done and learned in Asia in this area, especially in India and Indonesia on seismically resistant housing and in the Philippines on cyclone resistant housing. In summary, the current thinking is that building codes and by-laws and their enforcement works best in the Asian context at the high end of the construction industry. However, the vast majority of construction takes place in the informal sector of mid-rise buildings to individual houses that are done in structurally unsound ways due to the lack of knowledge regarding structurally sound construction of modern buildings. The AUDMP programs illustrated and underscored the need to bring into force simple, user friendly, non-engineered construction practices for use by the community and construction artisans. The program also demonstrated ways to transfer technical 'know-how" using hands-on 'show-how' techniques in Nepal and Indonesia for seismically safe construction and in Vietnam for flood and wind resistant construction.

Community Based Approaches to Disaster Mitigation: When the AUDMP was just starting up, a strong new current in disaster management thinking was underway that community-based disaster mitigation (CBDM) could be one of the most effective models for reducing vulnerability to disasters because it takes place at the community level where physical, social and economic risks can be assessed in detail and managed in a very direct and effective way. This approach was successfully applied in the AUDMP programs in Bangladesh, Cambodia, India, Nepal and Sri Lanka.

Some of the important lessons learned were that the success of this approach is linked directly to a communities perception of the real risk, how to go about community risk assessment and the multi-faceted reasons for this assessment linked to the communities perception of risk, strategies for organizing a community and building its capacity and final how to mobilize resources to implement mitigation strategies in the context of low-income communities. One of the key lessons learned was that, while CBDM can be effective in mitigating all disaster type, floods are one area where it excels due to the frequent return and the low cost of mitigation measures.

Public Awareness and Social Marketing: Public awareness in risk communications is the process through which people living in hazard-prone areas come to realize and understand that they live in areas of risk, learn of the specific dangers they are exposed to, the meaning of warnings issued and to know appropriate action the take to protect their lives and minimize damage to their property. Social marketing is the process of marketing the risk communications message to a specifically defined audience in a community by learning the cultural identifiers of that audience and crafting an outreach activity to meet the specific needs of that audience using a customized approach. These models were applied in all AUDMP projects and most effectively in Cambodia, Sri Lanka, Bangladesh, Nepal and Indonesia.

VII. Future Directions

When Is Disaster Mitigation Done?
One can say disaster mitigation has been made sustainable when institutional and social processes have been put in place that result in regular review and adjustment of the actions being taken to reduce the physical, social and economic vulnerability of a given community. This has been achieved to varying extents in the target countries of AUDMP as a result of the AUDMP projects in concert with other factors. Solid beginnings in each of the countries have been clearly been made and have been institutionalized.

Are We There Yet?
However, if one asks if disaster mitigation in these target countries has become fully integrated into the national, economic, social and local development process, the answer must be a straightforward, "Not yet. But a good start has been made." This has not yet been achieved across all sectors and levels. The obvious next question would be, "Given that Asia is measurably the most disaster prone region in the world and that more people are injured and killed by disasters every year in Asia than any other region due to its growing vulnerability to disaster, what still needs to be done?"

Where Do We Go From Here?
Today, as the end of a decade of implementing the AUDMP approaches, ADPC enjoys a prominent position recognized in Asia as the premier disaster mitigation institution with the most practical hard earned experience, networks and information products on disaster mitigation in the region. While other factors also contributed to this outcome, this is in no small part because ADPC was given the opportunity by USAID to undertake the AUDMP - a relatively high risk program that provided ADPC with many opportunities to grow. ADPC has grown from being an advocate of disaster mitigation in the late 80's and early 90's to being able to provide a robust, substantive source of support to the region's many growing mitigation programs. Moreover, this support is based on lessons learned and experience gained from practical experience in the diverse Asian context a lot of which was done under the AUDMP.

ADPC has also worked consciously to position itself as the primary focal point for obtaining support for disaster mitigation and management expertise by its primary national partners, the disaster management focal point of each Asian country through the Regional Consultative Committee (RCC) while at the same time establishing working partnerships with other important regional players such as the Japanese Asian Disaster Reduction Center and the UN-International Secretariate for Disaster Reduction.

ADPC Strategy 2020

What has become obvious to ADPC from the AUDMP experience is that institutionally ADPC support for disaster mitigation needs to continue. In anticipation of this ADPC has developed a strategy to continue providing support in the ways that have worked the most effectively and based on what it has learned from its partners throughout Asia. ADPC calls this its *Strategy Asia 2020* and it consists of the following three distinct programmatic thrusts or objectives supported by the ADPC Urban Disaster Risk Management Team and its network of regional and international disaster mitigation professionals.

- Policy and Technical Support for Disaster Mitigation Programs and Emergency Management and Response Planning – Community by Community
- Development and Implementation of Public Awareness and Risk Communication Strategies
- Knowledge Development and Capacity Building

Policy and Technical Support for Disaster Mitigation Programs and Emergency Management and Response Planning - Community by Community in 100 Asian Towns and Cities

ADPC has been providing policy and technical support for disaster mitigation and emergency management/response planning under the AUDMP and other programs since its inception in 1986 and more strongly in the last half of its existence. Working at the local level through partners ADPD will continue to support disaster mitigation initiatives. Given the solid start this work has achieved in the region, ADPC hopes to obtain the resources necessary to continue and more importantly, expand this critical local level support community-by-community, town-by-town and province-by-province throughout Asia. For this strategy, ADPC has set a target of 100 Asian towns and cities where it plans to help develop comprehensive disaster management, response planning and mitigation programs. While the effort will result in decidedly local activities on the front lines of disaster preparedness and mitigation, each one will be carefully tied to *national level policy dialogue focused on exploring the implications of underlying factors that lead to disasters such as population growth and high densities, vulnerable human settlement patterns, environmental degradation, climate change and extreme weather events and unplanned, unrestricted economic development*.

This approach repeats, builds and expands on the already successful approach of AUDMP by demonstrating disaster mitigation methodologies that work in the physical, social and economic context unique to that country. It also builds on successful approaches of other programs as ADPC where the focus was on building the emergency management and response planning capabilities. Ultimately, it links disaster mitigation and emergency management and response planning together appropriately since both require the same inputs from preliminary hazard assessment and risk analysis. It will do this by providing decision-making support to political decision makers in the form of disaster risk scenario building using techniques developed under AUDMP. It will also provide support and tools for strengthening houses even in the informal sector through credit programs, training of builders and artisans, insurance, lending institution regulations, etc.

Development and Implementation of Public Awareness and Risk Communication Strategies in ten (10) Disaster Prone Asian Countries

One of the most important areas that must be more fully developed throughout Asia is that of Public Awareness. While headway has been made, experience in this area is still thin compared with its importance in making disaster mitigation understood and broadly supported when compared with other competing development demands. Two important and inter-related basic target groups must be addressed with different kinds of messages to make it successful. The first group, the community(s) must be made aware of the risk and dangers they are exposed to and provided with the positive message about what they themselves can do about it. The second group, the politicians and decision makers must be made aware of the vulnerabilities of their constituents, the fact that their constituents are concerned about these vulnerabilities and their relationship to the development process and decisions made regarding this process.

From experience gained during the implementation of AUDMP, ADPC has developed guidelines and training courses specifically targeted at governmental decision makers, NGOs and media groups to expand their skills at identifying the key messages needed and them implementing public awareness and risk communication program. ADPC also aims to develop a mutually supportive network of experienced individuals and organizations that have been trained in this area and that have developed and implemented such programs.

Knowledge Development and Capacity Building

In 1986, ADPC established itself squarely as a knowledge development and capacity building institution based at a regional center of learning (AIT) by launching its first course, the Disaster Management Course (DMC). The DMC is still its flagship course. Carrying on this tradition and experience gained during from the AUDMP and other programs during the last 10 years, ADPC has made the quintessential strategic commitment to broaden and deepen this aspect of its activities through the implementation of the following Knowledge Development and Capacity Building strategic objectives:

- Publication of "How-to" Resources
- Support of Regular Regional Sharing of Best Practices
- Continued Action Research to Develop Best Practices
- Conversion of Mitigation Training Courses to Higher Education Courses
- Continued and Expanded Training Course Offerings

Publication of "How-to" Resources: ADPC has committed itself to the development of a multi-volume *Primer on Disaster-Rick Management for Asia*. The primer will serve the disaster mitigation practitioner as a comprehensive, practical "How-To" guide designed to serve as a daily reference tool, published in an easily updateable format and widely distributed through a major regional publishing company. The *Primer on Disaster-Rick Management for Asia* will be delivered in volumes based on the hazard type preceded by one volume that will provide the rational as follows:

- Volume I: Disaster Risk Management - A Disaster Mitigation Overview
- Volume II: Slow Onset Flood Mitigation
- Volume III: Rapid Onset Flood Mitigation – Coastal Flood, Storm Surge and Typhoon
- Volume IV: Hydro-Meteorological Disaster Mitigation
- Volume V: Earthquake Mitigation
- Volume VI: Landslide Mitigation
- Volume VII: Drought Mitigation

The primer will be targeted at four groups of individuals including those who (1) make decisions (prime ministers to mayors); (2) formulate policies (permanent secretaries to municipal commissioners); (3) plan, develop and implement mitigation programs (planners, engineers and technical specialists in national, provincial and municipal departments such as transportation of utilities, NGOs, CBOs and volunteer organizations); or (4) that support implementation of mitigation programs (peripheral national ministries and municipal departments, NGOs, CBOs and and volunteer organizations).

Support of Regular Regional Sharing of Best Practices at Regional Conferences Held Every Two (2) Years: One of the activities that grew out of the need to establish an opportunity to share and learn from each others experiences and lessons learned by ADPC's Project Implementation Partners was the Working Group Meetings and then later the Lessons Learned Workshops. These ideas also eventually influenced the design of the Regional Consultative Committee (RCC) that ADPC has initiated to give National Government disaster management focal points the opportunity to share with each other their experiences. ADPC plans to establish a large regional disaster risk management conference that would be held every two years and co-organized with other key disaster mitigation networks and organizations. The first of these multi-stakeholder conferences was held as a part of the AUDMP in 2002 in Bali, Indonesia and was attended by international and regional organizations, national governments, donors, bilateral and multilateral institutions, scientific community, NGOs and private sector organizations.

Continued Action Research to Develop Best Practices Under Three (3) Thematic Headings Done Through Three (3) Networks of Research Groups and Universities: ADPC is partnering with universities through out Asia and the world to facilitate *action research* studies to develop new or further develop existing disaster mitigation methodologies for various hazard types. Action research is highlighted because ADPC has always been focused on practical, pragmatic research and considered the AUDMP target country projects to be representative of action research projects. Therefore these research efforts will be based on and directly linked to real communities in Asia. They will also be designed to ensure that young graduate students planning to become professionals in fields that implement disaster mitigation programs will participate in and learn from them. Some of the universities with which ADPC has already established working relationships and memorandums of understanding along these lines include the following:

- Asian Institute of Technology (AIT), Bangkok, Thailand
- Center for Environmental Technology (CEPT), Ahmedabad, Gujarat, India
- Institute of Technology Bandung (ITB), Bandung, Java, Indonesia
- Swineburne University Victoria, Australia
- Karlshrue University, Karlshrue, Germany
- University of Colorado, Colorado, USA
- University of Illinois, Illinois, USA
- International Institute for Geo-information Science and Earth Observations (ITC) – Netherlands
- Ecole Nationale des Sciences Geographiques (ENSG) - France

Conversion of Mitigation Training Courses to Higher Education Courses (Urban Planning Schools and associated disciplines) at 13 Universities in Disaster Prone Asian Countries: Over the course of the AUDMP a number of disaster mitigation courses were developed and fully documented so that they could be transferred to national training institutions in the target countries. These courses can be readily translated into higher education university courses by spreading the contact hours over a university term and developing appropriate tests, handouts, reading and study materials, audio/visual materials, group projects, homework assignments, etc. based on the training course materials. This conversion process may be simply a direct

conversion, or done in such a way that the coursed are broken into modules that can be integrated as a part of ongoing course structures. Such a process will also benefit the training courses themselves. This program will result in the training of young professionals to consider how disaster mitigation is a part of their future area of work or business and what actions should be taken to reduce the impact of potential disasters. Some of the universities with which ADPC has already established working relationships and memorandums of understanding along these lines include the following:

- Khulna University, Bangladesh
- Institut Tecknologi Bandung, Indonesia
- University of Ruhuna, Sri Lanka
- Chiang Mai University, Thailand
- Kathmandu University, Nepal
- University of Peshawar, Pakistan
- University of Moratuwa, Sri Lanka
- Gadjah Mada University, Yogyakarta, Indonesia
- University of the Philippines, Philippines
- Urban Research Institute, Lao PDR
- Bangladesh University of Engineering and Technology, Bangladesh
- Centre for Environmental Planning and Technology, India
- Asian Institute of Technology, Thailand
- Hanoi Architectural University, Vietnam
- Indian Institute of Remote Sensing, India

Continued and Expanded Training Course Offerings in ten (10) Disaster Prone Asian Countries: During the AUDMP the following courses were developed, tested and fully documented so that they could be transferred to partner training institutions in the target countries: They have also been successfully transferred and run numerous times and ADPC is well versed in the complexities of adapting a course for a specific country and a specific training organization that could be government, university, training institute or NGO based. These courses include:

- Urban Disaster Mitigation
- Earthquake Vulnerability Reduction for Cities
- Land-Use Planning and Risk Management
- Urban Fire Risk Management
- Flood Risk Management
- Disaster Risk Communication
- Disaster Risk Management
- Training for Instructors

The target of this strategic objective is to institutionalize the appropriate course(s) at selected training institutes in ten Asian countries where they will be offered on a fee basis in order to ensure their long-term sustainablity. These courses will improve the disaster mitigation skills of mid-level professionals from government and non-government organizations in their own language through a “training-of-trainers approach. ADPC maintains a discussion forum - AUDMP Alumni list-serve to get a feed back from past participants on improvements, new concepts and topics to subject list in the courses.

The ADPC Urban Disaster Risk Management Team

ADPC has established a unit called the Urban Disaster Risk Management Team. This team of professionals drawn from throughout Asia consists of an in-house group of individuals with a general knowledge of disaster mitigation approaches along with a specific area of expertise in the subject. More than this however, ADPC has formalized its relationship with national partners whose disaster mitigation expertise was further developed during the AUDMP programs based on practical experiences of implementing projects. Most importantly, ADPC has also made a strategic commitment in its on-going, long-term vision and strategic planning process to provide

this kind of support to the region. As a result, *the ADPC Urban Disaster Risk Management Team represents the only significant, regionally indigenous focal point of a network of expertise that can provide the broad range of technical support needed for new mitigation initiatives community-by- community and country-by-country throughout Asia.* This significant, strategic commitment represents the almost two decades of institutional experience gained by ADPC since its establishment in 1986 the last half of which was primarily focused on disaster mitigation.

VIII. Conclusions

AUDMP can be considered a success story on many counts. It has demonstrated how to do disaster mitigation in the Asian context at the local level where real social, economic and physical changes can take place to lessen the vulnerability of a community. It has built up organizations and in one case helped established one that can continue to play a role in advocating and providing policy and technical support to disaster mitigation efforts in their country and throughout the region. It has institutionalized disaster mitigation training courses throughout the region, established networks of disaster mitigation professionals and has developed and distributed information products to help others do what has been done through the program. It has sustained this effort over a ten-year period that was enough to build a firm foundation for the support of disaster mitigation actions. It has also helped build ADPC's reputation as the premier regional institution that has the practical experience to provide support for national disaster mitigation programs at the local levels. ADPC has itself recognized the need to continue the most successful elements of the program for another decade and has developed an institutional plan and established a team of regional disaster mitigation professionals to do so. ADPC needs and deserves resources to implement this institutional initiative in order to ensure that the solid foundation established through the AUDMP is built upon and spread over the coming decade. One way for OFDA to support such initiatives in Asia is to encourage ADPC and others to propose such programs under its APS.

SECTION 2 - AUDMP

Program Completion Report

Table of Contents

I) Executive Summary 35
II) Background 36
III) Program Overview 40
A) Program Approach 40
B) Objectives 49
C) Target population 52
D) Monitoring and evaluation 52
E) Program lessons learned 52
F) Conclusion 54
G) SWAT analysis 57
IV) Country sections 58
A) Bangladesh 58
B) Cambodia 70
C) India 77
D) Indonesia 81
E) Laos 88
F) Nepal 95
G) Philippines 102
H) Sri Lanka 104
I) Thailand 115
J) Vietnam 118

Appendices

Appendix 1. Monitoring & Evaluation Matrix 121
Appendix 2: AUDMP Conducted Regional and National Trainings, 1997 - 2003 131
Appendix 3: ADPC Publications on Urban Disaster Mitigation 133

1. Executive Summary

Asia accounts for 60% of natural disasters and 87% of the resulting casualties but only 52% of the world's population. Asia is also rapidly urbanizing. In 2000, 37% of the people in Asia lived in urban areas. This proportion will rise to 50% by 2030.

During the 1980s and early 1990s, it became apparent that increasing amounts of money were devoted to disaster relief. Policymakers began examining how disaster mitigation efforts might help to control the need for disaster relief and reduce the casualties. In reaction to the concerns of member states, the United Nations declared the 1990s to be the International Decade of Natural Disaster Reduction. To mitigate the impact of disasters on urban Asian populations, the Office for Foreign Disaster Assistance (OFDA) of the United States Agency for International Development (USAID) awarded a grant in September 1995 to the Asian Disaster Preparedness Center (ADPC) to implement the Asian Urban Disaster Mitigation Project (AUDMP).

The Asian Disaster Preparedness Center (ADPC) is a regional resource center dedicated to safer communities and sustainable development through disaster reduction in Asia and the Pacific. ADPC is a neutral focal point for promoting disaster awareness and the development of local capabilities to promote disaster management and mitigation policies.

AUDMP, ADPC and USAID recognized that long-term collaboration was key to inculcate disaster mitigation policies into national and local governments and communities. While originally a four-year program designed for five countries, AUDMP was extended to an eight-year program involving ten countries. While the First Phase of the project had a budget of $4.40m, a Second Phase was added. In the end, the two phases of the project received obligations and spent $8.04m, of which $1.93m was spent on demonstration projects in the countries.

The purposes of the AUDMP Program in the original 1995 proposal were to

- reduce the natural disaster vulnerability of urban populations, infrastructure, lifeline facilities and shelter in targeted cities in Asia; and
- promote replication and adaptation of successful mitigation measures within the countries where demonstration projects are carried out and in the region.

The 1998 program revision shifted the emphasis towards building public and private capacity to plan and implement mitigation measures. The goal of AUDMP in the revised 1998 proposal was to reduce the disaster vulnerability of urban populations, infrastructure, critical facilities, and shelter in targeted cities in Asia. The purpose of the program was to:

- Establish sustainable public and private sector mechanisms for disaster mitigation that will measurably lessen loss of life, reduce the amount of physical and economic damage, and shorten the post-disaster recovery time;
- Promote replication and adaptation of successful mitigation measures within target countries and throughout the region.

AUDMP identified specific models that work in the Asian context to reduce vulnerability to disasters and documented those models in detail to support their replication in many other communities and countries.

There were three phases of the country projects. The first was the Demonstration Phase during which disaster mitigation was introduced to target urban areas and a mitigation activity was implemented in the target community. The second was the Replication Phase in other cities within the country. The last Consolidation Phase refined the project activities and continued the replication efforts. The program aimed for continued use of new mitigation tools and continued replication in other communities after the completion of AUDMP.

The country programs comprised three inter-related components or assistance interventions – (1) demonstration projects, (2) information dissemination, networking and (3) training. The three components reinforced one another and the overall mitigation message.

In the following table, we have categorized the country programs into four categories. The Bangladesh, Nepal and Sri Lanka projects succeeded in establishing disaster mitigation mechanisms an integral part of public or private sector planning and activities. While Indonesia implemented successful mitigation projects, there is not yet an enthusiastic agent that will take charge of the mitigation message in that country. AUDMP hopes to develop such an agent in the 2004 Phase III of AUDMP. Laos and Thailand are new projects, too new to be categorized as more than moderately successful. Cambodia saw a range of rural communities implement mitigation activities; however, the Cambodian Red Cross would need significant capacity building before it was able to take charge of a national disaster mitigation program. Three programs were terminated before reaching the completion stage. The local government in India stopped the Indian project as it was concerned about security issues with regards to mapping and also probably the short-term economic damage from highlighting industrial hazards to the general population. AUDMP was not able to conclude programs in the Philippines as it could not fund the subsequent phase after Phase I under the program guidelines. The Vietnam project design was not considered for funding by OFDA due to advancement of the completion date of the Cooperative Agreement. Only limited activities were undertaken in Vietnam.

Highly Successful	**Moderately Successful**	**Mixed**	**Early Termination**
Bangladesh Nepal Sri Lanka	Indonesia Laos Thailand	Cambodia	India Philippines Vietnam

For almost eight years, AUDMP has been dedicated to making cities safer through the reduction of disaster vulnerabilities of populations in Asia. AUDMP has had an important impact in Asia and has been instrumental in helping to give disaster mitigation a higher profile in the region.

2. Background

Asia is the most disaster-prone region in the world with almost 60 percent of all the world's natural disasters. While Asia accounts for 52% of the world's population, it accounts for 87% of the casualties from natural disasters. From 1992 through 2002, 463,681 people died due to natural calamities in Asia. The number of people who have been injured or who have lost their homes or livelihoods is over a thousand times the number who have died. In addition to the human suffering, the damage to infrastructure and investments has been huge. Between 1985 and 1999, Asia suffered 45% of global economic losses resulting from disasters.

At the same time, Asia is the fastest urbanizing region in the world. In 2000, 37 percent of its population lived in cities. This proportion is projected to rise to more than 50 percent by 2030. The rapidly growing urban areas are also the center of the region's economic activity and critical facilities. The intense population pressure overwhelms limited social services and urban planning capacity resulting in growing proportions of the urban populations living in unsafe conditions. Poor land-use planning, environmental mismanagement, unsafe building practices and a lack of regulatory mechanisms increase the risks and exacerbate the effects of disasters. Asia's urban areas also tend to be located along waterways, in valleys, slopes and other vulnerable places. Natural disasters can impoverish people and leave those who are already poor unable to cope in a crisis.

Forty-five percent of the world's poor live in Asian cities. The urban poor in Asia live in the least safe areas and are the least prepared for natural disasters and the least able to cope with them.

In the late 1980's and early 1990's, larger and larger amounts of money were being spent on disaster relief and response while little was being done in the development process to prevent or mitigate the potential effects of disasters. The political and governmental focus at the national and local levels at the time was focused chiefly on relief and response after disasters. There was awareness that disaster mitigation *must* become a major focus of the development process in Asia. However, ADPC's audience at the time consisted primarily of disaster managers *not* the development planners and practitioners that needed to hear and learn to apply this message. Even in the USA, government agencies were still focused on disaster relief and response operations. OFDA was an exception with 40% of its funding going to mitigation programs.

Because of growing resources devoted to relief and response, the United Nations initiated the International Decade of Natural Disaster Reduction. While vulnerability to disasters is a large and growing problem for urban areas in Asia, local and national governments in Asia in the mid-1990s did not have short and long term strategies for mitigation of disasters' impact.

Given the propensity for disasters, the increase in urbanization and the vulnerability of the urban poor in Asia, the Office for Foreign Disaster Assistance (OFDA) of the United States Agency for International Development (USAID) awarded a grant in September 1995 to the Asian Disaster Preparedness Center (ADPC) to implement the Asian Urban Disaster Mitigation Project (AUDMP) to introduce and institutionalize disaster mitigation practices.

The Asian Disaster Preparedness Center (ADPC) is a regional resource center dedicated to safer communities and sustainable development through disaster reduction in Asia and the Pacific. Established in Bangkok, Thailand in 1986, the Center is recognized as an important neutral focal point for promoting disaster awareness and the development of local capabilities to foster institutionalized disaster management and mitigation policies.

From the start of AUDMP, ADPC and USAID recognized that the concept of disaster mitigation was new to many countries in Asia and that it would take long-term collaboration from introduction of the concept to ownership of disaster mitigation policies by national and local governments and individual communities.

While originally a four-year program designed for six countries, AUDMP has been extended to an eight-year program involving ten countries. ADPC designed AUDMP to reduce the natural disaster vulnerability of urban populations, infrastructure, critical facilities and shelters in Asian cities. Bangladesh, Laos, Thailand and Vietnam joined the original six AUDMP countries (Cambodia, India, Indonesia, Nepal, the Philippines and Sri Lanka). While core funding for the AUDMP came from the OFDA, additional funds came from ADPC and collaborating institutions in target countries.

Following a May 1998 mid-term evaluation, the Core Working Group comprising ADPC, AUDMP management and USAID mandated the AUDMP management to submit a request to USAID to modify the program grant agreement.

The original AUDMP agreement (CA 940-1008-A-00-5531-00) had a budget of $4,400,000. USAID obligated $3,993,700, which was spent by the First Phase of the project. The First Phase of AUDMP expired on 31 May 2000. The Second Phase (CA 386-A-00-00-00068-00) became effective on 1 June 2000 and initially had a term expiring on 30 June 2003 and a budget of $8,004,129, which was increased to $8,019,129 in January 2002. Prior to the start of Phase II, USAID obligated $2,100,000. This was raised to $2,156,300 in September 2000, to $3,156,300 in September 2001, to $3,171,300 in January 2002, and to $3,671,300 in June 2002. In August 2003, USAID and ADPC agreed to extend the project through 31 October 2003. In September 2003 the

two parties agreed to extend the project through 31 December 2003 and USAID raised the obligation to $4,051,300 but reduced the $8m cooperative agreement budget to the obligated amount of $4,051,300.

Summary of AUDMP funding from USAID

Agreement number	Phase	Date	Budget	Obligated Amount	Expensed
CA 940-1008-A-00-5531-00	First Phase	Sep-95	4,400,000	3,993,700	3,993,700
CA 386-A-00-00-00068-00	Second phase	Jun-00	8,004,129	2,100,000	
		Sep-00		2,156,300	
		Sep-01		3,156,300	
		Jan-02	8,019,129	3,171,300	
		Jun-02		3,671,300	
		Sep-03	4,063,937.60	4,051,300	

AUDMP made sub grants to the country programs. A summary of the amounts provided is shown in US dollars in the table below:

	AUDMP I		**AUDMP II**		**Total**	
Country	**Budget**	**Spent**	**Budget**	**Spent**	**Budget**	**Spent**
Bangladesh	22,374.00	24,265.06	277,238.00	239,454.02	299,612.00	263,719.08
Cambodia	128,500.00	78,995.80	79,113.35	74,887.60	207,613.35	153,883.40
India	125,000.00	120,608.69	-	1,697.69	125,000.00	122,306.38
Indonesia	272,620.00	218,116.40	98,206.00	89,612.09	370,826.00	307,728.49
Laos	16,145.33	16,145.33	100,407.00	102,036.87	116,552.33	118,182.20
Nepal	304,000.00	305,209.53	94,000.00	97,779.37	398,000.00	402,988.90
Philippines	153,400.00	153,319.43	9,115.74	9,115.74	162,515.74	162,435.17
Sri Lanka	285,000.00	267,514.54	70,573.00	107,806.41	355,573.00	375,320.95
Thailand	-	-	110,508.65	110,508.65	110,508.65	110,508.65
Vietnam	13,796.04	13,796.04	27,249.69	27,249.69	41,045.73	41,045.73
China	-	-	-	304.69	-	304.69
Total	1,320,835.37	1,197,970.82	866,411.43	860,452.82	2,187,246.80	2,058,423.64

Notes: In some cases, e.g. Sri Lanka in Phase II, the spent amount includes expenses incurred by AUDMP for the country projects (such as external consultants) but which were not included in the grant made to the country partners. There were no instances in which the country partners exceeded, except in Nepal (where additional expenditure has been taken as contribution by the partner to the project) the grant budget agreed between the individual partners and AUDMP.

While there was never a China project approved, ADPC did incur staff costs in the development of a demonstration project concepts for a potential program in China.

Asian Urban Disaster Management Program
Phase I
Date: 31 May 2000
Grant Number: CA No. 940-1008-A-00-5531-00

	Budget (by Line Item)	Total Budget	Funds Received To Date	Total Expenditure to Date
1	National Demonstration Project	2,321,700.00	1,596,681.68	1,527,347.38
2	Regional Training Support	246,000.00	273,524.00	228,454.56
3	Regional Info. & Network Support	220,500.00	285,000.00	278,791.28
4	Project Evaluation thru RHUDO	0.00	10,000.00	9,904.41
5	Project Implementation	912,200.00	1,383,208.00	1,410,872.88
6	Indirect Cost (for Element #4)	293,300.00	445,286.37	447,967.24
7	Commitments			87,186.32
	Total	3,993,700.00	3,993,700.05	3,990,524.07

Phase II
Date: 31 December 2003
Grant Number: 386-A-00-00-00068-00

	Budget (by Line Item)	Obligated Amount	Funds Received To Date	Total Expenditure to Date
1	National Demonstration Project	829,000.00	765,428.20	820,527.40
2	Regional Training Support	441,000.00	448,863.31	472,542.66
3	Regional Info. & Network Support	351,436.00	312,537.35	338,762.13
4	Project Implementation	1,531,000.00	1,498,975.55	1,530,758.72
5	Project Evaluation	37,450.00	37,450.00	37,405.15
6	Audit	51,154.00	45,000.00	51,154.03
7	Indirect Cost	810,260.00	830,965.75	812,787.51
	Total	4,051,300.00	3,939,220.16	4,063,937.60

Phase I and II Combined

	Budget (by Line Item)	Obligated Amount	Funds Received To Date	Total Expenditure to Date
1	National Demonstration Project	3,150,700.00	2,362,109.88	2,347,874.78
2	Regional Training Support	687,000.00	722,387.31	700,997.22
3	Regional Info. & Network Support	571,936.00	597,537.35	617,553.41
4	Project Evaluation thru RHUDO	-	10,000.00	9,904.41
5	Project Implementation	2,443,200.00	2,882,183.55	2,941,631.60
6	Project Evaluation	37,450.00	37,450.00	37,405.15
7	Audit	51,154.00	45,000.00	51,154.03
8	Indirect Cost	1,103,560.00	1,276,252.12	1,260,754.75
9	Commitments	-	-	87,186.32
	Total	8,045,000.00	7,932,920.21	8,054,461.67

3. Program Overview

3.1 Program Approach

While Asia is the most disaster-prone region in the world and has suffered hugely from loss of life, injury and damage to infrastructure and investments, industrialized countries have demonstrated that disaster resistant buildings and infrastructure can dramatically reduce the effects of disasters. The Asia Urban Disaster Mitigation Program (AUDMP) was designed to introduce disaster mitigation technologies to targeted countries in Asia. While there was concern that Asian urban communities were focused on current problems such as sewage and garbage and hence would not be interested in dealing with potential disasters, USAID believed that there would be interest provided the program was pragmatic and resulted in measurable physical, social or economic change that decreased disaster vulnerability of urban communities, people, infrastructure, shelter and critical lifeline facilities.

The conceptualization of AUDMP began in January 1993 and culminated in the acceptance of a Project Identification Document (PID) by OFDA/PMP in October 1994. Between October 94 and October 95 a project design team was assembled consisting of ADPC senior staff and three international disaster mitigation experts that worked on the design of AUDMP. The team developed an overall program design. OFDA/PMP and RHUDO/Asia identified India, Indonesia, Sri Lanka, the Philippines and Nepal as the five initial target countries. (The program was later expanded to include Bangladesh, Cambodia, Laos, Thailand and Vietnam.) The team visited the five target countries and developed initial scenarios for what were called National Demonstration Projects. The basic program design assumptions for the demonstration projects were essentially the following guiding principles:

- Each country has the technical expertise to do disaster mitigation
- Each country has the institutional capacity to do disaster mitigation
- Keep it simple with a standard approach flexibly adaptable to the diversity of Asia
- Keep it simple with the focus on secondary towns and municipalities (not mega cities)
- Keep it simple with a preference for starting with one disaster and expanding from there
- Focus on simple, common sense mitigation measures integrated into the normal urban development process not just on science, technology or complicated GIS mapping
- Focus on communities with high vulnerabilities not just the most recent disaster

ADPC initiated AUDMP in October 1995. Funding available for the five country regional program was limited to $4.4 million over a four-year period. The project funding mechanism was a Cooperative Agreement between ADPC/AIT and USAID in which USAID shared in the overall program management and guidance with ADPC/AIT who also managed program implementation.

Using criteria developed for the selection, approval and funding of demonstration activities, AUDMP identified lead institutions in each target country to be responsible for managing demonstration projects and in-country training. ADPC provided sub-grants to implement these demonstration activities. ADPC also conducted regional training and policy seminar activities.

Overall AUDMP Management (Cooperative Approach): The program was funded by USAID through a Cooperative Agreement mechanism which meant that OFDA/PMP, Urban Programs in Washington and RHUDO/Asia all were to have a substantial role in the overall guidance and management decisions of the program. Practically speaking, this resulted in the establishment of a regular bi-annual management review of the program by what came to be known as the Core Group that consisted of key representatives from the USAID agencies responsible for managing the program funding which included OFDA/PMP based in Washington, Urban Programs

(Pre/ENV/UP) based in Washington, RHUDO/Bangkok and ADPC as the implementing organization. The primary USAID management, fiscal responsibility and the Cognizant Technical Officer (CTO) was housed initially with RHUDO/Bangkok.

i) Program Implementation Team

ADPC initiated AUDMP with a Senior Program Manager, an Information Manager and administrative support staff. The limited funding that OFDA had available for the program meant that it had been designed with a lean implementation staff that would have to rely heavily on its partners and specialized technical inputs to design and implement in-country projects. The training component of the project was to be developed and delivered by ADPC's Training Section.

Monitoring and Evaluation

Very early in the program the Monitoring and Evaluation (M&E) system was developed based on the required "Managing for Results" process used at the time throughout USAID. This system has documented measurable results based on the stated program goals and objectives since the beginning of the project. Although it does not perfectly capture all the nuances of the project's success, unintended successes or the intangible results that have to do with institutional development in the countries, the region and at ADPC, it has documented the regularly achieved results of targets set initially and then revised after the mid-term project evaluation.

Project Partner Selection Process

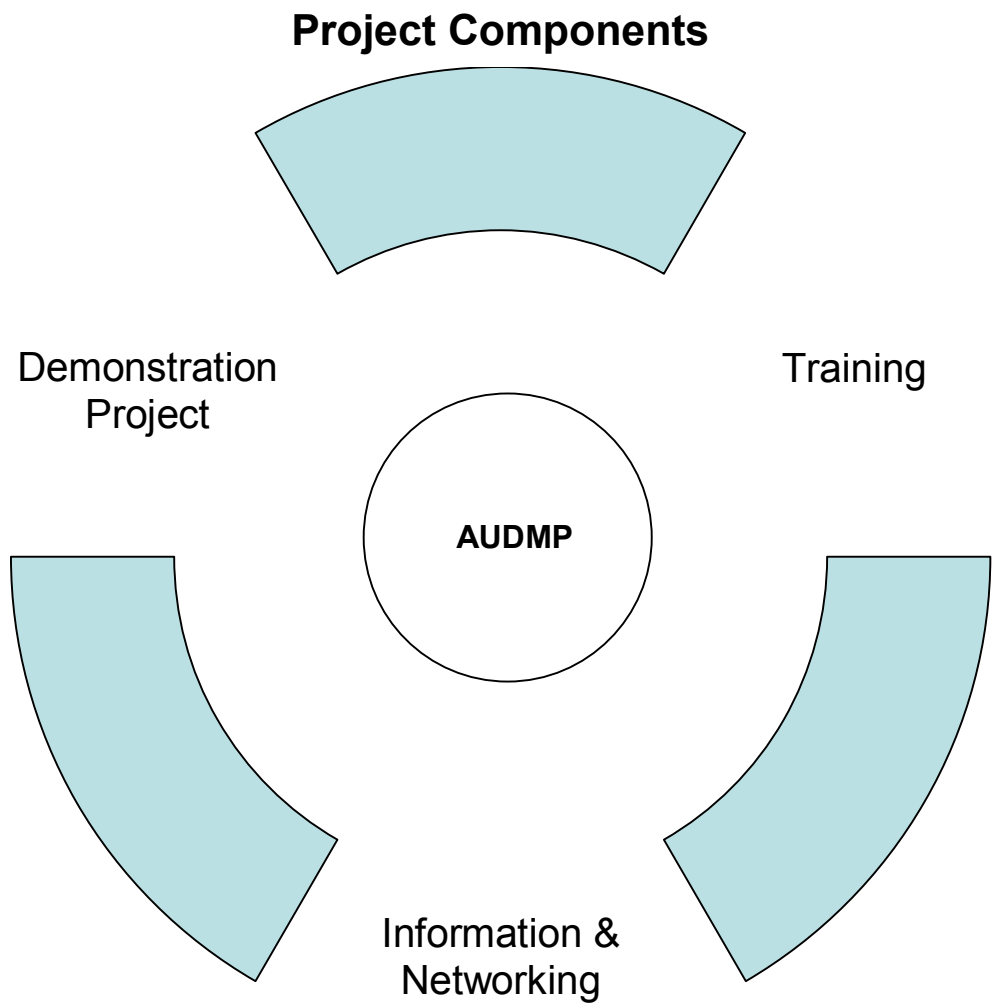
In all program target countries, each project design began with joint visits to USAID Missions by RHUDO/Asia representatives working in those countries, the OFDA Senior Regional Advisor and the ADPC/AUDMP Program Manager to discuss initial project designs compatible with Mission programs. From this visit potential collaborating organizations from government, NGO's and the private sector were preliminarily identified and a project partner(s) selected to design and implement the national demonstration project. The partner selected was seen early on as the most significant step in the process in terms of project success or failure and this perception was proved to be true through the life of the project.

Country Program Stages

There were three stages or phases of the individual country projects. The First Phase is the demonstration phase during which disaster mitigation is introduced to target urban areas in a country and a mitigation activity is implemented in the target community. Once this demonstration had been made, the Second Phase was to replicate this success in other cities within the country. The last consolidation phase refines the project activities and continues the replication efforts. The program aims to have the targeted communities continue to use the tools acquired during the project and also to have the replication activities continue in new cities within the country after the project has been completed.

Assistance Interventions

The country programs comprised three inter-related components or assistance interventions – (1) demonstration projects, (2) information dissemination, networking and (3) training. The three components reinforced one another and the overall mitigation message. The communities need training to implement the demonstration projects, and the demonstration projects show the utility of the training. The information campaign helps raise the awareness of the public and also mobilized support for the demonstration mitigation activities.



Working in conjunction with collaborating institutions in each target country, the Program used technical assistance and demonstration projects, information dissemination and networking, training and policy seminars to accomplish its purposes.

National Demonstration Project Design: Once the Project Implementation Partner was identified a project design would be prepared and submitted to ADPC/AUDMP for review. This cycle would be repeated until both ADPC and the Project Implementation Partner were satisfied that it would be successful and meet the project design criteria defined in an RFP that formed the basis for the project design. The project design document was then circulated to the Core Group for review and comments that would be incorporated in the project design before implementation. This process was relatively successful and seemed to result in good final proposals and projects.

Information and Networking Program Development: The initial project Information and Networking strategy was designed and underway by the middle of 1996. It primarily focused on collecting existing information on urban disaster mitigation best practices that could be made available to Project Implementation Partners who were looking for models upon which to base their projects. This strategy included searching for information specifically requested by partners as well as the development of a basic library of information needed to support all the projects. Where this did not exist, experts on little known areas were identified and brought in to assist partners adapt such models for local use. An early example of this is the Multiple Hazard Mapping and Risk Assessment methodology developed by Linda Noson for the Sri Lankan

municipalities to use under the SLUMDMP project. These methodologies would in turn become a part of the information available to all partners involved with the program.

Training and Technical Support Program Development: Within the first year, based on the original proposal that included the four new regional courses listed below, ADPC's Training Section developed a straightforward training program and presented this to the Core Group. The basic principle was to develop the four regional courses that would be tested at ADPC and then to adapt them for use throughout the region and in the target countries as appropriate. The first course renamed Urban Disaster Mitigation (UDM-1) was offered in October 1997, the second year of the program, and was an overview of disaster mitigation.

- Risk Management and Mitigation for Urban Professionals
- Hazard, Vulnerability and Risk Assessment
- Mitigation for Earthquakes
- Mitigation for Floods and Landslides

The Training and Technical Support Program component also included administrative systems for fielding technical expertise from ADPC or elsewhere needed to provide technical inputs necessary to fill knowledge gaps of the implementing partners. Linda Noson's technical input mentioned above is good early example of this support.

Each country focused on a hazard or a group of hazards that were important to the individual country. The focus of the country projects is shown in the table below:

Country project focus

Country	Hazard focus
Bangladesh	Floods
Cambodia	Floods
India	Earthquakes
Indonesia	Earthquakes
Lao PDR	Urban fire and road accidents
Nepal	Earthquakes
Philippines	Floods and multiple hazards
Sri Lanka	Multiple hazards
Thailand	Floods and disaster management systems
Vietnam	Flood resistant housing

National Demonstration Projects

National demonstration projects in each of the target countries served to provide a working example of urban hazard mitigation. The approach combined city level planning through integration of results of analysis of multiple hazards and community based risk mitigation initiatives at community level. In the target cities, the Program in conjunction with its local partners conducted hazard mapping and vulnerability assessments in order to formulate specific mitigation measures.

Assessment of hazards

There were two types of assessment, technical expert mapping and Community Based Disaster Management (CBDM). The technical expert approach used hazard mapping to identify the types of disasters that occurred in the cities and the locations that were affected. Hazard maps were created by field mapping attributes and integrating the frequency and severity of natural disasters on a geographic grid. The Program identified high risk areas after correlating the incidence of hazards with the underlying land uses. The technical expert approach was used in Sri Lanka, Thailand, and Naga City in the Philippines.

Vulnerability and risk assessment of urban areas

In selected cities, AUDMP used vulnerability assessments in addition to the hazard maps to identify the potential effects of disasters and for developing mitigation strategies. The Program worked to introduce mitigation tools and also the know how to implement them. AUDMP with its partners developed hazard maps by overlaying the frequency and severity of natural disasters on a geographic grid in some instances using GIS technology. In others, the program employed Community Based Disaster Management (CBDM), which places less importance on technology and more on community mobilization.

Technical experts mapped and assessed areas prone to natural hazards such as earthquakes, flooding, landslides, urban fires, and technological hazards and demonstrated GIS applications, issues and problems related to each hazard, and the range of options for addressing those problems. The Program determined the degree of vulnerability of particular areas of a city after correlating the incidence of the hazard with underlying land uses. The Program examined high-risk areas to determine what measures could be taken to reduce vulnerability in the most cost effective manner.

In the CBDM, the emphasis is more on building capacity of relevant stakeholder institutions and mobilizing the community to work together to implement mitigation activities. Some programs, such as Bangladesh, Cambodia and Nepal, endeavored to simplify Rapid Assessment technical tools so that they could be used and understood by members of the community.

The country programs using both approaches worked to make such essential data to various stakeholders including policy-makers and planners, developers and builders, investors and insurers, and businesses and residences in disaster-prone areas. These stakeholders need to know the impacts disasters can have on the existing build environment, the costs to reduce those effects, the best locations for future urban expansion, and the services and lifeline facilities they can count on after a disaster.

Identification of mitigation strategies or action plans

The Program examined the high-risk areas more closely to determine several mitigation options and selected the most cost-effective of the options. The project worked to develop long term action plans for the communities that incorporated disaster mitigation in the economic plans of the community. The program identified strategies to make the host cities safer through such mitigation interventions as better zoning, relocating facilities like bus stops to higher ground, reinforcing building structures, training in appropriate construction techniques given the vulnerability of the areas, and improved construction regulations and enforcement. As a first step, limited mitigation measures were implemented through the demonstration projects.

Many zones were not appropriate for any type of construction. For areas approved for development, local authorities need to ensure that construction met code. Along with better inspection and enforcement of building standards, it was also useful to link safety standards in buildings with the availability of insurance to provide incentives for safer construction. The project promoted reinforcing existing buildings and better building of new infrastructure.

In some target cities, the Program conducted more intensive assessments that focused on lifeline networks, such as power, telecommunications, transportation, water and sanitation systems. With lifeline networks, it is feasible to calculate the economic cost of the loss of service and benefits of the maintenance of the service. These costs and benefits can be weighed against the investment costs of mitigation activities. For example, landslides can cause transportation blockages, and community-based low-cost measures can help reduce the vulnerability of roads by improving drainage and slope stabilization.

In some target cities, the Program addressed structural vulnerability of critical facilities such as hospitals, health centers, schools, churches, mosques, police stations, fire stations, and community

centers that must remain functional after a disaster. The Program conducted vulnerability assessments of specific structures to determine how they would be impacted by disasters and what mitigation or retrofitting could be done.

The project paid special attention to low-income neighborhoods where non-engineered residential structures predominate. There are numerous techniques for strengthening informal housing, some of which were practiced in the past but discarded for various reasons. The projects in Bangladesh and Cambodia introduced simple strengthening measures appropriate to local house types and to work with community leaders to disseminate better building techniques. In Nepal, the project retrofitted schools.

In the Kathmandu Valley in Nepal, the Program used a disaster scenario approach to assess the points of greatest vulnerability in urban systems and prioritized these vulnerabilities through cost-benefit analyses that considered costs in the aftermath of disasters with and without appropriate mitigation strategies. The purposes of the assessment was to demonstrate a) the broad-based implications of disasters for several municipalities in one area, and b) the value of public/private cooperation and commitment to reduce the risk. The Program estimated the effects of disasters on buildings and infrastructure and of the interruption of essential utilities. The Program also estimated the demand for critical response services, such as search-and-rescue, emergency medical and other services. The projections involved multi-disciplined teams from government and business assisted by international experts.

The Program defined a comprehensive set of earthquake risk reduction measures including mitigation and preparedness strategies. The Program designed the demonstration projects considering the possibilities of financing priority vulnerability reduction measures. The Program realized that cost effective and affordable strategies were pre-requisites in order for municipal governments, ministries and development agencies to be able to use them in adjusting on-going projects and designing new ones. The last phase of the project was to define and establish the institutional structures needed to implement the recommendations on a sustained basis.

Implementation of mitigation strategies

In implementing the demonstration mitigation projects, AUDMP endeavored to get the participation of national and local governments, NGOs and the communities themselves.

Monitoring and evaluation

The national demonstration projects in targeted countries developed and implemented mechanisms for short and long term mitigation of disaster impacts. The demonstration projects were cost-effective and appropriate to the local environments.

Progress is noticeable in urban disaster mitigation measures such as: improved land-use planning, revision or improved enforcement of building codes, public awareness programs, retrofitting of key facilities and infrastructure, development of local disaster management plans, policy changes, capacity building activities targeted for different audiences etc.

The future strategy of the program should be to see the opportunities to disseminate the rich experience of the project while implementing the program activities in new countries. It is an encouraging sign that some of the countries that have completed the AUDMP activities are continuing the work beyond the AUDMP grant period through funding from other sources.

Information Dissemination and Networking

The Information and Networking component aimed to help build public and private networks as a forum for exchanging information and experience on urban disaster management, with the goal of replicating successful hazard mitigation practices from the demonstration projects throughout the region. AUDMP engaged a consultant, Robert Stephenson to write a strategy report for the information and networking component in 1996. As the project progressed, there was a shift in

that strategy. From 1995 until 2000, the flow of information was generally from ADPC to the country partners. From 2000 through 2003, the flow was from the country partners to ADPC.

Information methodology

AUDMP has made extensive use of the internet for disseminating information to its partners, among its country partners and to the general disaster mitigation community. AUDMP has its own website and those of its partners, where available, to publish its working papers, partners' and its own case studies, and project completion reports. The partner websites are the following:

Nepal: http://www.nset.org.np

Sri Lanka: http://www.chpb.gov.lk

Lao PDR http://www.ndmo.laopdr.org

Administration network

AUDMP set up an "audmp-network" listserve during the Sixth Working Group Meeting on 26-28 March 2001 for those interested in urban disaster mitigation in Asia and has distributed meeting proceedings to this group.

Task Force to develop the Asian Urban Disaster Mitigation Network (AUDMiN) was set up in 2001. The first meeting of the task force was held on 5 November 2001 to consolidate the network's objectives and structure, and develop a six-month work plan for the network. This was further discussed in the subsequent working group meetings in 2002 and 2003. In spite of these efforts, the AUDMiN has not received much support from the partner network. This may in part be due to poor internet services in some of the AUDMP countries.

AUDMP also produces a newsletter to exchange ideas about disaster mitigation experiences in the country programs as well as information about regional workshops and seminars. Initially, this was distributed in hard copy. However, since March 2003, the distribution has been via the internet. The scope of articles on disaster mitigation now exceeds AUDMP projects. The web based distribution strategy will make it easier for ADPC to continue the newsletter after the AUDMP project is completed.

Country programs

Each country program had its own networking and information dissemination program. These programs included Disaster Awareness Days, billboards and other forms of advertising, and radio and television shows. Details on the individual programs can be found in the country sections of this report.

Training, Resource Materials, and Continuing Education (TRMCE)

In parallel with the demonstration projects, the Program engaged in networking, and dissemination activities along with policy initiatives and the institutionalization of training programs. The purpose of these activities was to spread the mitigation message to other communities and eventually throughout the countries and regions.

Training courses were an integral part of project implementation. The Program conducted these training courses on a regional, national and local level using a training of trainers approach that facilitated cascading program benefits to the local level and the adaptation of curriculum to national and local conditions. There were three types of national training – training courses for the project staff, general awareness courses, and in-country training courses for the subject specialists/ target audience. At the end of all of the courses, participants filled out a questionnaire that provided feedback on the quality of the courses and ways that it could be improved.

The AUDMP Program worked to establish national and regional networks of disaster advocates in both public and private organizations. The Program conducted regional and national workshops to

develop a disaster mitigation policy framework and also to exchange ideas among various country partners. AUDMP produced documents on disaster mitigation and best practices, which it distributed in both printed and electronic form, including the ADPC website.

The Training, Resource Materials, and Continuing Education component provided an opportunity to further institutionalize hazard mitigation practices through regional and national level training courses and seminars for national level decision makers and all stakeholders groups, as well as by using an in-country and regional "train the trainers" approach for passing on technical skills and knowledge via a core curriculum in hazard assessment and mitigation. Courses were offered by in-country partner institutions and to a diverse group of stakeholders working in urban areas.

Workshops

AUDMP conducted policy workshops to exchange best practices and policy changes. Some of the workshops were organized following disasters, when the policy makers and other stakeholders were most receptive to change.

Workshops

Date	Location	Subject
May-99	Bangkok, Thailand	Regional policy environment changes
Mar-02	Ahmedabad, India	Successful urban mitigation practices following Gujarat earthquake
Sep-02	Hanoi, Vietnam	Community involvement in safer housing in flood prone areas
Nov-03	Sri Lanka	Long term strategy for disaster risk reduction following floods
Apr-02	Bangkok, Thailand	Regional policy, legal and institutional arrangements and planning for disaster management
Sep-02	Bali, Indonesia	Regional best practices in disaster management

In addition to the above, National policy workshops were held in the following countries:
- Indonesia
- Nepal
- Sri Lanka

TRMCE

AUDMP developed five courses under the Training, Resource Materials and Continuing Education component:

- Urban Disaster Mitigation (UDM) course was conducted by ADPC at regional level twice in Bangkok in October 1997 and May 1999 and in countries by national partners 10 times.
- Urban Flood Mitigation Course-UFM (now renamed as Flood risk mitigation-FRM) has been conducted 4 times to date – September 2000 in Bangkok, September 2001 in the Philippines, January 2003 for Asian partner countries and September 2003 in Beijing, China.
- Regional course on Earthquake Vulnerability Reduction for Cities (EVRC) was held in May 2002 and November 2002 in Katmandu, Nepal and in June 2003 in Bangladesh
- Regional course on Technological Risk Mitigation (TRMC) for cities was held in 1999 in India.
- Disaster Risk Communication (DRC) course was developed in AUDMP Phase II. The first course was held at AIT in Bangkok on 2-6 February 2004.

AUDMP also conducted national courses for the individual country projects. In each of the target countries, AUDMP, the National Partner Training Institutes, and the management of the country

project formed a consensus on the selection of courses along with the budget. After the delivery of the course, these partners worked on programming subsequent courses.

National courses

Date	Location	Subject
1999	Sri Lanka	Risk based mitigation planning
Oct-99	Sri Lanka	Natural disaster management 1
Feb-00	India	Urban disaster management 1
Mar-00	Sri Lanka	Natural disaster management 2
Oct-00	Cambodia	Training of trainers
2000	Bangkok, Thailand	Urban disaster mitigation (two times) for Lao PDR
May-01	Sri Lanka	Natural disaster management 3
2001	Bangkok, Thailand	Urban disaster mitigation (two times) for Laos and Thailand
Sep-02	Sri Lanka	Natural disaster management 4
Sep-03	Laos	Risk based land use planning for Lao PDR
2003	Laos, Sri Lanka Bangladesh	GIS usage in disaster management (three times)
Various	Bangladesh, India, Vietnam, Cambodia, Laos, and Sri Lanka	Community-Based Disaster Management (CBDM)

ADMIT – National partner training network

The Asian Disaster Mitigation Training Network (ADMIT) was launched on May 17, 1999. MoUs have been finalized between ADPC and the following institutions: the Nepal Administrative Staff College (NASC) in December 1999; the National Safety Council of India (NSCI) in January 2000; the Sri Lanka Institute for Development Administration (SLIDA) in January 2000; and the Centre for Housing, Planning and Building (CHPB), Sri Lanka in January 2000, Development Academy in Philippines (DAP) in June 2001 and Institute of Engineers (IOE) Nepal in July 2002.

The proposals submitted by a few other NPTIs in the year 2003 to become NPTIs, such as Bangladesh Public Administrative Training College (BPATC), Bangladesh Academy for Rural Development (BARD), Local Development Training Academy (LDTA) of Nepal, VBNK and SILKA in Cambodia, Urban Research Institute in Lao PDR, were not considered due to fund constraints and time limitation.

University network (co-funded with CASITA)

AUDMP has encouraged integration of Urban Disaster Mitigation course material in undergraduate and postgraduate level courses conducted by universities (urban planning schools) within the target countries. These courses enhance the career prospects of emergency managers and other professionals by helping them to acquire academic qualifications. The university courses also integrate disaster management skills in core professional education. AUDMP's involvement helps to assure that readings, assignments and assessments are of high quality.

Land use planning is one of the main streams of natural disaster management. Although recognized as a major concern in developed countries, it is still not recognized in all its perspectives by the academia in developing countries of Asia. The reason may well be the inadequate involvement of key urban planning players to integrate risk based mitigation tools in to the process of urban planning to reduce the impact of natural disasters. The following issues may be of special significance:

- Methodology for the identification of hazard impact areas
- Methodology for spatial analysis of vulnerability and risk

- Managing development activities within hazard prone areas through systematic development controls

Future focal points for study should include formulation of appropriate land management strategies to mitigate natural disaster impact, participatory policy planning and implementation, assessing cost-effective alternatives for the prevention of environmental degradation, knowledge dissemination processes, etc.

Twelve planning schools from national universities (in Philippines, Sri Lanka, India, Nepal, Bangladesh, Indonesia and Thailand) as well as the Indira Gandhi National Open University, India and Asian Institute of Technology (AIT), Thailand, attended a workshop organized by AIT in Bangkok in July 2002.

Following the workshop ADPC and ITC Netherlands submitted a proposal for funding from the European Union's CASITA to develop a web based learning platform to help universities develop teaching material. This on-going EU project began in April 2003.

3.2 Objectives

1995 objectives

The original thrust of the AUDMP program was the dissemination of information and expertise from ADPC to the target countries. The purposes of the AUDMP Program in the original 1995 proposal were to

- reduce the natural disaster vulnerability of urban populations, infrastructure, lifeline facilities and shelter in targeted cities in Asia; and
- promote replication and adaptation of successful mitigation measures within the countries where demonstration projects are carried out and in the region.

The AUDMP Program was to accomplish its purposes by:

- supporting up to ten practical demonstrations of how to better prepare for and mitigate the effects of natural hazards;
- assisting in dissemination of successful experiences and information through training, networking, and policy seminars; and
- developing and institutionalizing training programs to increase the number of professionals with disaster mitigation skills.

1998 objectives – changes and reasons why

The first three years of the program were largely devoted to devising and implementing start-up activities in six country projects (Nepal, Philippines, Indonesia, Sri Lanka, India, Cambodia), which introduced urban disaster mitigation – a new concept in many cities at the commencement of the program.

At the time of the mid-term evaluation in May 1998, international and national institutions were changing in response to a growing awareness about disaster mitigation.

- *Worldwide Context:* National and regional meetings to review progress made in disaster reduction were in the planning stages as the end of the UN-IDNDR was quickly drawing near.
- *Asian Context:* The Japanese Government had initiated the process of establishing a disaster management center. A new disaster mitigation program was initiated with Japanese and UN funding called RADIUS that was designed around similar principles as the AUDMP and resulted in the implementation and documentation of demonstration projects but focused on earthquake mitigation.

- *ADPC Institutional Context:* The sudden loss in March 1998 of three senior staff through resignations led to major upheavals in the management of ADPC and between ADPC and AIT. While this obviously had a short-term negative effect on the AUDMP as well as on ADPC as a whole, the long-term outcome was that this act probably quickened the process that eventually led to ADPC's independence.

- USAID/OFDA/RHUDO Context: At this same time, OFDA was, as a matter of policy, beginning to integrate disaster mitigation approaches into all its activities including relief and response efforts.

The basic outcome and message of the mid-term evaluation was that AUDMP was under-funded and understaffed but, despite these constraints, was beginning to achieve the initially intended results and promised to be an overall success. Therefore the evaluation team recommended that, if available, additional resources should be provided to build ADPC's AUDMP management team to do more than administer the program. They recommended a larger management team capable of providing substantive support to each project. This substantive support would result in the inclusion of community based disaster mitigation efforts, support for social marketing and public awareness programs, a redirection and expansion of the originally planned training program and an enhanced effort to ensure that the target country programs were sustainable and replicated elsewhere.

Another very significant decision made at that time was to expand the project to include the five additional target countries of Bangladesh, Cambodia, Lao PDR, Thailand and China. However, expansion to include China was based on an assumption that additional funding could be leveraged from the National Science Foundation under a special program, which did not materialize.

(1) 1998 objectives

The goal of AUDMP in the 1998 proposal was to reduce the disaster vulnerability of urban populations, infrastructure, critical facilities, and shelter in targeted cities in Asia. The purpose of the program was to:

- Establish sustainable public and private sector mechanisms for disaster mitigation that will measurably lessen loss of life, reduce the amount of physical and economic damage, and shorten the post-disaster recovery time;
- Promote replication and adaptation of successful mitigation measures within target countries and throughout the region.

(2) Resulting Overall Changes

The resulting overall changes to the program resulting from the mid-term evaluation and the decision to expand the number of target countries were as follows:

Program Management Team Expansion: The AUDMP management team at ADPC expanded from a staff of three professionals and one administrative support staff to a staff of eight to ten professionals and two administrative support staff. This allowed the ADPC program staff in Bangkok to grow from a mostly administrative role to a technical support role or from a reactive to a pro-active role with project partners. It allowed program components to grow from efforts limited to minimal support of the target country activities into mini-projects in support of country activities themselves.

Information Program - Transition from Partner Support to Collection/Documentation Role: The information program transformed from the earlier described basic program to one that was much more proactive in developing materials to distribute to other implementation partners throughout the program as well as other organizations interested in replication of AUDMP disaster mitigation

methodologies. This component became much more focused on helping each partners in each target country document its successes and failures (what to do and what not to do) for use in ensuring both the sustainability and the replicability of each project in each country (Please see sustainability and replicability discussion below).

Networking & Policy Support - Transition from Partner Support to Proactive Process, Increased Focus on Development of National Policy Workshops and Addition of a Public Awareness/Social Marketing Activity: The project was to increase its focus on networking with the addition of an ADPC network support manager. It was also agreed that ADPC would work closely with each project implementation partner to initiate dialogues and meetings that would support policy change. This matched well with ADPC's new vision of itself as an agent of policy change. Annual working group meetings were established in the target countries to help bring a focus to the issue and project and a large, end of project conference was planned. Finally, based on the recognition of its importance to the demonstration projects and inspired by AIDS public awareness campaigns, it was agreed that an effort would be made to include public awareness/social marketing as a component of each project as a part of long-term sustainability and replication.

Training Program – Increased Focus on Providing Support for In-Country Training Programs: Up until this point the primary focus of the training program had been on the development of the courses identified in the original project design. These courses were being developed and tested at the regional level and would then be adapted for use at the national level. This was seen to be too unrelated to the national demonstration projects. It was agreed that a strong effort would be made to develop courses more specifically related to the needs of the national demonstration projects.

Sustainability and Replicability: These important project objectives were defined as follows:

- Sustainability - Will national demonstration projects be continued in that given place?
- Replicability - Will national demonstration projects be continued in other places?

Sustainability had long been an objective of the project and a renewed effort evidenced in the increased management team support for the national demonstration projects, the new public awareness programs, etc., were seen efforts to enhance ongoing work towards sustainability. *Replicability*, on the other hand, was a newly brought out program objective related to sustainability at the national level that would be applied primarily to the national demonstration projects in an effort to ensure that not only would a national demonstration project be sustainable in and of itself, but that it, or something similar, would be repeated in other places in that target country. A third phase, the Consolidation Phase, was added to the national demonstration projects which was a proposal for a set of activities to ensure replicability. In addition, other programmatic components, such as the strengthened support for policy change, public awareness campaigns were seen to be supportive of replicablity.

Decade Long Support of Disaster Mitigation in Asia: One of the most innovative steps that came out of this evaluation was the decision to increase the life of the program to what ultimately has become nearly a decade of support for disaster mitigation in Asia. In hindsight, this commitment was made incrementally, but one of the most important commitments to causing real change is sustained commitment of resources over a long period of time. Normally the life of a typical development program does not exceed four or five years. A quick two to three years represents the norm. AUDMP's effect on the partner institutions and ADPC was far more significant and long lasting simply because of the decade long duration of the program.

The period 1998-2001 focused on documenting the experiences of on-going projects and learning lessons so that the experience can be used in designing future projects.

Target population
The AUDMP target population is the urban populations in targeted countries in Asia who are vulnerable to natural disasters. The program focused initially on secondary cities in these countries because with limited resources per country, there was a better chance that the project could demonstrate measurable progress that could then be used as a model for other urban areas in the country. Of particular interest were the urban poor, who are the most vulnerable. The urban poor in Asia comprise about 45% of the poor in the world.

3.3 Monitoring and evaluation
Program partners were requested to send progress reports on a monthly and quarterly basis. They were also encouraged to document the project implementation process.

AUDMP program staff published monthly highlights and disseminated information on the projects through newsletters. While the early newsletters were published in hard copy, an electronic newsletter was launched in 2003 as a more cost effective means of distribution and one that ADPC could continue after grant funds for AUDMP terminate.

Program staff prepared strategic framework updates every six months. These reports are available on the AUDMP web site.

Program staff and USAID/OFDA representatives conducted regular monitoring visits to partner countries. The program core group comprised of USAID/OFDA, ADPC, RUDO (SA&SEA) also had twice yearly meetings in the early stages of the project.

The program organized an annual working group meeting to discuss the issues related to program implementation. The working group meetings brought together representatives from project partner institutions and subject experts in disaster management and urban development in the region to review progress of the program, share knowledge and experiences, and discuss future directions.

Themes for the working group meeting are being selected with the consent of country partners.

Regional Working Group Meetings

Date	Location	Subject
1997	Bangkok, Thailand	Project Imlementation
Feb-98	Kathmandu, Nepal	Project Implementation
May-99	Bangkok, Thailand	Policy Strategy
Feb-00	Phnom Penh, Cambodia	Replication strategy
Mar-01	Ahmedabad, India	Replication and sustainability
Mar-02	Bandung, Indonesia	Social marketing to enhance mitigation programs' effectiveness
Mar-03	Colombo, Sri Lanka	Monitoring and evaluation for effective program implementation

Program lessons learned
All Disasters Are Manmade And The Direct Result Of Development Patterns: The term “natural hazards” gives the impression that it is the earthquake or flood that is dangerous when in fact it is the development without consideration of these natural phenomena that is the real danger.

Specific Mitigation Measures are Hazard Dependent: The measures taken to reduce the vulnerability to a given hazard or disaster uniquely tied to the hazard type because a development pattern vulnerable to one type of hazard may not be to another. For example, underground utilities may be less likely to be damaged by hurricane winds than pole-mounted utilities while the opposite is true for floods.

Intra and Inter-Governmental Partnership and Cooperation Is Essential: Disaster mitigation crosses all aspects of human activities regarding health, development, construction practices, economics, industrialization, housing, social interaction, etc. Therefore all parts of government have a role to play in vulnerability reduction both in terms of mitigation as well as preparedness and emergency response.

The community must be involved. The first group, the community(s) must be made aware of the risk and dangers they are exposed to and provided with the positive message about what they themselves can do about it.

Disaster Mitigation is a Core Function of Government at All Levels: Collaboration of the various parts of government both vertically and horizontally was shown to be necessary to ensure a comprehensive approach to disaster mitigation.

Decentralization, Devolution And Transparency Enhance Disaster Mitigation: Disaster mitigation is best done at the local level and by development and sharing of sensitive information about the vulnerability of physical or economic components of a society. Transparency of information is critical to disaster mitigation because political fears of revealing sensitive information have been shown to be not only unfounded, but to actually undermine the recognition of the need for safe development practices.

Resources Will Be Attracted As Responsibility is Decentralized and Expertise and Political Will Are Strengthened through Training and Capacity Building: Once information about vulnerability is clearly defined and expertise is increased, solutions were found that frequently had little or no cost. Even when there is a high cost, if it is an efficient solution resources were found to support it that would not have been had the problem not been identified.

Small Enthusiastic, Field Oriented Groups Make the Most Successful Institutional Partners: When selecting partners to implement a disaster mitigation program, seek out the smaller, lean and mean organizations that are passionate about their work.

Mitigation Measures Are Unique to the National, Cultural, Social, Economic and Local Context: Solutions that work in one community can not be transferred directly to another without first adjusting them for the national, cultural, social, economic or local conditions of the second community. Basic principles of social marketing can be repeated, but the wording of the message, even the language and pictures will be completely different in a different community.

Mitigation is Most Effective When Fully Integrated in the Development Process. Mitigation activities, like development activities, are usually multidisciplinary. Because it is usually far cheaper to retrofit existing infrastructure that to rebuild after a disaster, integrating mitigation activities into the development process is far more cost effective over the medium to long term.

Past experience is not a good gauge of future needs. The biggest mistake a community can make is to look back historically at disasters and their community to make decisions about their community's future. Looking back may give an impression of a smaller, less vulnerable community and of a lower return rate of a hazard that is now more likely due to developmental or environmental changes, for example, Kathmandu was much smaller and constructed of different building types when it experienced an earthquake in 1934.

Political changes are needed before disaster strikes. Sound policies and legislation that facilitate disaster mitigation and appropriate institutional arrangements must be in place in advance of a disaster to ensure that disaster mitigation is integrated into the development process and that preparedness planning is interrelated.

Hazard Mapping and Risk Assessment: Comprehensive risk assessment is a critical starting point and basis for essential decision-making and design of both mitigation programs and emergency response planning.

Capacity Building: Once awareness and interest is raised, the development of skills and knowledge that can translate this awareness into real change must be provided.

Mitigation Planning and Implementation: Once a hazard and risk assessment has revealed the vulnerabilities that exist in a community, a plan to reduce these vulnerabilities must be developed and implemented. The three main approaches to mitigation planning that were used in AUDMP pilot projects included plans developed by government, grassroots-citizen led plans and integrated public/private plans. The AUDMP experience showed that the most effective approach was an integrated partnership of government officials, NGO's, civil society groups, community based organizations and the private sector.

Promotion of Safer Building Construction: building codes and by-laws and their enforcement works best in the Asian context at the high end of the construction industry. However, the vast majority of construction takes place in the informal sector of mid-rise buildings to individual houses that are done in structurally unsound ways due to the lack of knowledge regarding structurally sound construction of modern buildings. The AUDMP programs illustrated and underscored the need to bring into force simple, user friendly, non-engineered construction practices for use by the community and construction artisans.

Community Based Approaches to Disaster Mitigation: community-based disaster mitigation (CBDM) could be one of the most effective models for reducing vulnerability to disasters because it takes place at the community level where physical, social and economic risks can be assessed in detail and managed in a very direct and effective way. This approach was successfully applied in the AUDMP programs in Bangladesh, Cambodia, India, Nepal and Sri Lanka.

Public Awareness and Social Marketing: Public awareness in risk communications is the process through which people living in hazard-prone areas come to realize and understand that they live in areas of risk, learn of the specific dangers they are exposed to, the meaning of warnings issued and to take appropriate action to protect their lives and minimize damage to their property. Social marketing is the process of marketing the risk communications message to a specifically defined audience in a community by learning the cultural identifiers of that audience and crafting an outreach activity to meet the specific needs of that audience using a customized approach.

Conclusion

Much has changed in the context of disaster mitigation today compared to the early 1990s, especially in the Asia region that can, in no small part, be attributed to the impact of the AUDMP.

Worldwide Context: The UN-IDNDR was brought to a close and the UN-International Secretariat for Disaster Reduction (ISDR) has been established to carry on follow-up activities. ADPC was invited to serve on the advisory council of this organization as a representative of the Asia region. A number of regional disaster management centers similar to ADPC now exist throughout the world.

Asian Context: There is now a strong awareness on the part of development professionals about the need and importance of disaster mitigation as an integrated component of the development process that did not exist a decade earlier. While it is true that a number of other factors have also contributed to this awareness, a good deal of this change should be credited to ADPC and the AUDMP program.

ADPC Context: ADPC is seen in Asia as a powerful and important ally and resource for information, training, policy change and open access to a network of experienced disaster

management and mitigation experts throughout the region. In great part this is due to the opportunities presented during the implementation of the AUDMP. There are now two significant disaster management centers in Asia that include ADPC and ADRC. ADRC is a Japanese Government initiative that is still in the process of establishing its mandate and purpose with its partners. Both have an important role to play and have established a working relationship through MOU with each other directly as well as with the UN-ISDR as a tri-partite regional body.

Over the last decade, ADPC has grown from a staff of around 14 in the early 90's, peaked at almost 60 and has stabilized today with a staff of over 40. The center's greatest human resource though is still its networks of disaster management professionals throughout Asia and the world. ADPC is still depended upon in Asia to provide sound technical assistance to its partners along with a broad range of disaster mitigation and management information products and training courses. ADPC's partnerships and networks have expanded enormously. One of the most significant contributions to this was the AUDMP program.

USAID/OFDA/RUDO's Context: OFDA has for sometime now made mitigation an integral component of all its programs and overall way of thinking, doing away with the need for a stand-alone PMP program as was the case in the early 90's. The RUDO's have been disbanded due to the unpopularity of increasing the financial debt of the developing countries they targeted. Several USAID Missions in Asia (representing over a third of the AUDMP target countries) have made disaster reduction one of their Strategic Objectives including Bangladesh, India, the Philippines and Vietnam and all USAID Missions in Asia recognize the important role disaster management and mitigation plays in the development process of Asian countries and factor this into their programs.

ii) Program Achievements

The program goals set out initially and modified during the mid-term program adjustment process have been met or exceeded. This achievement has been measured and documented in the monitoring and evaluation process designed and established in conjunction with USAID. All agreed upon performance indicators were at least met (or in only two cases are just about to be met) or were exceeded over the life of the program (LOP). These indicators are summarized to date as follows:

- 10 of 10 targeted operational plans developed with resources from national collaborating institutions to carry out mitigation measures and demonstration activities after the program ends
- 21 of 25 targeted replications or adaptations of mitigation skills and procedures promoted in AUDMP demonstration activities by other organizations, communities or countries in Asia (more to come)
- 26% ($1.1 million) of the 20% targeted of the total USAID investment from non-AUDMP funding sources attracted by program and demonstration activities
- 43,000 households potentially benefiting from AUDMP sponsored activities to reduce disaster vulnerability
- 23 of 10 targeted new or improved assessment methods and guidelines/standards used for public and private sector development
- 5 of 8 targeted emergency preparedness and response plans written or revised to reflect improved information on hazards and vulnerability
- 95% of public and private sector professionals with AUDMP initiated disaster mitigation training who are employed and using the knowledge gained in fields impacting disaster management or urban development versus the 75% targeted

- 12 institutions where AUDMP initiated training and professional development course modules are institutionalized versus the 12 targeted
- 5 regional networks, 209 organizations and 1,760 disaster mitigation professionals participating in the AUDMP regional information and contact network established during the program that started with 33 organizations
- 6 policies (of 2 targeted) established or revised to facilitate action, regulation, enforcement and or incentives for disaster mitigation and vulnerability reduction

Questions

When Is Disaster Mitigation Done?

One can say disaster mitigation has been made sustainable when institutional and social processes have been put in place that result in regular review and adjustment of the actions being taken to reduce the physical, social and economic vulnerability of a given community.

Are We There Yet?

"Not yet. But a good start has been made." ADPC has grown from being an advocate of disaster mitigation in the late 80's and early 90's to being able to provide a robust, substantive source of support to the region's many growing mitigation programs.

Has AUDMP been a success?

AUDMP can be considered a success story on many counts. It has demonstrated how to do disaster mitigation in the Asian context at the local level where real social, economic and physical changes can take place to lessen the vulnerability of a community. It has built up organizations and in one case helped established one that can continue to play a role in advocating and providing policy and technical support to disaster mitigation efforts in their country and throughout the region. It has institutionalized disaster mitigation training courses throughout the region, established networks of disaster mitigation professionals and has developed and distributed information products to help others do what has been done through the program. It has sustained this effort over nearly a ten-year period that has been enough to build a firm foundation for the support of disaster mitigation actions. It has also helped build ADPC's reputation as the premier regional institution that has the practical experience to provide support for national disaster mitigation programs at the local level. ADPC has itself recognized the need to continue the most successful elements of the program for another decade and has developed an institutional plan and established a team of regional disaster mitigation professionals to do so. ADPC needs resources to implement this institutional initiative in order to ensure that the solid foundation established through the AUDMP is built upon and spread over the coming decade.

SWAT analysis

Strengths	Weaknesses
• Institutional memory (ADPC has 15 years of experience with the DM issues) • ADPC's has proven experience in handling similar programs • Competent, specialized UDM in-house staff and consultants from inside and outside the region • Carefully selected competent partner institutions in countries • Continuous funding support from OFDA/USAID and other bilateral/multilateral donors • Support from the national disaster management institutions of respective governments.	• Program vulnerable to changes in management. Staff changes in 1998 and 2003 impacted program achievements • Program depends on OFDA/USAID funding for new program countries or replication in existing countries • Lack of long term funding weakens confidence in ADPC by respective government and NGO institutions • Concerns about program continuity may create loss of trained competent staff • The establishment of ADPC's new Urban Disaster Risk Management team may face growing pains that impact project output • Disaster mitigation is a new subject so difficult to set implementation timeframe • Partners are new to methodologies so long term capacity building is essential but funding may not be sufficient • In many countries the program created a huge mitigation demand that partner funds are not sufficient to meet • Disaster events in Asia (e.g. Gujarat earthquake, floods, terrorism) have created new demands on donor agencies' limited funds, reducing allocations for mitigation • Country partners have other activities and cannot devote full time to mitigation • Mitigation has become supply driven rather than demand driven • Training programs attract more participants from NGOs as governments do not have enough funds to participate in courses
Opportunities	Threats
• Expand the I&N components to reach new audiences (political leadership, insurance and finance sectors, media etc.) • OFDA/USAID support for year 2004. OFDA may be the only funding institution that focuses on long term programs on DM. • Opportunities for collaborative arrangements as ADPC is connected with a large network of International institutions dedicated to Urban issues (UNHABITAT,CITYNET,ISDR, IULA etc) • ADPC's status as a member of influential advisory bodies (ISDR,WB etc) • Good understanding with International NGO community and global forums such as UNDP • Good reputation of ADPC among donors (USAID, AUSAID, ADB, DANIDA, DIPECHO, etc) • Effective governance structure of ADPC . • Restructuring at ADPC saw establishment of the Urban Disaster Risk Management team, which will have more focused interventions	• After UN's decade for disaster relief, attention is now focused on governance, eradicating terrorism and infrastructure • Multiple regional urban disaster mitigation programs dilute attention (MRC in Mekong region, WB in India) yet difficult to convince others to avoid duplication • Program period insufficient to fulfill identified tasks due to violence and terrorist attacks • Staff turn over can happen again • No guarantees for further funding • Program staff deal with routine more than the institutional development issues, which could hamper fund generation, obtaining new projects, etc.

4. Country sections

4.1 Bangladesh

Country Context and AUDMP focus

Situated in the delta region of South Asia, at the north edge of Bay of Bengal, Bangladesh is a flat country covered by an intricate network of rivers. Its geographical circumstances make the country vulnerable to natural disasters. Cyclones, storms, floods and tidal surges and the resulting deaths and injuries are commonplace.

Bangladesh has a total area of 55,598 square miles or 144,000 square kilometers. The country comprises plains crossed by the mighty Padma, Meghna, and Jamuna rivers and their numerous tributaries. It is fenced by the Bay of Bengal on the south and by India on the north, east and west. There is a small strip of frontier with Myanmer on the southeastern edge. As Bangladesh is situated on the downward slop of the Himalayan mountain range, the water flow is as much as 14 times capacity measures with respect to the area of Bangladesh.

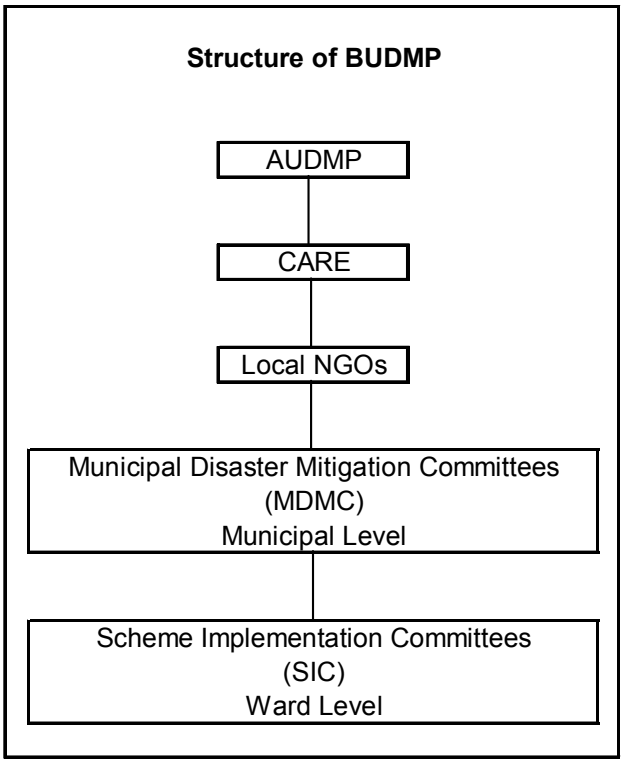
Much of the country is composed of river silt. Along the coastal belt, the land averages 3 meters above sea level. In the far north, the Panchagarh District, the average is 60 meters above sea level. During the period of full and new moons, coastal basins inundate. About 65% of the country is below 7.5 meters above sea level. Flooding is a constant problem for Bangladesh. While the riverbanks of towns are the most vulnerable to flood disasters, floods in rural areas force rural victims to migrate to towns to seek employment opportunities.

Bangladesh has one of the highest rates of growth of urban populations in Asia at over 6% per annum, which is double the national growth rate of 2.4%. According to an Asian Development Bank study, the urban population will increase from the current 20% to 36% in 2010 and will then total an astronomical 51 million people.

Migration has been the most dominant component of urban population growth contributing 40% of the total during 1974-1981. For some large cities this share could be even higher up to 70 percent (UNCHS-UNDP 1985). Both rural push and urban pull factors caused large-scale migration from rural to urban areas. Because of the rapid growth in urban populations, more people are settling in areas vulnerable to hazards. Rapid population growth and migration make it difficult for authorities to protect people from disasters. Finally rapid urbanization is upsetting the balance in ecosystems, with more frequent and more serious disasters as a result.

Urbanization in Bangladesh has taken place generally without much urban planning. The nature of urbanization is dominated by low level of economic development of the country and massive poverty in the urban areas. The Asian Development Bank estimates that the urban poor in Bangladesh will increase to 25 million in 2010. Critical impediments for service delivery and proper management include inadequate coordination of urban services and lack of transparent urban governance.

The Bangladesh Urban Disaster Mitigation Project (BUDMP) began in July 2000 as part of AUDMP with the partnership of CARE-Bangladesh assisted by two local NGOs, the Gano Unnayan Kendra (GUK) in Gaibandha and the Committed Organization for Development Extension Services (CODES) in Tongi. In each municipality, the project in collaboration with the local community established a Municipal Disaster Management Committee (MDMC) responsible for authorizing and guiding activities within the communities. The project also established Scheme Implementation Committees (SIC) in each ward of the municipalities to implement structural mitigation measures.



BUDMP aimed to reduce the vulnerability of flood prone communities in the two municipalities. CARE-Bangladesh and its partner NGOs worked to establish community-based flood mitigation and preparedness systems to improve the capacity and skills of communities to manage flood risks and apply mitigation strategies. Project activities included activation of municipal disaster management committees, use of participatory rural appraisal (PRA) techniques to assess the level of vulnerability and hazard, mobilization of community resources for reduction of flood impact, and the development of community mitigation plans, preparedness plans and implementation of respective plans as demonstration initiatives. One of the major successes of the project was the reactivation of Municipality Disaster Management Committees in both municipalities. The Bhuyiananpur and Sahjadpur municipalities were added during the replication phase, Phase Three. BUDMP is currently working to replicate its success to other selected communities in the country.

Project Objectives and Evolution

BUDMP aims to reduce urban vulnerabilities to natural disasters thereby protecting people's safety and shelter, Bangladesh's infrastructure, and the general economy. The specific objectives are the following:

Establishment of community based flood mitigation and disaster preparedness systems in the Tongi and Gaibandha municipalities and later, during the replication phase, the Bhuiyanpur and Sahjadpur municipalities.

Replication of mitigation measures and disaster preparedness system to other municipal areas of Bangladesh.

Improve capacity and skills of community (elected representatives, government officials and key players) to manage the risk and apply mitigation skills in the urban areas.

The First Phase of the project (July 2000 – April 2001) included a baseline household survey, vulnerability assessments, and training of BUDMP staff, and NGO heads, volunteers and other stakeholders. The project undertook risk mapping using a Participatory Rural Assessment approach and implemented a monitoring system.

The project conducted community-based vulnerability risk assessment using several Participatory Risk Appraisal (PRA) tools and Geographical Information System (GIS) software.

After the field activities of vulnerability assessment had fully been completed in Gaibandha and Tongi, a report on relevant findings, maps and diagrams was disseminated among community members, concerned stakeholders and organizations in both municipalities. As a result, community members became more aware of their hazardous situation as well as gained knowledge regarding disaster preparedness and mitigation measures for their locality.

Disaster Management Committees were set up in both municipalities under the chairmanship of the Mayors. The Committees comprised elected members, government officials, NGOs and civil society representatives.

The Second Phase was originally scheduled for May 2001 through August 2002 but was extended until the end of December 2002 at no additional cost. This phase saw the implementation of the BUDMP mitigation plan including structural projects, the design of three training modules and public awareness materials.

The third phase replicated the project in the Bhuiyanpur and Sahjadpur municipalities and ran from January through December 2003.

Components

Demonstration and Project Implementation Framework

Technical Foundation of Demonstration Project

AUDMP asked CARE to design and implement the BUDMP project. CARE worked with local NGO partners in each community. These institutions worked with the local municipalities to establish the MDMCs and with the local communities or wards to establish the SICs.

The CARE Disaster Management Program coordinator served as the BUDMP project coordinator. The full time project manager reported to the program coordinator, supervised the BUDMP and traveled to the demonstration cities. In each municipality, BUDMP had a project manager, who worked out of the local municipality offices alongside local PNGO staff dedicated to BUDMP activities.

BUDMP followed the general AUDMP format of disaster mapping, identification of vulnerabilities, mitigation strategy development, design and implementation of demonstration mitigation activities. BUDMP placed more emphasis on community participation and less on technical mapping.

The start up of the project was slow due to CARE bureaucracy and perhaps by CARE's emphasis on getting a high level of community buy-in for the project. BUDMP spent five months assessing the interest of the communities in participating in the project and working with the most committed to develop maps of their communities. The community outreach involved elected ward commissioners, teachers, religious leaders, public servants, commercial representatives, and others, BUDMP was also able to make sure that both men and women were equally represented in the MDMCs and SICs. The whole process allowed BUDMP to identify communities that were the most interested and also willing to contribute their labor and other resources.

Working with the communities in discussion groups and with trained volunteers, the project developed a series of five PRA community map tools.

- **The Transact Walk** resulted in a transaction map that showed the complete topographical information of the area along with the kinds of activities that took place as people worked and led their lives.

- **The Social Mapping** identified risks and social resources in the community such as schools and religious centers.
- **The Problem Identification and Ranking** indicated the degree of problems, for example flood maps identified areas subject to inundation.
- **The Mobility Chart** showed how people tended to move during crises and identified appropriate shelters for people during disasters. The Wealth Ranking map identified the poorest in the community as priority BUDMP beneficiaries.

Mitigation activities included installing deep wells to avoid arsenic poisoning and construction of central latrines.

Demonstration Sites

Gaibandha

Gaibandha has a population of about 130,000 people. It is a rural town along the banks of the Ghowat River and is about five hours drive from Dhaka. It is one of the poorest towns in one of the poorer regions of Bangladesh and hence was a prime candidate for BUDMP. Gono Unayon Kendra is the local NGO implementing the project.

The communities developed the PRA community maps, which helped them to generate public awareness, training and structural mitigation initiatives.

In total there were 22 structural mitigation initiatives to which the communities contributed labor and money. These revolved around elevation raising and improved drainage. The elevation raising initiatives included community playgrounds, households of the poorest members of the community, roads, and clusters of households. One village of 65 households worked to raise the entire village. Drainage projects included construction of surface drainage various kinds of culverts to divert water from built-up areas.

Tongi

Tongi is on the outskirts of Dhaka and is a city of about 400,000 people, 125,000 of whom live in slums. A branch of the river Turak surrounds the area. Over the last decade, the city has received an influx of rural migrants wanting to find a better life in Dhaka. The district is home to 400 industries, which act as a magnet for the migrants. The city is both more populated and more densely populated than Gaibanda. The rapid influx of recent migrants makes the community less cohesive, making the development of mitigation strategies more complex.

After initial difficulties with the Association of Rural Development (ARD), the Partner NGO for Tongi, the Committed Organization for Development Extension Services (CODES) was chosen as the new partner for BUDMP.

Similar to Gaibandha, structural mitigation activities revolved around raising the level of structures and construction of culverts and drainage systems. The structures that were elevated included a community sports field and individual and groups of houses.

Bhuiyanpur

Bhuiyanpur, a replication site, is in the Tangail district and is a part of the Jamuna flood plain in the Brahmanputra basin. The Louhagonj River drains the region. It covers an area of 10.95 km2 and has a population of 13,705. The municipality comprises 9 wards. Most of the activities focused on raising structures above flood levels and the construction of three culverts.

Sahjadpur

Sahjadpur was also a replication site. It is part of the lower Karatowa flood plain under Brahmanputra basin. Administratively, it was upgraded to a Thana (sub-district) back in 1875 and then as a municipality in 1989. The municipality consists of 9 wards with 9 male ward commissioners, 3 female ward commissioners and is headed by a Chairman. The Commissioners and Chairman are elected. The town covers an area of 19.52 square kilometers with a population of 65,897 and a density of 3,376 per km2. The municipality has been ranked as one of the most densely populated areas and is known throughout the country as the market or trading outlet of weaving products. Apart from agriculture and cottage industries, weaving and producing diary products are the most important economic activities in the area.

Structural mitigation activities under BUDMP

Name of interventions	Tongi	Gaibandha	Bhuiyanpur	Sahjadpur
Community place ground raising	3	3	2	0
Individual homestead raising	7	3	3	1
Cluster housing raising	0	1 (98 H/H)	0	0
New latrine distribution above flood level	146	75	90	100
Community latrine complex	0	1	0	0
Tube well Installation above flood level	30	30	0	0
Drains	3	2	0	0
Culverts	2	5	3	3
New road construction above flood level	0	3	0	0
Low cost housing	1	2	0	1

Training

BUDMP included training of project staff, partners and beneficiaries as an integral part of the demonstration projects. The training has been focused on the areas in which the project is active and has not had a nationwide focus.

In the First Phase of BUDMP, the project developed five training modules in both Bengali and English on the following topics:

- Basic Disaster Management
- Municipality Disaster Management Committee (MDMC)
- Volunteers Training Module on Disaster Management
- Training for Trainers
- Participatory Monitoring and Evaluation

Project-based training

BUDMP provided five types of training for beneficiaries and two for its staff and partners.

Beneficiary training

- The **Municipal Disaster Mitigation Committee (MDMC)** had three days of training early in the project to introduce the concepts of disaster mitigation, preparedness, management, and the relationship between disaster mitigation and development.
- **Community volunteers** received two days of training on how to mobilize communities to assess flood hazards. The first part of the training introduced disaster mitigation measures and the second taught the five Participatory Rapid Assessment (PRA) tools described above to assist their communities plan mitigation measures.

- **Scheme Implementation and Maintenance Committees** received two days of technical and managerial skills training needed to implement the structural mitigation measures. The training included a project briefing, guidelines on community resource pooling, the committee's role in the process, and techniques for raising the level of houses or other community infrastructures.

- **Raising awareness among members of civil society.** The project conducted one-day awareness-raising sessions among 797 leaders and community groups, including Scouts and Girl Guides. Each group trained about 25 people.

	Name of Municipalities				
	Gaibandh	Tongi	Bhuiyanpu	Sahjadpur	Total
No. of participants	135	240	237	185	**797**

- **Raising awareness among students.** Project staff and partner NGO staff visited secondary schools and colleges in the municipalities to present two-hour sessions on "dos and don't during an urban flood." The sessions included songs, display posters and class activities. A total of about 500 students in Gaibandha and 400 in Tongi attended.

Project staff training

Core staff received foundation training prior to the start of project activities and on-going study circles during implementation to acquire additional information and skills.

- **Foundation training** took place in October 2000 for BUDMP project staff and partner NGOs. ADPC participated in the training, which included the basic concepts of disaster mitigation and participatory monitoring and evaluation, training skills, their roles and responsibilities and those of committees and volunteers.

- **Study circles** involved BUDMP staff and partner NGO staff. Topics included decision-making process, self-help approach to development, management of development, meeting-conducting skills, public awareness through community mobilization, and management information systems.

National Training Partner Institute

AUDMP has not been able to identify an appropriate entity to act as the National Partner Training Institute (NPTI). Many institutions that AUDMP contacted were not interested in collaborating or are not focused on cities. AUDMP has attempted to address the lack of an NPTI through working with two Bangladesh universities (Bangladesh University of Engineering Technology and Kulna University) to develop urban disaster management courses. AUDMP plans to use the UDM curriculum during the consolidation phase of AUDMP in 2004. BRAC University and ADPC have also signed an MOU for ADPC technical assistance. In 2003, ADPC provided BRAC University with assistance on an Earthquake Vulnerability Reduction for Cities (EVRC) course. In the consolidation phase, the assistance will be for a disaster management course. While these efforts partly address the lack of an NPTI, AUDMP suspects that the sustainability of the universities' involvement over the long term is low.

Information and Networking

Public Awareness

While BUDMP did not have a formal public awareness strategy, public education campaigns were a high priority of the project. Local volunteers trained in disaster mitigation oversaw the public awareness efforts. The volunteers included both energetic young people as well as older, more influential community leaders. The volunteers also comprised equal numbers of men and

women. The public awareness campaigns were sensitive to community demographics, traditional coping mechanisms, history of disasters, and the profile of the inhabitants (education levels, traditional practices, religion, land entitlements, cultural practices, etc.)

The public awareness activities included a National Disaster Preparedness Day, awareness raising workshops, dramas, folksongs, and rickshaw and cinema advertisements. The project also promoted art, essay and debate competitions.

Public Awareness Activities

National Disaster Preparedness Day was celebrated on 31st March 2003 at the newly selected working municipalities. A Disaster Awareness Booklet under BUDMP was also published and distributed among civil society representatives at the Municipality and National level. In addition, public awareness activities, such as the issuance of an official disaster awareness seal, were introduced. Moreover, billboard hanging, cable network announcements, slide displays in movie halls have all been implemented at the municipality level to target a wider audience.

Development of Information Products

BUDMP used fliers, calendars, billboards and posters to convey the disaster mitigation message. These products were issued in Bengali and, for those unable to read, contained clear pictures to convey the message. The information products were displayed or distributed in locations where they would have the most impact, e.g. near markets and government buildings.

BUDMP also produced two videos on public awareness and community participation that included actual experiences of disasters. The project also produced a disaster awareness booklet in Bengali and distributed to educational institutes, municipalities, organizations and NGOs in areas where the project was active.

Networking

BUDMP joined the Network for Information, Response and Preparedness Activities on Disaster (NIRAPAD) and has communicated its mitigation message through the NIRAPAD newsletter, which includes disaster histories, trends, scientific findings related to disaster preparedness and response. NIRAPAD has more than 20 members, including CARE Bangladesh, which helped to set it up. NIRAPAD along with CARE Bangladesh puts BUDMP in a strong position to utilize existing networks in Bangladesh. The project has also tried to share experiences with municipalities in other countries, e.g. the Philippines.

The chairmen of the municipalities visited the project sites. About 25 of them were interested in working with BUDMP, three of which have been chosen for the next phase of AUDMP in 2004.

Major Accomplishments

The November 2002 project monitoring report for OFDA said that "The steps BUDMP has taken towards raising public awareness are commendable and surpass those of most other AUDMP projects."

BUDMP and its PRA tools have drawn the attention of Pakistan, India, Indonesia and the Netherlands. These countries were sufficiently impressed by the projects results to make inquiries about the project. These inquiries followed the AUDMP Lessons Learned Workshop in Bali, Indonesia in September 2002.

BUDMP was effective in working with the municipalities. BUDMP fostered real local participation in most of the project activities in the demonstration cities. The municipalities supported the BUDMP activities and considered themselves as key stakeholders in the PRA process. Both municipalities established disaster management committees and have indicated that

the committee will continue after the project's completion. The communities have taken ownership over the project.

CARE-Bangladesh provided a strong management team that worked down to the community level and also coordinated the BUDMP activities with other related CARE activities. CARE-Bangladesh will also continue to carry out mitigation activities in their other disaster management activities.

The partner NGOs successfully implemented the projects at the municipal level because of intimate knowledge of the local issues facing the project, which enabled them to carry out the lengthy PRA process.

The structural mitigation activities were largely successful and demonstrated what can be done with small amounts of funding. Training was functional and effective.

Significant Shortcomings

While the project has been successful in the areas that it worked, spill over to other municipalities has been less than hoped. BUDMP did hold a workshop for other municipal chairpersons, which helped identify three communities for the Consolidation Phase of AUDMP in 2004.

There has been little contact with NGOs that do not have a pre-existing relationship with CARE. As a large organization in Bangladesh, CARE has its own network of partner NGOs. However, those NGOs that are not part of this network have yet to be touched by BUDMP.

The project has had little involvement with the government and has not yet enhanced the role of disaster mitigation with the Ministry of Disaster Management and Relief, which focuses much more on relief than mitigation. The Director General of the Disaster Management Bureau has changed three times in 2002-2003. These frequent changes at the national government level have complicated BUDMP's efforts to establish a relationship.

Training institutes in Bangladesh do not have urban disaster mitigation as a high priority and hence their interest in the project has been low. BUDMP has attempted to address this issue through building a relationship with three Bangladesh universities. There is an MOU with BRAC University. In the 2004 extension of AUDMP, BUDMP will endeavor to get the UDM curriculum adopted in academic courses in Bangladesh University of Engineering Technology and Kulna University.

Links to AUDMP and other organizations

BUDMP has benefited from links to other AUDMP projects and has also made use of the materials on the AUDMP web site. BUDMP has found the AUDMP training modules and the materials to be useful in the Bangladesh context. However, staff found that some information on hazards provided via AUDMP's list serves was not relevant to the Asia Pacific context.

In spite of BUDMP's significant successes, it still has not contributed to the AUDMP "Safer Cities" series. This should be done as the BUDMP experience is worth sharing.

BUDMP has sent its own staff and partner NGO staff to AUDMP's regional courses.

Number of staff attending courses		
Course	CARE	PNGOs
Urban Flood Management I	3	2
Urban Flood Management II	2	
EVRC	1	2
Flood Relief Management III	1	2

Budget Highlights

In the First Phase of AUDMP, the project budgeted $22,374 for country activities, and all of this was spent. In addition, AUDMP had $1,891.06 in expenses for the Demonstration Project paid directly by AUDMP. The total expenses under Phase I was $24,265.06. In the Second Phase, a much larger amount was allocated, $277,238; however, the project only spent $239,454.02. Hence, $38,783.98 remained unspent. For the two phases combined, the project spent $263,719.08 out of $299,612, leaving a balance of $35,892.92.

Lessons Learned

Community participation

In order to establish community-based preparedness and mitigation systems, BUDMP had to ensure community participation in the following areas of project implementation: (a) decision making; (b) planning; (c) implementation; (d) resource mobilization; (e) supervision and monitoring; and (f) benefit-sharing. Through learning-by-doing approach, BUDMP officers gained a lot of experiences, some of lessons learned are illustrated below:

- If the people perceive development programs and activities as benefiting, they will be involved and will contribute.
- People's confidence in their own capacity to mitigate disaster can be boosted through hands-on active participation.
- Community participation in development work is a cost-effective and sustainable although it is time-consuming.
- BUDMP team realized that community participation is an opportunity for power sharing.
- Indigenous coping mechanism and community knowledge are indispensable in BUDMP's mitigation planning.
- From the start of the planning of a project, there should be a two-way information flow, both formal and informal, between project authority and potential beneficiaries.
- A participatory approach empowers the community in decision-making, planning, implementation and benefit sharing. Mutual support and solidarity among community members helps to strengthen the community's ability to face hazardous situations as well as generate shared ownership among them.
- Participatory methodologies are useful for assessment and community mobilization and develop the community's ability to conduct its own self-assessments.
- Openness and accuracy of methodology ensures reliability and validity of collected information.

Volunteerism

Volunteers played an important role in ensuring community participation and establishing connection between respective municipality and the community. The following are BUDMP's lessons learned in this regard:

- The volunteers showed great enthusiasm.
- Volunteerism encourages gender-balanced workmanship.
- The volunteers formed congenial relationships with MDMC members.
- The community accepted the volunteers and allowed them to handle local conflicts.
- Volunteers enhanced the sustainability of mitigation efforts.

Vulnerability assessment and mitigation planning

Vulnerability assessment and mitigation planning were among the most important parts of the project. Community participation was essential to achieve the goal and objectives of BUDMP. During the whole process, BUDMP officers learned a lot about the community, such as their feelings, thoughts, interests, attitudes, environments, etc. Some important lessons learned are illustrated below:

- Community was not well aware of their hazardous situation or the social resources at their disposal prior to the project assessment.
- The assessment process raised community expectations from BUDMP.
- The community embraced the volunteers.
- Additional PRA tools were applied to capture wider information.
- Municipality officers were responsive and supportive of the assessment process.
- There was insufficient data at the municipality level for mitigation planning.
- A huge amount of money was needed for vulnerability reduction projects in the targeted municipalities. Nonetheless, there were insufficient development funds at the municipality level.
- Unplanned urbanization was the main problem that hindered having an environmentally sound structure.
- Municipalities have skilled manpower but no master plan for disaster management.
- The municipalities had few good initiatives regarding public awareness.
- The communities emphasized hard interventions more than soft awareness activities.

Communities can successfully implement mitigation measures

BUDMP successfully worked with urban communities to implement both non-structural and minor structural mitigation measures. At the community level, BUDMP successfully established community-based flood preparedness and mitigation systems, which may be deemed a milestone of urban flood mitigation in the country. Moreover, BUDMP was successful in teaching municipality officers how to handle community-managed projects. Through sharing of the lessons learned with the office bearers of the Municipality Chairmen Association of Bangladesh (MCAB), BUDMP was able to introduce a new approach for reducing urban flood victims' sufferings in many parts of the country. Through participation in many workshops, seminars at national and international levels, BUDMP established an example of urban disaster management in Bangladesh.

Low-tech grassroots strategy can reach the urban poor

BUDMP succeeded in reaching some of the poorest resident in the demonstration sites by working at the grass roots level. Volunteers and villagers did their own hazard mapping without having to use highly technical methods. Simple PRA techniques succeeded in engaging villagers throughout the process. The project used local indigenous construction techniques, for example with pillar houses.

Model public awareness campaign

BUDMP set a good example of an effective public awareness campaign. The project started with thorough vulnerability assessments and household surveys to collect baseline data. This enabled the project to design appropriate activities and enabled the project to measure progress. The

project used a wide variety of information products, including bill boards, leaflets, and advertisements on rickshaws and in cinemas.

Simple but consistent monitoring often best

BUDMP monitoring practices were consistent and thorough. Their simplicity was key to their success. There was regular interaction with people at project sites, documentation of findings and sharing of information with people up the chain, including monthly reports to AUDMP.

Sustainability and Replicability

There are reasons to hope that BUDMP will have a lasting impact on the Municipal governments, the partner NGOs, as well as CARE – Bangladesh. The Municipal Disaster Management Committees in the districts directly affected by the project are now champions of the disaster mitigation message. The Municipal Chair in Tongi says that he relies on the PRA tools for other projects outside of BUDMP.

The partner NGOs gained experience in working for a successful project and are apt to continue using their new skills. However, they will need access to additional funding, which may be problematic.

Because CARE-Bangladesh implemented the project as part of its overall Disaster Management Project, it will incorporate the mitigation, training and information and network activities into the larger program. This should increase the impact of the overall DMP. CARE-Bangladesh reports that they have also woven the mitigation concepts into other CARE projects. Other USAID programs in Bangladesh should also consider adopting appropriate AUDMP approaches into their projects.

BUDMP mobilizes fund to promote mitigation

To promote mitigation, CARE Bangladesh and partner NGOs under the BUDMP has mobilized funds and in-kind contributions from the municipalities and community groups in developing small, cost-effective mitigation schemes to mitigate against flood risks. Examples of schemes include raised roads, bridges, culverts, arsenic-free tube wells, widened drains, etc. Complementing these schemes were awareness raising campaigns and training programs.

It remains to be seen how effective the replication efforts will be. The success of BUDMP to date has been predicated on extensive working with the grass roots of communities to get them to buy into the mitigation concept. Superficial exposure to the ideas may not be sufficient. Before the initiation of structural mitigation activities, partner NGO officials in Bhuiyanpur and Sahjadpur visited activities in Gaibandha Municipality. This may or may not prove sufficient.

Replicating BUDMP in five other municipalities

The Bangladesh Urban Disaster Mitigation Project (BUDMP) is currently in its Replication Phase. Following its successful implementation in two demonstration project municipalities-Tongi and Gaibandha, BUDMP plans to replicate the project activities in five other flood-prone municipalities namely, Sahjadpur (in Sirajgonj District), Bhuiyanpur (in Tangail District), Goalanda (in Rajbari District), Bhairab (in Kishoregonj District), and Dohar (in Dhaka District). Activities in Sahjadpur and Bhuiyanpur were started in 2003. Replication activities will be undertaken through both direct activity implementation and experimental learning. In Sahjadpur and Bhuiyanpur, which were identified as the two most vulnerable municipalities among the five, direct activity implementation would be applied. The other three municipalities (Gaolanda, Bhairab, and Dohar) would implement through on-site visits, observations, workshops and local community interactions.

MOUs between CARE Bangladesh, the implementing institution for BUDMP, and local NGOs namely BURO Tangail for Bhuiyanpur, and National Development Program (NDP) for Sahjadpur were signed for partnership for project implementation.

To enhance the capacity of partner NGOs especially the newly recruited community development officers of those municipalities, foundation training on disaster mitigation was conducted. In addition, training on "Role and Responsibilities of Municipality Disaster Management Committee" for all committee members and training on "Role and Responsibilities of Volunteer in Urban Disaster Management" for volunteers for both working municipalities were organized respectively to lay strong foundation towards disaster management in the country.

4.2 Cambodia

Country Context and AUDMP focus

Many Cambodian communities have proven to be extremely vulnerable to the effects of recurrent flooding, particularly in the eastern part of the country that borders the Mekong River and the northwestern area around Tonle Sap. This region has experienced major flooding in six out of the last eight years. This annual flooding has had a severe effect on agriculture, destroying rice and other crops, livestock, homes and other buildings, and ruining dams, dikes, roads, and distribution centers. After years of political turmoil, especially Pol Pot's systematic murder of the educated, the government's capacity to undertake programs is weak and it relies on assistance from local and international NGOs.

Because of these upheavals, the Cambodian people are ill prepared for major floods and also recurring droughts and fires. They lack the infrastructure to mitigate disasters and are poorly organized and trained to prepare and respond to disasters. Funds for mitigation are also scarce.

The Cambodian Community Based Flood Mitigation and Preparedness Project (CBFMP) was designed to reduce the vulnerability of the population to floods using an integrated, community-based disaster preparedness and mitigation process at the village level. The process addresses the susceptibility of the general population and its critical facilities, infrastructure, livelihoods, and shelter. The project targets several communities within three highly flood-prone provinces bordering the Mekong River and Tonle Sap: Kompong Cham, Prey Veng, and Kandal.

The Cambodian Red Cross (CRC), the International Federation of the Red Cross (IFRC) and PACT Cambodia collaboratively worked on implementing this project by establishing sustainable mechanisms for disaster mitigation and preparedness through CRC□s network of Red Cross Volunteers (RCVs).

CBFMP focused on developing a curriculum and conducting training for RCVs to organize community involvement in carrying out risk assessments, developing preparedness plans and facilitating the implementation of small-scale mitigation solutions to minimize communities' risks to flooding. CRC has replicated project activities in other provinces of Cambodia.

Project Objectives and Evolution – baseline data collection

CBFMP was the first AUDMP project that was not part of the original five countries (India, Indonesia, Nepal, Philippines and Sri Lanka). This project was different in that it focused almost exclusively on the non-governmental structure, was rural rather than urban in nature, and funds for structural mitigation activities were not included in the AUDMP budget. Such funds were to be sought by the individual communities from other donors active in the villages.

The rural thrust of CBFMP was necessary for several reasons. Firstly, the country is overwhelmingly rural. Secondly, the major city and capital Phnom Phen is not prone to floods, which is the major disaster hazard in Cambodia. Thirdly, by addressing the rural flooding problem, one can help to reduce the amount of rural to urban migration, which is becoming a major issue in Cambodia.

CBFMP aimed to establish sustainable, replicable non-government mechanisms for disaster mitigation and preparedness, with a focus on flooding. The objectives were to:

- Develop a range of practical, low-cost, community-based preparedness and mitigation strategies using an integrated approach to identify flood-related development needs.
- Establish a sustainable institutional framework for identifying and implementing those strategies during and after the demonstration project.

- 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.

The project began in September 1998 and terminated in November 2001, 38 months later. Phase I ran through March 2000, and Phase II began in April 2000. The project received two no-cost extensions. PACT-Cambodia, IFRC, and CRC implemented the project. The IFRC chaired the management committee, but PACT was the grant recipient.

- PACT made a sub-grant to the CRC for implementation. PACT managed the AUDMP funds and coordinated support from province-based international and local NGOs, which partially funded mitigation activities in villages.

- CRC generally assists the Cambodian government in disaster relief. In this project, CRC trained RCVs and helped them to implement the project.

- IFRC assigned one Disaster Preparedness Delegate to assist in project management and to strengthen CRC capacity.

CBFMP worked within a larger CRC Community-Based Disaster Preparedness (CBDP) project. CBDP started in 1996 and expanded the role of CRC from relief to disaster preparedness. CBDP trained volunteers in community-based first aid and Red Cross principles.

Components

Because the CBFMP worked with rural villages, the projects were smaller scale than in other AUDMP countries. PACT used a cascading training strategy. Outside trainers trained the CRC, which in turn trained village-based volunteers, who worked with their own communities.

Demonstration and Project Implementation Framework

Technical Foundation of Demonstration Project

CRC is the government's major NGO partner in the disaster management field. The National Committee for Disaster Management (NCDM), chaired by the prime minister, coordinates government efforts. The NCDM is small with fewer than 20 staff, and the CRC is the only non-governmental member on the committee. This structure is repeated at the provincial and district level.

While CRC traditionally focused on disaster response, floods in the mid-1990s caused the CRC to expand into community-based preparedness and mitigation. This new approach became the larger CBDP project. CBFMP was the first activity under CBDP.

The project did not concentrate on larger cities because PACT perceived provincial government resistance to any community mobilization for whatever purpose. Project implementation also coincided with commune elections, which heightened political sensitivities. Two thirds of urban residents in Cambodia are transient and difficult to mobilize. The CRC staffs were also inexperienced and working in politically charged urban environments was too big a challenge. Given the political situation and the stage of CRC's institutional development, village based project offered the best chance for successfully planting the mitigation message.

CBFMP trained village-based volunteers to identify and prioritize basic hazards and to mobilize their communities. The trained volunteers worked to establish village disaster committees to identify hazards, prepare funding proposals for mitigation activities, and manage the projects and the project funds.

AUDMP did not fund the projects. CRC and PACT helped write proposals to other donors. The donors that funded activities include the American Red Cross, Oxfam, AusAID, CWS,

DipECHO, and wealthy individuals. The CRC volunteers mobilized villagers to participate in the planning and implementation of mitigation activities.

Demonstration Sites

Unlike other AUDMP projects, CBFMP did not have one or two cities for mitigation activity demonstrations. The project also did not work with government agencies beyond the Committees for Disaster Management. CPFMP assisted 23 villages complete mitigation activities during the demonstration phase and 11 projects in additional villages during the replication phase.

In Prak Andong Village (Kampong Cham Province), the villagers constructed a canal to enable farmers to irrigate their rice paddies during the dry season.

Ksom Village (Kandal Province) has 4,732 inhabitants. The volunteers worked with the villagers to prepare a hazard map. While the village Committee for Disaster Management started the process, the local chief's later involvement mobilized the entire community. The community decided to construct a 55-meter water dike and culvert with a water gate to protect homes from flooding and also to provide water for irrigation during the dry season. PACT contributed US$214, and the community R60,000.

In Chroydorng Village (Kandal Province), volunteers prepared a simple hazard map that showed the geography of the village, important markers, and areas prone to flooding. The village constructed seven culverts, located across four existing canals that became partially dry in the dry season. The new culverts provided additional water to flow in the canals during the dry season.

There were three kinds of replication in the CBFMP. Some villages initiated additional project and sought and received funding for these. CBFMP also spread to additional villages. Third, the CBFMP process was replicated in additional provinces beyond the three in the AUDMP project with funding from the EU's DipECHO program.

Training

In Cambodia, there is no National Partner Training Institute and no UDM or UFM courses have been presented. All training has been project-based. The project has added two modules to CRC's Community-Based Disaster Preparedness (CBDP) course for training volunteers to mobilize communities to prepare for disasters.

Project-based training

CBFMP trained roughly 20 CRC staff and between 150 and 160 volunteers. The purpose of the training was to help volunteers mobilize their communities to prepare for disasters and finance and implement mitigation measures.

In 1996, CRC began training volunteers in Red Cross principles and first aid. In 1998, CBFMP began helping CRC to revise and augment the curriculum with the addition of disaster and flood mitigation, leadership, and community organizing. The revised curriculum had the following four modules:

- Red Cross values and responsibilities (3 days)
- Disaster management and hazard mapping (6 days)
- Community-based first aid (6 days)
- Leadership and community organizing (10 days)

The hazard mapping and community organizing training involved five Participatory Rapid Assessment (PRA) tools:

- Social mapping

- Hazard mapping
- Seasonal calendars
- Problem identification and prioritization
- Action plan development

CRC later added a financial management module.

Staff training: To build the capacity of CRC to train and manage its volunteer network, the project provided seven workshops to a core training team of six to 12 headquarters staff plus two officers from each of the three provinces. These were later also attended by officers from other provinces. ADPC and/or consultants assisted in five of the seven workshops held between January 1999 and March 2002.

AUDMP assisted the CRC in adapting and translating training materials into the Cambodian context. The project drafted a training-of-trainers manual in June 2001 and final staff and volunteer manuals in March 2002. Two AUDMP staff helped the CRC develop the eight-module manual covering disaster preparation, mitigation and community organizing. The manual was prepared in English and Khmer. Also in March 2002, AUDMP provided follow-up training to the CRC staff. The British Red Cross is continuing to assist CRC in training-of-trainers.

Volunteer training: CRC trained 75 volunteers in Phase I of the project (March – June 1999) and an additional 75 volunteers in Phase II of the project (October 1999 March 2000). The volunteers participated in the training on Red Cross values and hazard mapping and then returned to their villages to conduct a mapping of their community. CRC staff visited them in their villages. The first aid and community organizing modules were then held on a provincial level, gathering all the volunteers from that province. PACT supported the training and volunteer work in the villages.

Post-training support: CRC staff continued to visit the volunteers and to offer refresher training. In each province, staff had a target of four group meetings and five site visits. CRC staff helped volunteers carry out their assignments and reported on progress.

National Partner Training Institution (NPTI)

There are few institutions in Cambodia, including CRC, that have the capacity and mandate to act as an NPTI. AUDMP identified two potential NPTIs, VBNK and SILIKA, which are NGOs involved in training in management and fund raising; however, they do not have links to CRC, which provides the volunteers. In the absence of additional funding, training proved not to be sustainable.

Information and Networking

Two editions of the AUDMP Safer Cities series describe the CRC experience in Cambodia. The case studies are titled:

Safer Cities 2: Coping with flood in Cambodian communities, June 2002

Safer Cities 3: Mitigating flood risk in Cambodian communities, July 2002

CRC is working to build linkages with international donors and is gaining credibility as it painstakingly builds capacity. CRC funding sources now include DipECHO, OXFAM, and Action Against Hunger. The IFRC is also helping CRC build linkages with other Red Cross Societies (American, British, and Finnish).

Major Accomplishments

The CBFMP project helped to transform the CRC approach to disasters from one of response and preparedness to embrace mitigation. Other donors are continuing to fund CRC's mitigation activities, which are now a core part of its mission.

The CBFMP project introduced CRC and its volunteers to community mobilization methods to mitigate flood damage in their communities. Prior to this project, CRC had not helped villagers work together or implement mitigation measures. The project introduced CRC to cascading training methodology and materials for disaster mitigation and for community organization, completed structural mitigation measures in 73 villages (39 outside of the CBFMP project), and helped villages interface with project-funders.

Phases and funders of village training and mitigation measures

Phase	Funder	Provinces	Districts	Communes	Villages
I (1998-1999)	CBFMP	3	6	6	23
II (1999-2000)	CBFMP		3	7	11
	Total CBFMP	3	9	13	34
III (2000-2001)	Dip-ECHO	3 old	3	5	8
		4 new	5	6	11
	Total Dip-ECHO	7	8	11	19
Food Security	Total ECHO	2 (1 new)	2	8	20
	Grand Total	**8**	**19**	**32**	**73**

AUDMP helped CRC develop a sound, practical training program. The training modules helped many volunteers to convey mitigation measures that could be planned and implemented on the village level. Volunteers were able to use the PRA tools to provide a new perspective on mitigating flood damage. Through the process, some villagers began to see the benefits of working with other members of the community.

CBFMP acted as a catalyst for CRC's overall Community-Based Disaster Management Program (CBDP). This program has formed 117 community based disaster management committees and implemented 130 structural mitigation activities. The CBFMP encouraged the involvement of volunteers, village chiefs and government officials and generated public awareness at the village level. Many villagers appreciated the accomplishments of the project and some even noted activities that they had not previously done.

Under the CBDP project, 625 village volunteers received training in flood mitigation. The initial 150 and 160 were trained under the CBFMP and the others by other donors' projects with CRC.

PACT participated in a consortium of NGOs working in disaster mitigation and management. Such consortia should play a role in improving coordination among the roughly 250 international NGOs and more than 1,000 indigenous NGOs working in Cambodia.

Significant Shortcomings

While there are good reasons for AUDMP to have decided not to work in urban areas in Cambodia (few urban areas in Cambodia, absence of flood risk in Phnom Phen, political resistance, inexperienced CRC staff, transient population), the mission of AUDMP is urban and not rural.

PACT was in the process of closing out its programs prior to the implementation of the AUDMP project. Staff numbers dropped from 25 to six and this affected its ability to monitor and document project activities.

The roles of the implementing agencies overlapped. PACT administered the project and provided financial management training and assistance; however, IFRC also had similar capacity building initiatives with CRC including financial management. This duplication between PACT and IFRC raises questions about coordination and their respective roles. The decision to work with both PACT and IFRC was affected by the fact that both agencies were getting funding from USAID. Also, CRC was not perceived as a good choice because it appears to be politicized.

While AUDMP expected that the local Disaster Management Committees (DMC) would be useful for introducing disaster mitigation principles, this has not happened to any great extent. PACT and CRC should probably have done more to build linkages with the DMCs.

Villagers sometimes did not see a difference between traditional ways of preparing for disasters and the PRA tools. For them, the main advantage was that they learned how to write a proposal, interact with donors and get funding from external sources. This may make them more dependent on outside funding in the future.

Volunteers sometimes had to shoulder most of the burdens of the project as they were unable to communicate the concepts of the project to the villagers and hence to mobilize them.

By design, the project did not involve much government input. However, the government's involvement is needed to make mitigation a part of the government approach to disaster management and to increase public awareness.

The project assumed that the implementation of mitigation projects could be self-funded by the villages themselves at a cost of no more than $5,000. This proved to be optimistic as budgets were as high as US$20,000, and PACT decided to help the villages seek additional sources of funding.

CRC's technical and financial ability to continue training courses is in doubt. Training at the end of 2002 had ceased with the end of DipECHO funding. AUDMP repeated its training of trainers course in March 2002 after the project ended. The British Red Cross has continued the training of trainers. This suggests that staffs' ability to absorb the course materials is limited as these courses should not have to be repeated with the same staff members.

Very little was done to develop information products under the project. Volunteers spread the mitigation message by word of mouth without any written training materials or pictures.

CBFMP also did not establish a close relationship with USAID. While USAID is not focused on disaster mitigation, CRC and PACT could benefit from a closer in-country relationship with the USAID Mission, which would also facilitate continuity and future programming.

Links to AUDMP and other organizations

While AUDMP was building the capacity of CRC, the grant was to PACT. This structure may have restricted the amount of attention that AUDMP devoted to CRC.

Four CBFMP staff attended regional ADPC courses. AUDMP staff and/or consultants visited Cambodia four times to provide technical assistance. In 1999, they helped with initial training of CRC staff. In 2000 and 2001, they assisted with staff training and developing training curricula and materials. In early 2002, they conducted additional staff training and helped complete a training manual. One staff from both PACT and CRC attended the Bali workshop in September 2002.

CRC has not made optimal use of AUDMP information products; however, this is in part due to staff changes at AUDMP.

Budget Highlights

AUDMP allocated $207,613.35 for CBFMP, $128,500 for the First Phase and $79,113.35 for the Second Phase of AUDMP. CBFMP under spent both amounts. In the First Phase, CBFMP spent only $78,995.80 out of the $128,500. In the Second Phase, CBFMP spent $74,887.60 out of the budgeted $79,113.35. Altogether the project spent about three quarters of its budget or $153,883.40 out of the $207,613.35 available.

Lessons Learned

Project focus was too narrow

Project design should have been more comprehensive, including components for awareness and training that would move the experience of the projects in the villages to the national level. Project design should have included funds for structural mitigation projects, public awareness campaigns, and training for government officials involved in disaster management.

Building capacity in Cambodia requires time

It takes a long time to build capacities and implement activities in an environment of weak institutional infrastructure. AUDMP under-estimated the amount of time required and had to extend an 18-month project twice to 38 months.

Sustainability and Replicability

The fact that CRC has extended the number of provinces and villages with other donor funding is a strong indication of the sustainability and replicability of the CBFMP approach. CRC has adopted cascading community training and disaster mitigation as part of its core objectives. The support of other donors, including the European Union's Dip-ECHO project, is a strong vote of confidence in the CBFMP approach. Nonetheless, it is still apparent that CRC requires continue outside funding to pursue the mitigation strategy. When ECHO funding ceased in late 2002, activities came to a halt.

CRC also may need continued outside technical assistance to sustain activities. This is evidenced by the need for continual training of its staff. CBFMP conducted training of trainers at the beginning of the project, after its end and the British Red Cross took up where AUDMP left off. There is also a concern that senior management of CRC is not focused on the need for disaster mitigation.

There have been ongoing discussions between ADPC, CRC and PACT on further replicating and consolidating the CBFMP approach. The possibility of combining activities or having synergy with ongoing initiatives of other ADPC implemented projects such as DANIDA-funded Disaster Reduction Program for Cambodia, Lao PDR and Vietnam (DRP-CLV) were discussed.

After Cambodian Community-Based Flood Mitigation and Preparedness Project (CBFMP) were completed, two projects implemented by ADPC continue some of the activities undertaken by CBFMP. PDR-SEA has helped training team of CRC to further enhance the training skills and also to develop training manuals.

4.3 India

Country Context and AUDMP focus

In 1988, the release of methyl isocyanide gas from a Union Carbide plant in Bhopal, India killed more than 3,000 people and injured tens of thousands. This was the worst technological disaster in history and altered the course of India's industrial development. New laws were passed to protect against a repetition of this disaster and, in general, awareness of industrial hazards increased along with an enhanced perception of the need for disaster preparedness and mitigation.

In 1997 India was the site of one of the first AUDMP projects, the India Technological Hazards Mitigation Project. This project was unique for AUDMP in that it was the only one to attempt to address non-natural disasters.

The Baroda Citizens Council (BCC) managed the program in Vadodara and at the national level. The Times Research Foundation (TRF) managed the project in Calcutta.

BCC, TRF, RUDO/New Delhi established a project review committee responsible for trouble shooting and monitoring at the national level. The project budget was $250,000, of which $97,900 was spent before the project was terminated in 1999. The choice of cities proved to be unfortunate. While BCC, the Vadodara and national manager, was not dynamic, the core problem was that the government of Vadodara refused to release the mapping information, deeming it to be security sensitive. One explanation was that there was a potential conflict with a now nuclear Pakistan and that the Vadodara industrial area was important to India's security. Another explanation was that the government did not want to release information about industrial hazards for fear of alarming the general public, which could result in a reduction in economic activity. While overall legislative and policy changes instituted since Bhopal provide a framework under which many mitigation measures could work, enforcement of legislation is generally poor. In Calcutta, it proved impossible to gain the interest of the municipality and other local partners, perhaps for similar social and economic reasons as Vadodara.

Following the earthquake of 26 January 2001 in Gujarat, the India project was redesigned to address earthquake risk in urban areas of Gujarat and particularly Ahmedabad. This was later expanded to address multiple hazards in a proposal for the Ahmedabad Disaster Mitigation Project (ADMP). The project was to be based in Ahmedabad with the goal of reducing the disaster vulnerability of population, infrastructure, and economic assets in Ahmedabad and other cities. The proposed project included seven components namely hazard and vulnerability assessment; promoting safer buildings; school safety program; preparation of mitigation measures; social marketing; replication; and comprehensive disaster mitigation strategy. The project was to be implemented by the Centre for Environmental Planning and Technology and Ahmedabad Municipal Corporation.

AUDMP did not proceed with the project in part because of concern about the scope of the project duplicated other efforts by existing USAID sponsored projects.

Project Objectives and Evolution

The India Technological Hazards Project had two demonstration sites, Vadodara and Calcutta. The projects in each city were slightly different. In Vadodara, the objectives were the following:

- Enhance awareness on the part of all participating institutions in mitigation possibilities;
- Enhance skills on the part of these same agencies to assess risks and vulnerability and to implement disaster mitigation measures; and
- Incorporate principles of hazard analysis in on-going and future urban planning and development exercises.

In Calcutta, the objectives were the following:

- Establish sustainable public and private sector mechanisms for technological/ industrial disaster mitigation in targeted Indian Municipalities;
- Build the capacity of urban decision makers and urban managers to identify and address technological/industrial hazards; and
- Promote replication and adaptation of successful mitigation measures in other Indian cities.

Following the termination of the ITHP in 1999 and the Gujarat Earthquake in 2001, the India project was revised and had the following objectives:

- Minimize the impacts of hazards and disasters in Ahmedebad through the development of an appropriate disaster mitigation strategy based on the results of a risk and vulnerability assessment.
- Promote safer building practices through better construction methods, strengthened institutional mechanisms, and training.
- Introduce a school safety program focused on the reduction of vulnerability to multi-hazards.
- Design a system for assessment of the effectiveness of community understanding through social marketing.
- Advocate replication of activities in other cities.

Components

Demonstration and Project Implementation Framework

Technical Foundation of Demonstration Project

Beginning in 1997, the project addressed industrial and technological hazards through four components:

- Two demonstration projects in the Calcutta Metropolitan Area and the Vadodara (formerly Baroda) Urban Development Authority Area.
- A training program with national, regional and local components. The last being in Calcutta and Vadodara.
- Replication, information dissemination, and networking activities.

Policy studies leading to a national policy seminar.

Demonstration Sites

The two sites chosen for the initial project were quite different. Calcutta is a mega-city of 12 million people. Vadodara has about 3 million people in the metropolitan area but only about 1 million in the central city. In Calcutta, the project focused on government entities. In Vadodara, the lead agency was BCC, an NGO and the focus of the project was the efforts of the industrial sector to establish a Central Control Room (CCR), an emergency response focal point in the heart of the area's largest industrial complex. The CCR conducted preparedness and mitigation activities and was seen as an innovation that deserved replication in other industrial complexes.

Training

AUDMP conducted the first national course on Urban Disaster Management in February 2002. HSMI has also provided three UDM courses.

Information and Networking

Twelve planning schools from national universities (in Philippines, Sri Lanka, India, Nepal, Bangladesh, Indonesia and Thailand) as well as the Indira Gandhi National Open University, India and Asian Institute of Technology (AIT), Thailand, attended a workshop organized by AIT in Bangkok in July 2002.

In March 2001, AUDMP conducted a regional workshop on Replication and Sustainability in Ahmedabad. In March 2001, following the Gujarat earthquake, AUDMP conducted a workshop in Ahmedabad on successful urban mitigation practices.

Major Accomplishments

One of the selected National Partner Training Institutes reportedly continues to offer an annual Urban Disaster Mitigation course.

Through the project's early termination, it demonstrated that powerful economic and political forces do not want technological hazards in urban areas to become a focus of attention. This is a real problem in India and indeed most of Asia. While the project ended, ADPC has been sensitized to the need to find a more comprehensive solution to the growing problem of technological hazards that during the implementation of mitigation measures minimizes the damage to local economies, businesses, and above all the fear in vulnerable communities. Such a comprehensive solution will require the active participation of not only business, political and community leaders but also financial institutions and insurance companies that also have a real economic stake in safer urban communities in Asia.

Significant Shortcomings

The municipal governments and other local partners stopped the original project. While technological hazards are a large and growing threat to urban areas in India, and in fact in Asia in general, there needs to be found a way to minimize conflicts with economic and political forces that do not want a focus fixed on these technological hazards.

Links to AUDMP and other organizations

While the India project was terminated in 1999, AUDMP has conducted training programs and workshops in India to continue to try to make a contribution. In 1999, AUDMP conducted a regional course in India on Technological Risk Mitigation (TRMC) for cities. In February 2000, AUDMP conducted the first Indian national course on Urban Disaster Management. In March 2001, AUDMP conducted a regional workshop on Replication and Sustainability in Ahmedabad. In March 2002, following the Gujarat earthquake, AUDMP conducted a workshop in Ahmedabad on successful urban mitigation practices.

Budget Highlights

In Phase I of AUDMP, the India project spent $120,608.69 out of a total budget of $125,000. While the amount was small given the size of India, the early termination of the project by the Municipal governments was the main constraint for the project. In the Second Phase, AUDMP spent $1,697.69 on the India program's behalf.

Lessons Learned

In designing a project to address industrial hazards, there is a need for a deep level of commitment from government officials and the business community. The support of the later will only come if there is in place financial mechanisms for sharing the economic burden of implementing any needed mitigation actions. The budget of the original India AUDMP project was only $125,000 which was not enough for training and public awareness campaigns in India, let alone the costs of modifying industrial plant, procedures, waste management and choices of raw materials. A project that threatens to drive away industrial plants will also not be popular with a democratic government. An industrial hazard project probably needs low cost loans and/or grants to succeed, Involvement of insurance companies and banks could also help to create incentives for industrial

companies to want to reduce hazards to the community, their employees and their own physical infrastructure.

Sustainability and Replicability

The only element of this project that has been sustained is the UDM courses that are still offered by HSMI.

4.4 Indonesia

Country Context and AUDMP focus

Five years after the removal of President Suharto from power, the Indonesian economy remains weak and the political situation unsettled. Indonesia has experienced considerable unrest during this time, but has managed to begin far-reaching changes in how the society is governed. Since 1999, an ongoing decentralization process is altering the relationship between the central and local levels. These changes have affected how disaster management, including disaster mitigation, is undertaken.

Decentralization of authority and resources has meant new roles and responsibilities at the local level, oftentimes within organizations that are not yet ready to take on the new roles. During the implementation of this project, Indonesia faced economic crisis, sweeping political changes, and unrest in various parts of the country.

Indonesia is prone to earthquakes, volcanic eruptions, floods, landslides, fires and typhoons. Starting in 1997, the Indonesian Urban Disaster Mitigation Project (IUDMP) aimed to reduce the vulnerability of Indonesian cities to earthquake hazards.

Bandung was selected as the demonstration project site where the Institute of Technology Bandung (ITB) implemented the IUDMP. The Earthquake Engineering Research Group (EERG) and the Center for Urban and Regional Planning Study (CURDS), both within ITB, collaborated on the project. ITB's primary role was to organize inter and multidisciplinary research in the faculties and research centers in science, technology and visual arts.

The IUDM Project undertook many activities, the highlights of which include a Bandung action plan, a rapid risk assessment methodology and the training for teachers program on school earthquake preparedness. At the national level, ITB worked closely with the National Coordinating Board for Disaster Management (BAKORNAS PBP) in drafting a new National Policy on Urban Disaster Mitigation in Indonesia. Since mid-2002, IUDMP has been replicating the best practices to Bengkulu and other Indonesian cities. Currently, the team is working towards setting up a Center for Research on Disaster Prevention and Mitigation at the ITB campus to continue promotion of disaster mitigation in Indonesia.

Bandung has a population of over 4 million and is located about 200 kms from Jakarta. It also has the highest population density of any urban area in Indonesia, approaching 120 people per hectare in some areas. The city is surrounded by mountains and active volcanoes and is subject to heavy annual flooding. Fires are also another great hazard.

Seismically, Bandung is located in Zone IV of seismic map zoning of Indonesia, indicating a middle range of hazard risk; Zone VI is the highest in seismicity. Although Bandung is not in an extremely high seismic risk zone, it is still quite vulnerable because of its total population and population density, low quality construction, and sedimentary soils 20 kms from an active fault.

The goal of the Indonesia Urban Disaster Mitigation Project (IUDMP) was to reduce the vulnerability of Indonesian urban populations, infrastructure, critical facilities and shelter to natural disasters. The IUDMP objective was the establishment of sustainable public and private sector mechanisms for disaster mitigation in targeted urban areas of Indonesia.

The Bandung demonstration project focused on reducing the susceptibility of the urban population, infrastructure, critical facilities, and shelter to natural disasters, particularly to earthquake hazards. The First Phase consisted of hazard mapping and vulnerability assessment of the city. During the Second Phase, mitigation strategies are developed and implemented. Activities include the review of the Bandung Spatial Planning and Local Building Regulation with regard to seismic safety; the preparation of technical guidelines for implementation by the Municipality of Bandung; the development and implementation of a monitoring system; the

development of an emergency response mechanism and the shift from a single hazard to a multi hazard mitigation process. Other activities include public awareness campaigns, networking and training.

As part of the decentralization process, ITB has become an autonomous institution. The changes at ITB have delayed plans under IUDMP for the creation of a Center for Research on Disaster Prevention and Mitigation. Due also to decentralization, some of the offices within the Bandung Municipality have disappeared or been merged with others. Some of the resources for mitigation efforts that were planned have not been available. While other cities have availed themselves of IUDMP resources, the general weakness of most local governments has been a handicap for IUDMP replication and sustainability.

The unrest and decentralization in Indonesia has impacted the National Coordinating Board for Disaster Management (BAKORNAS PB).

Project Objectives and Evolution

The original project objectives were the following:

- To reduce the natural disaster vulnerability of the urban population, infrastructure, lifeline facilities, and shelter in Bandung, with an emphasis on earthquake hazards.
- To promote replication and adaptation of successful earthquake mitigation measures to all large and earthquake vulnerable cities in Indonesia.

While these remained the objectives, the scope was broadened to give more emphasis to the wider issue of disaster mitigation as well as to include activities involving flooding. While Bandung is at risk for earthquakes, the population perceives the risk as remote as there has been no serious earthquake during the life of most of its residents. Floods on the other hand are an annual event.

The project started in 1997 and completed hazard maps and a vulnerability assessment and developed an action plan to reduce Bandung's vulnerability to earthquakes. The project team has proposed a number of mitigation measures, including improved building code information and inspection system, the development of an Emergency Operations Center for the city, and public awareness initiatives.

In February 2000, ITB submitted a proposal for the third or replication phase of the project. AUDMP approved this in late 2000 and the project was completed in December 2003.

Components

As with other AUDMP programs, there was an initial city demonstration component and training and information networking components designed to foster replication and sustainability. In addition, there was a policy component to help national and local governments review existing disaster mitigation policies and plans, especially with respect to earthquakes.

Demonstration and Project Implementation Framework

Phase I consisted of a yearlong earthquake hazard mapping and risk assessment of the city of Bandung and the preparation of a mitigation strategy with the city government. Phase II began in August 1998 and comprised a three part mitigation strategy:

- Addressing deficiencies in the Bandung urban land development process, the project with the city's regional planning department looked at the city's existing land use plans and proposed guidelines, which have been adopted, on how to include risk management principles into land use planning. A subsequent design of a 100,000-spectator stadium employed earthquake resistant standards following the revised guidelines.

- Strengthening the emergency management process of the city. The project worked to revise the city's standard operating procedures; however, the suggested changes have not been implemented, largely because of the confusion sown by the decentralization process.
- Raising public awareness about the hazards being faced. The choice of earthquakes, which are seen by the public and the local government as remote, made it difficult to get the public's attention.

Phase II lasted until the end of 2000. Phase 3, the replication phase, began in late 2001 and finished in December 2003. In Phase 3, the project expanded the scope in Bandung to include floods. The project also introduced a Rapid Risk Assessment tool (RRA) that was able to complete a map of Bengkulu in four months, about a third of the time required in Bandung. The project expanded into Bengkulu after a major earthquake. Denpasar, Palu, and Menado were also added at their invitation after an October 2001 national workshop organized and co-sponsored with the Association of Local Governments. The RRA was used in all three new replication sites. The success in the replication sites varied. The city parliament of Bengkulu invited the project to make a full presentation of the results. The interest of Manado waned as the project progressed. In Denpasar and Palu, there are possibilities that the results will be disseminated to other towns, which may also provide additional funding.

Policy

IUDMP, uniquely among AUDMP projects, specifically included a policy component for both the local and national levels. In Bandung, the decentralization of the Indonesian bureaucracy created confusion that made it difficult to implement policy changes. The moves to establish standard operating procedures for disaster management, the establishment of an emergency operations center, and an emergency earthquake plan did not materialize. However, the project did impact the city's land use plan and specifically the construction of an earthquake resistant stadium, which are significant achievements given the upheaval in the local government.

At the national level, progress was slow but with some significant results. The project reviewed the national disaster management policy, held a workshop with BAKORNAS, prepared a working document on disaster mitigation strategy, which BAKORNAS used to draft its own strategy. The strategy has not yet been issued because BAKORNAS is still trying to define its role post decentralization.

Information and Networking

IUDMP's I&N component was designed to promote replicability and sustainability of the overall project and had the following objectives: (a) to raise the level of awareness of earthquake risks, safety measures and means of mitigating adverse effects, and (b) to establish a support system of people interested in earthquake risk reduction for sharing information and experiences.

Public awareness

The project included journalists and radio staff in its training on earthquake hazards and risk reduction training. The project also set up a website, www.kompak.or.id, to provide information. Journalists wrote articles in newspapers and radio programs broadcast earthquake awareness programs. The project conducted public education campaigns that included one-day workshops, earthquake awareness days, and student dramas.

While there was no baseline data, a newspaper conducted a phone poll of 500 people in Bandung, and 74% of the people were aware of their own vulnerability to earthquakes. While phone owners would represent the more affluent in Bandung, this nonetheless indicates that the public awareness activities of the project had an impact as prior to this project, most people had little to no knowledge about the possibility of an earthquake in Bandung.

Development of information products

The project developed a wide range of booklets, leaflets, posters, and maps for different audiences, including engineers, inspectors, policy makers, and children. The project had a "Training of Teachers" program that provided information products to the teachers, who then disseminated them in their communities. The project used schools in particular to spread information about earthquakes to the general public. The project also produced research documents, reports and reported on meetings proceedings.

The guides are in both Bahasa Indonesia and English and hence provide exposure to English language. The readers of the guides also get exposed to environmental issues and science related to earthquakes and mitigation.

Networking

The project has promoted interdepartmental contacts within ITB and also with the students. This resulted in different departments getting involved in project research and training activities. Students also volunteered to contribute to project activities. At the community level, there is an increase in the demand for teacher training on earthquakes and mitigation. As more teachers teach the courses to their students who then pass on the information to their families, there should be more networking at the local level. At the national level, IUDMP's efforts to liaise with the Ministry of Education were successful and resulted in the training of 120 teachers and the production of 10,000 manuals. BAKORNAS and other local government officials have also shown more interest in ITB projects. IUDMP also established links with other donors, including UNESCO, UNICEF, and JICA.

Training

The project offered five technical training courses for construction workers and city officials. It has also developed curriculum and teaching materials for a course for educators and primary students and has offered the course twice. There are plans to format the educators' materials for a Ministry of Education certification course, which may be part of the 2004 AUDMP extension.

Technical training

The project has provided technical training in Bandung and Bengkulu. The Bandung training comprised a three-day course on earthquake mitigation and building construction monitoring for the field staff of the Local Building Office. The project also provided nine one-day workshops to government agencies and other groups in Bandung. After the June 2000 earthquake in Bengkulu, the project trained craftsmen and city building inspectors in earthquake resistant building practices and in retrofitting damaged buildings. The project also provided a one-day workshop on seismic activity in Bengkulu and the earthquake disaster management concept to government officials from several city governments representing various disciplines.

Training for schools

The project conducted three earthquake preparedness training events for schools in Bandung. These were then developed into a three-day training session on earthquake mitigation for school staff in Bandung. The roughly 60 attendees, which included school inspectors, administrators, primary school principals and teachers, were asked to return to their schools and train others. The training materials comprised 11 modules, a student book of about 200 pages and an instructors' manual of similar length plus additional background materials. In October 2002, the course was repeated for educators form another earthquake-vulnerable area.

The Director-General of the Ministry of Education was a major force behind the development of the course. He was impressed by the original earthquake preparedness training events and agreed to co-finance the formalized course. The Ministry financed the travel and expenses of the trainees.

IUDMP funded the costs of the training center, and ITB staff and students prepared the curriculum and training materials. The process included field-testing and evaluation with input of experts made available by AUDMP and the internet. The training program included hands-on activities in addition to lectures and discussions. IUDMP has also turned over a finished Training of Trainers course to the Ministry of Education.

National Training Partner Institute

The project identified two potential National Training Partner Institutes (NTPI), ITB's Institute for Research and Community Empowerment (which implements IUDMP) and the Training and Education Agency of the Ministry of Home Affairs. There have been delays in formalizing the arrangement due to problems between the two agencies, insufficient funds for the Urban Disaster Mitigation course, and national political instability. The ITB Institute for Research and Community Empowerment hopes to establish a Center for Research on Disaster Prevention and Mitigation as the NTPI.

Establishment of the Center for Disaster Mitigation

Following the strategic plan for institutionalization of disaster mitigation, the Research Group on Disaster Mitigation at the Institute of Technology Bandung (RGDM-ITB) was established on January 10, 2003 as the center for disaster mitigation in Indonesia. The objective of the establishment of the center was to prepare for the phase out of IUDMP and to continue and further promote disaster mitigation in Indonesia beyond the life of IUDMP. The establishment was based on the IUDMP initiatives to mitigate disaster risk for safer communities in Indonesia. The body of knowledge and best practices gained from the implementation of demonstration project in Bandung and replication in Bengkulu would lay a good foundation to the center to share the experiences in disaster mitigation and provide technical assistance to other cities throughout the country.

At the National level, ITB is working closely with the National Coordinating Board for Disaster Management (BAKORNAS PB) in drafting a new National Policy on Urban Disaster Mitigation in Indonesia.

Major Accomplishments

The project successfully introduced the concepts of disaster management and mitigation and kept them alive during a period of political and economic turmoil in Indonesia. The project worked with national and local government agencies in presenting three national workshops to present these ideas and helped to get some of them adopted as government policy.

IUDMP developed a Rapid Risk Assessment tool that it used in four replication sites. This tool reduced the cost and man-hours by over half and is appropriate to cash strapped local authorities in Indonesia. While technically less detailed, the tool is useful for local governments that are assessing vulnerabilities.

IUDMP offered five technical courses and nine one-day workshops. The project produced curriculum and training materials for educators and students. These materials may be modified for a Ministry of Education certificate course. The project has made progress towards seeing its approach become an institutionalized part of the curriculum in earthquake prone regions throughout Indonesia.

The project raised the awareness of earthquakes and mitigation in Bandung and the replication cities and through BAKORNAS at the national level. IUDMP also networked effectively with national and local governments.

Significant Shortcomings

While the Bandung local government adopted some of the building standards and land use planning guidelines that IUDMP proposed; however, the city did not establish standard operating procedures, an emergency operations center, or an emergency earthquake plan. The confusion caused by the government decentralization plan was a major factor in this failure but the choice of earthquakes as the project focus may also have dampened enthusiasm.

There is not yet enough progress to say whether the disaster mitigation message has taken hold in any of the four replication towns.

At the end of the replication phase, ITB established a Research Group on Disaster Mitigation at the Institute for Research and Community Empowerment of ITB to continue and further promote disaster mitigation in Indonesia. This is key to the future of disaster management and mitigation in Indonesia; however, it is still not certain that the Research Group will be able to sustain the project long term.

While the Ministry of Education and BAKORNAS have supported the project, it is too soon to assert that disaster mitigation has been accepted throughout the government.

Given that many of the materials that the project has produced are of a high quality, the project needs a budget and a means of distributing them during the project and after the project is over.

The project also did not have sufficient funds to devote staff to social marketing, networking or training. The project had to rely on professors that assisted in addition to their full time teaching duties. While linkages with international organizations, government agencies, and academia were forged, more staff time and hence money is needed to deepen these linkages.

Links to AUDMP and other organizations

AUDMP has supported IUDMP through the annual working group meetings, technical experts and web-based services. IUDMP staff reported that the working groups that gathered staff from all of the AUDMP projects were useful for exchange of information and experience. AUDMP experts also contributed to the curriculum and materials that the project developed. IUDMP also made extensive use of the web-based services in developing materials, in particular the AUDMP listserve.

As noted above, the project has promoted interdepartmental contacts within ITB, with government agencies such as BAKORNAS and the Ministry of Education, and also international donors.

Budget Highlights

The Indonesian project under spent the First Phase budget by about 20% and the Second Phase by about 10%. In the First Phase, AUDMP approved a budget of $272,620 but the project only spent 218,116.40. In the Second Phase, the project spent $89,612.09 compared to a budget of 98,206.

Lessons Learned

IUDMP demonstrated the importance of developing ownership of the program and the sense of belonging to the program within the targeted organization or community. Without the sense of program ownership, the organization and the people within it are not motivated to continue the program or implement mitigation activities.

While the project considered the options prior to choosing earthquakes as a focus, this did not prove to be a threat that mobilized the government or the community, mostly because Bandung had not experienced an earthquake during the lives of most of its citizens. Such a seemingly remote risk did not have traction in the mindset of an Indonesian population that was going through the worst economic and political upheaval in a generation. Flooding, which occurs on an annual basis, might have had a better chance of getting the required attention and of convincing

people and the government of the benefits of disaster preparedness and mitigation. Once people are convinced of the benefits of flood mitigation, selling them the idea of earthquake mitigation would be easier.

The choice of ITB as an implementing partner was a gamble. ITB brought academic knowledge, prestige, and professors and students that could contribute. However, it took a long time to establish the Research Group on Disaster Mitigation, which is essential for the sustainability of the project. While it is too soon to say how well the Research Group will propagate the mitigation message, it is now in place. It may also be true that any Indonesian entity would have been slow to commit to a new venture given the environment in Indonesia since 1997.

Projects should consider carefully at the beginning of a project the required amount of resources. The Indonesian project suffered from a shortage of funds to publish the materials it produced, maintain its website, and pay adequate staff. The budget was too small for a country with more than 200 million people. The fund shortage also limited the ability to make use of NGOs, other universities and local governments who may have been interested in disaster mitigation.

The Rapid Risk Assessment is a useful approach for financially weak governments. The major purpose of the approach is to raise interest and awareness of the local stakeholders on the need for better understanding disaster risks. A Rapid Risk Assessment with limited resources can be done for those cities as an introductory initiative to disaster mitigation but is should be followed on by further actions, as not to create either a false sense of safety or even panic among the population.

Given slow internet access, AUDMP materials need to have alternative means of distribution. This may include CDs, printed copies and even emails. Slow internet access discouraged some Indonesians from accessing the AUDMP materials.

Sustainability and Replicability

IUDMP has made progress on sustainability in spite of the upheaval in Indonesia since 1997 and its own modest resources. The Research Group on Disaster Mitigation has been established at ITB. The Ministry of Education has adopted the Training of Trainer course for schools, armed with the ITB's curriculum and materials. The project has conducted replication activities in four cities and three more cities have shown interest in working with IUDMP.

The most solid commitment on sustainability comes from the Ministry of Education. The Ministry has the materials and the mandate and some form of budget to train teachers. It seems likely that it will continue to provide training to teachers that work in areas that are prone to earthquakes.

While the formation of the Research Group on Disaster Mitigation is a step forward, it remains to be seen how committed ITB will be to the Group going forward. It is noteworthy that the unit was set up as a "Group" and not a "Center" and indicates the level of support from ITB. There are also questions about the ability of the Group to mobilize its own funds and to chart its own future. The ability of ITB to replicate its work in other cities will be dependent on the answers to these questions.

In the 2004 phase of AUDMP, IUDMP plans to propose training of International NGOs on earthquake resistant construction. This is a timely initiative as there is an urgent need to rebuild in areas in which have experienced armed conflict.

OFDA work with Indonesian NGOs would benefit from linkages with AUDMP, which would also develop relationships with other organizations with interests in disaster management beyond ITB. AUDMP could provide support for additional activities in Indonesia. AUDMP should also forge linkages with more local government associations, which also receive support from USAID.

4.5 Laos

Country Context and AUDMP focus

The Lao People's Democratic Republic (Lao PDR) is a country of 5 million people with a per capita income of $290, making it one of the least developed countries in Asia. Laos is bordered by China, Thailand, Vietnam, Cambodia, and Myanmar. The population is comprised of three groups, the agricultural hill tribe Lao Theung, the nomadic Lao Soung of the north, and the lowland farming Lao Loum that inhabit the region along the 1,865 km Mekong river, which forms part of the border with Thailand. The capital Vientiane has a population of 133,000 with about half a million in the whole province. Following the country's adoption of an "open door" policy in 1996, there has been an increase in economic growth and tourism. The country became a member of ASEAN in 1998.

Laos faces a range of disasters including flooding of the Mekong, drought, landslides, as well as unexploded ordinance, fires, road accidents and other manmade hazards. Laos ranks second after Myanmar in Southeast Asia in terms of high rate of road accidents.

Fires have been identified as the largest cause of loss of life and property in the capital city of Vientiane. The main causes for fires are careless use of candles for indoor lighting and religious practices and faulty electrical wiring. The Lao PDR Urban Disaster Mitigation Project (LUDMP) aims to reduce the disaster vulnerability of population, infrastructure, and economic assets in Lao urban areas to fires and related man-made urban hazards by establishing systems for hazard assessment and disaster mitigation for the city of Vientiane, the project's demonstration site, and other Lao cities and communities. To accomplish this, the Lao National Disaster Management Office (NDMO) in collaboration with the Urban Research Institute (URI) and the Fire Protection and Prevention Department focuses on conducting a risk assessment of Vientiane, both at the city and community levels; building capacity for prevention and response within the city's emergency service departments; establishing a public awareness campaign and; improving the regulatory and incentive system for fire mitigation and accident prevention.

Project Objectives and Evolution – baseline data collection

LUDMP's goal is to introduce ways to identify and assess urban fire hazards and to mitigate these hazards. Vientiane is the demonstration site for the project, whose objectives are:

- Reduce disaster vulnerability of the population of Vientiane through application of appropriate mitigation strategies,
- Increase capacity for hazard assessment and mitigation planning,
- Assess risk, set priorities, select management options and implement solutions for reducing risk and improving response to disasters, and
- Improve capacity of the NDMO to coordinate and support risk assessment and management activities.

NDMO and AUDMP signed the project agreement on 24 June 2002. The First Phase began on 1 July 2002 and ran through December 2002. During this phase, the project completed multi-risk assessments and hazard mapping, a work plan and budget and began introductory urban disaster mitigation workshops for officials and community members. The NDMO developed its training curricula and information products and launched its public awareness campaign.

Phase II beginning in January 2003 concentrated on the implementation of the First Phase's Mitigation Plan. Activities included improvement of standard operating procedures and institutionalizing of risk mitigation in urban planning, capacity building of various stakeholders through training, and public awareness creation.

Components

Demonstration and Project Implementation Framework

Technical Foundation of Demonstration Project

Stakeholders Workshops

A first Stakeholders Workshop was organized on July 19, 2002 with the objectives to introduce the project to the Vientiane Community and to obtain support and inputs from the community for project implementation and activities. Forty participants from the National Disaster Management Committee, the four urban districts of Vientiane, Lao Red Cross, US Embassy, Ministries of Education, Foreign Affairs, Transportation, National Security, Finance, Defense, Agriculture, Industry, Information and Culture, and Public Health attended the workshop.

At the discussion session, participants offered a number of suggestions including community self help and woman involvement in fire prevention/preparedness, strategy to disseminate project information by using media, role of town planners, adoption of a national day as fire safety day, emergency services improvement (fire and road accident rescue), and participation of Lao Red Cross in the project.

On December 4, 2002, a Second Stakeholders Workshop was organized to present to the Vientiane community the planned fire prevention/preparedness measures for the city of Vientiane and for the high-risk communities in Vientiane and to solicit comments and inputs from the stakeholders on the proposed measures. About 50 participants attended the workshop, including participants from the Ministry of National Security, Transport Department, Traffic Police Department, Water Supply Authority, Electricity of Lao, Lao Red Cross, International NGOs, and the Urban Development Authority of the four districts in Vientiane.

During the second workshop, the participants provided suggestions on fire prevention and road accident reduction measures for inclusion in the Phase II of the project.

Demonstration Sites

Community Fire Risk Mapping Workshop

A demonstration project on community risk mapping and risk reduction planning was conducted in one high-risk community, Ban Hatsdy in Chantabouly. This community was selected due to its appropriate size for a pilot site with possible further replicability, potential future financial support, and its past experience with fire disaster. A brief Training Needs Assessment was conducted, followed by the Community Fire Risk Mapping Workshop at Ban Hatsdy Tay on October 24-28, 2002. Twenty-seven community representatives attended the workshop.

The community risk map was produced based on the same attributes used in the Vientiane city risk mapping with some modifications to suit the community situation. The attributes were comprised of fire history; fire sources related to livelihood; building material and density; quality of electrical wiring system; access in and out of fire trucks, vehicles and people in the event of a fire; houses in which there are young children and elderly. The participants discussed on fire history and conducted a community survey for other attributes.

Vientiane Fire Risk Map

The Urban Research Institute (URI) with technical assistance from AUDMP produced a Fire Risk Map for Vientiane. One hundred communities in four districts of Vientiane: Sikhottabong, Chanthabouli, Sisattanak, and Xaysettha were covered in the risk mapping.

Pakse Fire Risk Map

The Urban Research Institute (URI) with the assistance of the staff from Champasak Office of Communication in data collection completed the Pakse Fire Risk Map, which covered five

districts of Pakse City. The Workshop to present the results of the fire risk mapping to Pakse community was organized on May 19, 2003. Thirty participants from Pakse Urban Development Authority, Pakse Fire Brigade, Champasak Office of Communication and the five districts covered by the map attended the co-organized workshop by URI and the Champasak Office of Communication.

In addition to the presentation of the map, an overview of LUDMP and two reports by the Pakse Fire Brigade and the Urban Development Authority were also presented at the workshop. Participants also discussed extensively on how their organizations and they themselves can prevent fires; how the Pakse Fire Risk Map can help them prevent fires; and who should be responsible for fire prevention and mitigation.

Fire and Road Safety Awareness

The project has worked to revise traffic regulations to improve enforcement of road safety, which are now pending cabinet approval.

Training

In preparation for the implementation of the new project in Lao PDR, the Urban Disaster Mitigation (UDM) course was delivered to the representatives from Laos by AUDMP in August 2001. It aimed to build the capacity of the AUDMP partners on the concepts and tools for urban disaster mitigation, including city level assessment methods; development and implementation of mitigation strategies; and integration of urban disaster mitigation as part of the urban development planning process.

Community Fire Risk Reduction Planning Workshop

Based on the community risk assessment, a one-day Fire Risk Reduction Planning Workshop was held on November 10, 2002 with the same group of participants to identify fire safety measures. Participants were divided into four groups to discuss in further details of strategies for fire prevention, preparedness and response. Results of the group discussion regarding the key strategies were shared among other community members so that they could be actively involved in the implementation of the fire risk reduction plan. The project implementing organizations worked closely with the community to undertake selected activities, based on the recommendations derived from the workshop.

Urban Disaster Mitigation Course

The Third Urban Disaster Mitigation Course (UDM) was jointly conducted by the URI, NDMO and the ADPC at the URI Office during 16-21 December 2002. The course materials were translated into Laotian before the course. About 22 officials attended the course; they came from Vientiane municipality, other municipalities, fire service departments, university professors and others. The URI plans to conduct the course as part of its annual training calendar, through its training budget, upon completion of the AUDMP project.

Fire Prevention Planning Workshop

On 17 October 2002, a Fire Prevention Planning Workshop was held to present the preliminary finding of the Vientiane Fire Risk Map and to strategize for fire risk reduction measures at the city and national levels. Forty-five participants attended the workshop, mainly from the Fire Department at the headquarters and from three provinces, namely Luang Prabang, Savanakhet and Champasak. The key resource person was from the Melbourne Fire Brigade, which had assisted AUDMP in the capability assessment of the Fire Service in Vientiane in 1999.

Four selected areas for the project implementation were identified and prioritized by the participants. They included Regulatory Development, Community Education/Outreach, Fire Service Equipment, and Training and Exchange Program.

Establishment of Fire Volunteer Group in Community

In preparation for the community to safeguard lives and property of community members in face of fires, the Lao Urban Disaster Mitigation Project (LUDMP) in collaboration with the Lao Fire Brigade helped establish volunteer groups in eight communities from four targeted districts in Vientiane and organized a training program for 160 volunteers during February 15-16, 2003.

The training program was the first community-based fire prevention activity undertaken by the Lao Fire Brigade. Knowledge of fire prevention, fire fighting and rescue was demonstrated to the volunteers through presentations, exercise and simulation. At the end of the training, fire volunteer groups were set up in each community – three teams for each group: fire protection, fire fighting and fire rescue – to enhance community effectiveness in case of fire emergency. Besides fire response and relief, the volunteer groups will also encourage community members to take preventative actions to mitigate fire disasters.

Training of Trainers (TOT) on Fire Fighting and Fire Rescue

In order to strengthen the capacity of the Lao Police Fire Brigade for emergency management in Vientiane and other Lao cities, ADPC in collaboration with the Thai Police Fire Brigade and Melbourne Fire Brigade organized the Training of Trainers Course on Fire Fighting and Fire Rescue for ten Lao Fire Brigade officials in Thailand during March 24 – April 4, 2003.

The two-week fire fighting and rescue training program included lectures, presentations, simulation exercises and study tours. Participants learned fire safety systems, risk evaluation, fire fighting-rescue techniques, leadership, and fire fighting-rescue from hazardous materials/liquid petroleum/gas. Moreover, they also learned how to do public education/outreach and training techniques.

Training on Fire Fighting and Rescue for Fire Brigade Officials

Upon their return to Laos, the officials who participated in the TOT course in Bangkok conducted a training course for other officials of the Lao Fire Brigade and other Provincial Fire Brigades.

The training was organized on May 26-30, 2003. ADPC/AUDMP received the cooperation from the Thai Police Fire Brigade in sending one experienced trainer to provide technical assistance to the Lao training team by coaching the trainers in curriculum content, practical exercise and using visual aids.

Forty-four staff from the Fire Service Department and Vientiane Fire Brigade participated. While overall they were satisfied with the training, they wanted some of the sessions to be more detailed and for similar training to be conducted every six or twelve months.

First Aid Training

With technical assistance from Lao Red Cross, LUDMP organized First Aid Training Courses for 16 Vientiane Traffic Police on May 19-21, 2003 and 27 Fire Brigade officers on June 4-6, 2003 respectively. The objective of the training was to provide first aid skills to traffic police and fire brigade officials to enable them to save people's lives in case of fires and traffic accidents. They were trained on basic first aid principles including how to take care of unconscious, bleeding, burned or broken bone victims and how to transport victims to hospital. All the participants took a practical test at the end of the course before being awarded a certificate to ensure their capability to provide first aid in emergency situations.

Land Use Planning for Risk Based Mitigation Approaches in Lao PDR

AUDMP Partner Institutions in Lao PDR – Urban Research Institute (URI) and National Disaster Management Office (NDMO), conducted a training course on Land Use Planning for Risk Based Mitigation Approaches (LUPRBM) during June 24-28, 2003 in Pakse, Lao PDR. Land use planners, urban designers, municipal engineers and officers to urban, municipal and local governments participated in the course.

Unlike many other risks, land use planning risks can manifest themselves after five, ten, or more years from the time a decision is made or an action is taken, and potential liability can be significant. Therefore a course on Land Use Planning for Risk Based Mitigation Approaches was developed by merging experiences from two professional fields of practices i.e. Land Use Planning and Risk Management and run as a pilot.

The course content consisted of overview of Hazards, Vulnerability and Risk, in-depth study on opportunities of Land Use Planning for Risk Based Mitigation (RBM) and a desktop simulation exercise on Risk Mitigation Planning as a Process to integrate Land Use Planning (LUP).

During the course, discussions focused on ways cities and local governments can minimize risks in developing long-range land use policy strategies, and in carrying out day-to-day development review responsibilities. Emphasis was given on team play, as top management alone could not deal with risks effectively. Officials who are part of the land use planning process must have an understanding of the risk management issues with which they are dealing.

Information and Networking

Recognizing the priority of public education/awareness of traffic, ADPC/AUDMP took this opportunity to assist LUDMP public awareness activities to prepare citizens for the revised rules and regulations. ADPC/AUDMP activities include:

- Art Competition for Primary School Children, May 10, 2003, promoted public awareness of urban fire & road safety. 220 students from 4 schools participated.
- Educating school children, May 17, 2003. Teachers from eight primary schools in four targeted districts in Vientiane Municipality were trained in how to educate school children using new curriculum on urban fire and road safety prevention.
- ASEAN Disaster Reduction Day, June 26, 2003, included various activities to make people in Vientiane City aware of Urban Disasters and seek the appropriate measures to mitigate disaster risks. Art competition results were announced at this event.
- Public Awareness via National and Vientiane Radio was an on-going activity to promote fire safety through quizzes.

Upgrading of the Standard Operating Procedures

In order to upgrade the Standard Operating Procedures of Lao PDR Police Fire Brigade, LUDMP in collaboration with Thai Police Fire Brigade organized an exchange visit in Bangkok for four Lao Brigade officials on June 16-19, 2003.

A visit to Thai Police Fire Brigade was carried out in order to exchange views and experiences between officials of two fire fighting organizations, as well as to observe the operating procedures of the Thai Fire Brigade including administration, pre-fire planning, coordination between government and private sectors in fighting fire, fire prevention strategy, delegation in building inspection and fire fighting, fire prevention in crowded areas, fire statistics, training procedure etc. The Lao Brigade officials also visited the Bangkok Metropolitan Administration and Port Authority of Thailand to see their fire fighting systems.

Major Accomplishments

The project with technical assistance from AUDMP produced a Fire Risk Map for Vientiane and Pakse, which were the first such maps produced in Laos. The maps were developed through integration of individual attributes through overlay process of seven layers of information, namely: 1) building material type, 2) availability of fire sources, 3) Fire fighting scenario, 4) electrical wiring, 5) fire history, 6) building density, and 7) accessibility. Scores were given to the different attributes and when combined provided the four categories: very high, high, moderate and low risk.

The project conducted a study in Vientiane of causative factors of road accidents and review of road safety projects. The study concentrated on areas where there has been high rate of road accidents to identify the root causes and intervention measures. The study found that the main causes were physical defects, e.g. lack of light, design of road, etc. The study was followed by a workshop to present findings and to obtain recommendations for measures for intervention.

The project started the process of identifying fire code requirements and of providing knowledge on the same to municipality officials. Currently, Lao PDR does not have a fire code to ensure fire safety measures are included in construction of new buildings. This has made it difficult to require its population to set up prevention and preparedness measures to reduce the fire risk. The code enforcement procedure is now on the way and municipality will in future take action to enforce the fire code regulations.

Significant Shortcomings

The administrative structures in Laos are weak. This has meant that AUDMP has had to play a more active role in the gathering of data and preparation of reports than in other AUDMP countries.

Links to AUDMP and other organizations

The Australian Fire Brigade has assisted through sharing training and information products, which were adapted to the Lao context.

AUDMP has organized a training exchange program for the senior officials of Lao Fire Brigade to see the facilities, operation procedure of Thai Fire Brigade. The purpose of the exchange was to facilitate upgrading of the Standard Operating Procedures at the Lao Fire Prevention and Protection Police Department (four officials for three days at the Thai Fire Brigade). In addition, AUDMP arranged for the Thai Fire Brigade to provide a “Training of Trainers” Course in Bangkok on Fire Fighting and Fire Rescue for Lao officials from the Fire Prevention and Protection Police Department of Vientiane.

Budget Highlights

As the MOU for the Lao project was only signed in 2002, most of the project activities took place in the Second Phase of AUDMP. During the First Phase, the Lao project had a budget and expenses for $16,145.33. During the Second Phase, the budget for LUDMP was $100,407; expenses totaled $102,036.87, but this included some centrally funded expenses on the project’s behalf..

Lessons Learned

Time spent mobilizing stakeholders before the project starts can be time well spent. While the project started late in the life of AUDMP, the slow start provided a long period for AUDMP to lobby the national and local officials and to introduce them to concepts of disaster mitigation. This long lead-time generated genuine support for the project, which allowed the project to accomplish a great deal over a short period of time.

Sustainability and Replicability

Pakse Fire Risk Map

The Urban Research Institute (URI) with the assistance of the staff from Champasak Office of Communication in data collection completed a Fire Risk Map of five districts in Pakse City. URI and the Office of Communication presented results in a workshop to 30 participants from Pakse Urban Development Authority, Pakse Fire Brigade, Champasak Office of Communication and the five districts covered by the map.

The workshop also presented an overview of LUDMP and two reports by the Pakse Fire Brigade and the Urban Development Authority. Participants also discussed how their organizations and they themselves can prevent fires; how the Pakse Fire Risk Map can help them prevent fires; and who should be responsible for fire prevention and mitigation.

4.6 Nepal

Country Context and AUDMP focus

Nepal has a long history of destructive earthquakes. In the 20th century alone, over 11,000 people lost their lives in four major earthquakes. Study of the seismic record of the region suggests that major earthquakes occur approximately every 75 years, and the smaller ones, more frequently. Earthquakes are, thus, unavoidable parts of the country's history and they are inevitable in the long term. A major earthquake is likely to occur in the near future.

Since the last major earthquake of 1934, the risk of Kathmandu valley has increased significantly due mainly to uncontrolled development, use of construction practices without concern for earthquake safety, and lack of awareness among the general population and authorities.

The Kathmandu Valley Earthquake Risk Management Project (KVERMP) addressed seismic vulnerability in the Kathmandu valley. Project implementation was divided into four main areas: 1. Development of an Earthquake Scenario and Action Plan for Kathmandu; 2. School Earthquake Safety Program including the retrofit of schools and training of masons; 3. Public Awareness Promotion, the highlight of which is the establishment of Earthquake Safety Day on the anniversary of the 1934 earthquake; and 4. Institutional Building and Training. The project officially began in September 1997 and concluded in February 2000 with a Replication Phase running from March 2000 through August 2001. The National Society for Earthquake Technology (NSET), a Nepalese professional society, implemented the KVERMP, assisted by Geo-Hazards International (GHI), an American NGO.

In the 1990s, local governments achieved greater autonomy and resources to operate on their own. The Municipalities of Kathmandu, Lalitpur and Bhaktapur are among the best organized and most resourceful local governments in Nepal. The Kathmandu Valley therefore offered an excellent opportunity for mitigation work. The Kathmandu Municipality had already established a disaster management unit, and the KVERMP benefited from the ability to work with this unit.

A Consolidation Phase ran from January through October 2003 and expanded the focus of the project beyond the Kathmandu valley. The risk of earthquakes is high not only for the Kathmandu valley, but also for other municipalities and urbanizing centers. This is due to the very high rate of migration from rural areas to urban centers, uncontrolled urbanization, and the resulting increase in seismic vulnerabilities mainly due to poor construction practices. Likewise, infrastructure development initiatives in the rapidly growing urban centers of the country have not been able to address the earthquake risk. In some cases, even the development activities have inadvertently contributed to increasing the risk.

Cities outside the Kathmandu valley mostly serve as regional or district headquarters and are also the centers that mobilize the resources of large surrounding rural winter lands. In this sense, they are not only cities for their inhabitants but also the nerve center of rural lives. Since most of the 58 municipalities of Nepal are also the district headquarters, the importance of earthquake risk management at that level becomes important because of the participation of all district level development authorities and donor agencies in the process. Also, any awareness program for earthquake risk mitigation or preparedness in these municipalities spills over to the surrounding villages. As the masons and labor involved in construction of buildings or other development works in urban areas mostly come from the surrounding villages, training of masons for aseismic construction directly affects the construction culture of rural areas as well.

Therefore, the National Society for Earthquake Technology – Nepal (NSET) implemented the Municipal Earthquake Risk Management Project (MERMP) as the consolidation process of the experiences, achievements and lessons learned form the Kathmandu Valley Earthquake Risk Management Project (KVERMP). The components and the methodologies adopted in the MERMP are the outcomes of the experiences of the KVERMP and the similar experiences of the

other cities of the world. MERMP was implemented during January 2003 to October 2003 in association with the AUDMP.

Project Objectives and Evolution

Phase I and II of the project ran from September 1997 through February 2000 and had four objectives:

- Evaluate the Kathmandu Valley's earthquake risk and prescribe an action plan for managing that risk;
- Reduce the vulnerability of public schools to earthquakes;
- Raise awareness about Kathmandu Valley's earthquake risk among the public, government officials, the international community resident in Kathmandu Valley, and international organizations; and
- Build local institutions that can sustain the work launched in this project.

A Replication Phase ran from March 2000 through August 2001. The Replication Phase had three main objectives:

- To establish NSET's future as an organization by working towards financial and managerial stability and sustainability
- To consolidate the gains of the project by replicating the successes and positive outcomes of KVERMP so that the momentum towards increased earthquake safety is sustained. To explore the possibility of replicating some of the actions in other parts of Nepal, notably in other municipalities outside the Kathmandu Valley
- To complete some of the activities of the previous phases that could not be accomplished earlier

A Consolidation Phase ran from January through October 2003 and had four objectives that were similar to the objectives of the first two phases..

After the KVERMP Replication Phase was completed in 2001, OFDA funded a follow-on project the Kathmandu Valley Earthquake Risk Management Action Plan Implementation Project (KVERMAPIP). This project was implemented by NSET without AUDMP assistance. This project had two objectives:

- NSET managed and coordinated the "School Earthquake Safety Project," which (1) informed selected communities about the vulnerability of their schools and what could be done to reduce the risk; (2) prepared school-specific plans for improvements in seismic safety; and (3) mobilized support to improve the safety of the schools.
- Non-structural hazards and mitigation methods were explained through informational products produced by NSET.

Components

Demonstration and Project Implementation Framework

Technical Foundation of Demonstration Project

The project retrofitted a primary school as a structural mitigation project.

Shake Table and Full Scale Model Demonstration

The demonstration of real models of the earthquake resistant building and shake table demonstration to show building damage by earthquake has been considered an effective tool to convince people how important the earthquake resistant elements are to make a building safe from

earthquake. Vyas Municipality consequently carried out a shake table and full-scale model demonstration in the municipality's public ground on the concluding day of its mason training program where all sectors of the society i.e. government officials, local organization representatives, business people, teachers, students and the public attended the ceremony.

Demonstration Sites

In the First Phase of the project (September 1997 – February 2000), ten schools were surveyed for their ability to withstand earthquakes; one school, the Bhuwaneshwory Lower Secondary School in Nanghkhel, was retrofitted. In the second replication phase of the project (March 2000 – August 2001), three more schools were retrofitted, and two were rebuilt. All of these activities were co-funded by the project and the communities. The project contribution focused on technical assistance and training. The communities provided the materials and labor.

School	Location
Retrofitted buildings	
Bal Bikash Secondary School	Alapot, Kathmandu
Upayogi Primary School	Sirutar, Bhaktapur
Gadgade Primary School	Nagarkot, Bhaktapur
Rebuilt buildings	
Bhuvaneshwory Lower Secondary School	Nanghkhel
Vaishnavi Secondary School	Kirtpur

Training

Masons and Contractors Training

Trainings for local masons and contractors on earthquake resistant building construction were organized in four targeted municipalities under KVERMP consolidation phase, namely Vyas, Banepa, Pokhara, and Dharan. On-the-job training of masons in school programs has also been conducted. As the training in each municipality was localized, there is a need for this training of masons and contractors to be repeated in all areas of the country. In order to be effective, the formalized curriculum for mass scale training of masons and contractors needs to be of a very high standard.

Information and Networking

The project prepared an action plan that was partially funded by AUDMP.

A Visit to Three Potential Municipalities for Consolidation Phase of KVERMP

A visit to three potential municipalities, namely Vyaas, Pokhara, and Banepa, was carried out in order to assess needs and feasibility of these three municipalities to be targeted areas for implementation of activities under the consolidation phase of the Kathmandu Valley Earthquake Risk Management Project (KVERMP). Representatives of the National Society of Earthquake Technology-Nepal (NSET-Nepal), the project's implementing partner, facilitated the visit.

Meetings were conducted with key stakeholders in each municipality. The result was positive as all three municipalities agreed to offer their full cooperation in carrying out proposed activities. This is an effort to further replicate the success from KVERMP in these three municipalities. In this regard, it was felt that it would be prudent to consider each municipality separately since their capacities and the needs are different. Therefore, NSET-Nepal identified the needs of each municipality and prioritized them for formulating the respective Work Plan for each municipality. Subsequently, Dharan Municipality was also selected as the fourth municipality in implementing the KVERMP consolidation phase.

Nepal Earthquake Safety Day

Kathmandu Valley held its fifth Earthquake Safety Day (ESD) on January 16, 2003 as a reminder to the victims of the great Bihar-Nepal Earthquake in 1934. The ESD was attended by greater number of participants, with more and larger events and achieved bigger impacts, as it was for the first time that the exhibitions were held not only in Kathmandu but also in Vyas and Pokhara Municipalities.

A wide range of education and public awareness activities were organized to remind people of the enormous earthquake risk Kathmandu Valley faces. Through a symposium, an awareness rally, an exhibition, a shake table demonstration, art competition, and the distribution of posters, booklets and leaflets, a wide group of people were informed about how they could prepare for and mitigate against earthquakes.

The Earthquake Safety Day received a positive response from the participants as they expressed in the symposium the necessity of earthquake awareness programs and also made commitments to cooperate with the municipality to make the community earthquake safe.

Major Accomplishments

The work begun by AUDMP in Nepal was successful and accomplished a great deal in the earthquake mitigation field. NSET has flourished in spite of continued dependence on donors and has provided assistance in earthquake mitigation both inside and outside of Nepal.

The project established the cost of conducting a building vulnerability survey, the technical expertise required for surveys, the costs of strengthening vulnerable buildings, the techniques to use for strengthening typical Nepalese structures, the interest of the community in strengthening buildings, the ability to attract local and international funds for this work, and the earthquake risk levels acceptable to Nepalese society.

Significant Shortcomings

While NSET grew stronger, it did not achieve financial sustainability either during the KVERMP or during the KVERMAPIP, which was also funded by OFDA. Yet it has continued with various partners, including OFDA. NSET needs to diversify its sources of funding.

Links to AUDMP and other organizations

OFDA provided $450,000 to NSET to fund the Kathmandu Valley Earthquake Risk Management Action Plan Implementation Project (KVERMAPIP) as a follow-up to the KVERMP project but outside of AUDMP.

Budget Highlights

The total budget was $398,000, making it the AUDMP project with the largest budget. This budget was broken down as $304,000 for Phase I and $94,000 for Phase II of AUDMP. In Phase I, the project spent $305,209.53. In Phase II, the project spent $97,779.37. The total amount spent, $402,988.90, was about 1% over budget. The reason for this, is that the total figure includes some expenses paid directly by AUDMP that were not included in the budget of the local partner.

Lessons Learned

Flexibility of funding agency is critical to success

The AUDMP and OFDA allowed flexibility in scheduling and in distribution of funds. The project implementers felt that this was important because the original project concept, schedule and budget needed to be modified once work was underway. The implementation of KVERMP was an evolutionary process, and flexibility allowed the project to pursue the best results, regardless of whether or not they fit the original project concept exactly.

As one example, earthquake scenario development took longer than expected. The number of institutions interviewed increased from the originally planned 15 to 29 and required three to four visits for each institution lasting one to three hours per visit. The project proposal assumed these

visits would require one hour apiece. The increased effort placed on these interviews allowed the project to get better information from the organizations and secured their interest, involvement and ownership of project results. By allowing the project implementers to learn from their experiences, they believed that the final project achievements were more significant than they would have been if they had strictly followed the project proposal.

Low-tech approach was optimal

The project consistently adopted simple technical approaches, which made the project cost-effective and understandable to the laypersons. It also focused the project on implementation of risk reducing actions rather than more theoretical studies.

Unlike many projects, KVERMP emphasized past research rather than conducting new technical or scientific studies. The decisions to use a repeat of the 1934 earthquake shaking and simple, existing methods to produce loss estimates were very important. These loss estimates were cost-effective and produced a significant impact on the community without causing undue panic. This approach built upon the works of GeoHazards International and Escuela Politecnica National (GHI, 1994) in Quito, Ecuador. Similarly, the low-tech approach adopted for screening the seismic safety of schools produced useful, affordable and timely results, which are desperately needed to save lives in Nepal.

Emphasis on community level work is important

Implementation of the action plan and earthquake risk reduction requires earthquake safety concerns to become a part of the society's culture. Ordinary people started taking interest in earthquake issues and raising questions after the project began. This prompted the project to work on an experimental basis with two wards of the Kathmandu municipality, whose residents, on their own initiative, took action to assess and to decrease the risks to their neighborhoods. The enthusiasm and potential of these groups has been exciting and such community work should be a part of future efforts of NSET.

Focus on school earthquake safety drew criticism

Some people criticized the focus on schools and not hospitals, cinemas, or colleges. The project team explained that the project had limited resources available and noted that the work on schools was building NSET's capacity to evaluate the vulnerability of other systems in the future.

NGO status both helped and hindered project implementation

As an NGO, NSET faced problems from both local and international institutions. Locally, NGOs are viewed as corrupt and ineffective. Many international agencies only work with governments and cannot work with NGOs. This limited funding opportunities.

Ultimately, NSET's NGO status was beneficial to the project. NGO flexibility allowed fast and cost-effective work. Its staff and programs remained stable throughout the project duration. Moreover, NSET's non-political status allowed it to work effectively among all groups, despite a highly politicized atmosphere in Nepal.

Efforts at transparency difficult but valuable

The project tried to be transparent and created an advisory committee to oversee all project work. This committee drew in many influential people during project implementation. The dialogue between this committee and other groups helped to build trust, to establish the authority of NSET, and to keep people abreast about ongoing activities, interim findings, project maps and documents..

Frequent personnel changes in government agencies hindered the institutional interaction between the project and the different organizations. However, due to the project's outreach efforts, results are openly available for all those who wish to use them.

Institutional development is a long-term process

The project helped NSET to establish itself as a leader in earthquake disaster management activities in Nepal. However, NSET still requires institutional help before it can be a self-sustaining and fully effective organization. In particular, NSET needs to improve its management capabilities, reduce its dependence on a few key-people and improve authority delegation. It needs to broaden its ability to attract funds, and increase its ability to plan long-term strategy and day-to-day activities. This project increased the interest and concern of Kathmandu Valley citizens about earthquake so significantly that NSET is overwhelmed by requests for help.

A new model for national-international project partner relationship developed

The co-operation between OFDA (core funding agency), ADPC (AUDMP coordinator), GHI (technical assistance and oversight provider) and NSET was significantly different from previous projects in Nepal. This new model was cost-efficient, helped to build local institutions, and produced successful results.

First, primary control of the project and a majority of project funds went to NSET. Previously, local agents played only a secondary role. Second, GHI, ADPC and OFDA provided significant international support and guidance and helped to strengthen NSET's abilities and the confidence of NSET's staff. The international groups worked as true partners with NSET, accepting that local specialists knew the best methods to address local problems.

The success of this project caused it to be a model for the United Nations RADIUS project implemented in nine cities around the world.

Stakeholder involvement is essential to earthquake scenarios and action plans

The scenario and action planning process was successful because stakeholders were actively involved through interaction, interviews, and workshops. Interim findings such as loss estimates and simple laminated maps provided a focus for continued dialogue and the required motivation to seek/identify actions. Scenario development promoted awareness and the development of an action plan encouraged buy-in by the authorities. Risk reduction ideas started coming in from officials when the institutions were formally requested to identify actions that could help reduce risks.

People who have suffered from disasters are the most receptive to replication efforts

The project found that it was easy to convince the local governments and institutions in Dharan to implement mitigation activities as the population had witnessed significant damage from the 1988 earthquake; however, it was difficult to convince other cities that do not have similar experience but have equally high risks of an earthquake.

School earthquake safety program is ripe for replication

There is a tremendous opportunity for replicating the successes of the School Earthquake Safety Program (SESP) due to the interest of the Ministry of Education and the donor community. NSET – Nepal should continue SESP for at least a few more years.

SESP has been enhanced beyond its original concepts. Apart from retrofitting and reconstructing school buildings to withstand the identified seismic forces, this program now incorporates i) training of teachers, ii) training of children, (iii) development of School emergency response plans for the schools, and iv) training of masons. SESP has also developed appropriate manuals, guidelines, and training curricula.

Sustainability and Replicability

The question of sustainability should be looked upon from two angles: 1) sustainability of NSET, and 2) sustainability of the project impacts. Replicability of the KVERMP initiatives is already a proven fact, with replication occurring in the Kathmandu Valley, other parts of Nepal and through the United Nations RADIUS project in nine cities around the world.

Sustainability of NSET as an organization

The project helped NSET's transformation from a "weak" institution (a registered institution but with a volunteer management committee, no permanent office or communication facilities) into an institution with permanent office facilities, a well-defined action plan, and a reputation for trustworthiness in Nepalese Society. It is now an authority on earthquake risk management in Nepal. Nonetheless, NSET is still vulnerable in terms of financial sustainability. However, many institutions, projects and even individuals are interested in helping NSET.

Sustainability of KVERMP impact

The concept of sustainability should include the change in the social environment and not only financial sustainability. Before KVERMP, there was not a single initiative on earthquake safety run by any agency in Nepal; the situation now is much better.

The Earthquake Scenario and the Action Planning process has not only raised awareness on earthquake risk, but also helped develop several initiatives by other institutions. Currently, several institutions have either updated their operational emergency plans (e.g. Nepal Police, Royal Nepal Army, etc.) or prepared emergency response plans (e.g. UNDP).

KVERMP inspired several other projects, including the JICA-sponsored project for Earthquake Risk Mitigation for Kathmandu Valley with the Ministry of Home. Nepal was the subject of a case study city by UNDP/ISDR, Kathmandu has been considered for the Global Earthquake Safety Index (GESI) project.

KVERMP's School Earthquake Safety program should continue as more and more partnering agencies are getting involved, including local businesses, UNESCO and UNCRD.

4.7 Philippines

Country Context and AUDMP focus

The Philippines Cities Disaster Mitigation Project (PCDMP) began in January 1997 and aimed to reduce vulnerability to natural hazards by addressing flood and typhoon mitigation in Naga City and San Carlos City.

In Naga City, flooding is the major natural hazard risk to this city of 120,000. A large portion of the city is below sea level and is subject to flooding during typhoons and other instances of heavy rainfall. Population growth and poor land use practices have exacerbated the risks. Naga city benefited from a stable local government as the Mayor had been in office for ten years. The local government also was recognized as the best municipal government in the Philippines in 1995 and 1996.

San Carlos City is situated on the north eastern coastal plain on the island of Negros Occidental. The city has a population of over 100,000, covers 42,418 hectares, and is located 38 kilometers from the active Canlaon Volcano and is at risk to lava flows, ash fall and volcanic bombs. Earthquakes and tsunamis are also problems with low frequencies. Typhoons and floods are at least an annual event. Deforestation and poor hillside agricultural practices make landslides a frequent problem. Dense squatter settlements are also vulnerable to fire.

In addition to hazard mapping and mitigation planning, the project emphasized land use planning, the formation of disaster management standards, and the training of urban professionals. The *Philippine Business for Social Progress* (PBSP) in association with *League of Cities* (LOC) and the two cities' local governments managed the demonstration phase. The project successfully completed preparation of hazard and risk assessments in the two selected cities; however, the project was terminated on 31 August 1999 as the proposals for the replication phase was larger than programs in other AUDMP programs and than budgeted in the AUDMP grant.

Project Objectives and Evolution

The Philippines Cities Disaster Mitigation Project (PCDMP) had three major objectives:

- Enhancement of disaster mitigation capabilities of the League of Cities
- Institutionalization of disaster mitigation programs in two pilot demonstration cities
- Adoption and replication of the disaster mitigation program and processes in other Philippine cities.

The project was terminated prior to the start of the replication phase.

Components

Demonstration and Project Implementation Framework

The Naga City program consisted of establishing a city task force, undertaking a composite hazard map and vulnerability assessment, building the capacity of city staff and others in disaster mitigation, developing city standards and a city disaster mitigation plan, implementing demonstration projects and encouraging the implementation of new policies, programs and regulations that will mitigate flood risks.

In San Carlos City, the project introduced hazard mitigation to the community. Prior to the project coordinator's attending ADPC's Urban Disaster Mitigation Course, there was not record of mitigation activities. The mitigation activities included erection of flood control structures, relocating populations in low lying areas to higher ground, sea walls and breakwaters in areas subject to flooding to reduce the damage to lives, crops and property. The Municipal government prepared a comprehensive land use plan in 1997 along with a San Carlos Corridor Development Plan.

Training

AUDMP conducted the Urban Flood Mitigation Course (UFM) in the Philippines in September 2001.

Information and Networking

Universities from the Philippines attended a workshop organized by AIT in Bangkok in July 2002 on the incorporation of disaster mitigation subjects in the university curriculum.

Major Accomplishments

Both demonstration cities conducted hazard mapping and implemented GIS. Some of these tools are still in use nearly five years after the project was terminated.

Significant Shortcomings

While both demonstration cities undertook valuable mapping and mitigation activities, there appears to have been little understanding of what the PCDMP entailed. There also seemed to be little appreciation for the project either within the PBSP or the LOC.

Links to AUDMP and other organizations

AUDMP has maintained contacts with some of the civil servants involved in the project and still shares AUDMP materials with them. The Development Academy of the Philippines also continues to benefit from the AUDMP materials.

Budget Highlights

The Philippine project's operations were focused on the First Phase of AUDMP. The project budgeted $153,400 for county activities, and the project spent $153, 319.43 of this amount. In the Second Phase, the project was allocated and spent $9,115.74.

Lessons Learned

The project was implemented in two cities in which the local governments were among the most progressive. While this meant that the governments would be apt to be supportive, it also meant that they already had established some level of mitigation activities. Hence it is difficult to discern which activities were a result of the project and which were a result of the normal operations of the city governments. It may have been more beneficial to choose sites that were less progressive and to use Naga City and San Carlos City as models for the less progressive cities.

Sustainability and Replicability

While the project terminated in 1999 prior to a replication phase, there are some elements of the project that have been sustained. The Development Academy of the Philippines still uses AUDMP materials in its training courses. Naga City also continues to use the hazard maps and GIS that were introduced by AUDMP.

While there has been no formal replication of the demonstration project, both Naga City and San Carlos City have civil servants that continue to other municipalities to spread the message of hope that the impact from natural disasters can be mitigated through local governments, businesses and the general community working together. Here, we cite in particular the efforts of Ernesto Elcamel, a Project Development Officer for the Naga Municipality, who actively gives speeches to other municipalities in the Philippines.

4.8 Sri Lanka

Country Context and AUDMP focus

The island nation of Sri Lanka experiences heavy rainfall during including two annual monsoons. In some areas, rainfall exceeds 400 centimeters per annum. About half of the natural disasters are floods, which are exacerbated by human activities in both rural and urban areas. Landslides are becoming a more frequent source of loss of life and property and result in erosion, pollution, contamination of water supplies and other hazards.

An ongoing-armed conflict and insufficient resources have hampered attempts at mitigation of these disasters. Two decades of armed insurgency has drained funding for non-military purposes, including urban development and natural disaster management and mitigation. In addition, the government bureaucracy is undergoing reorganization at the national and local levels. In spite of these handicaps, the project's implementing staff has been in place during the whole project implementation period. The prospects of a peaceful resolution of the insurgency offer hope for more funds for government services. The project has also benefited from a pervasive awareness within government as well as the general population of the impact of natural disasters on economic development and the quality of individuals' lives.

The Sri Lanka Urban Multi-Hazard Disaster Mitigation Project (SLUMDMP) aims to reduce the vulnerability of Sri Lankan cities by identifying hazards including landslides and floods. The project focuses on developing tools and skills for incorporating risk management into urban development planning in the demonstration city, Ratnapura and in replication cities, namely Kandy, Nawalapitiya, Colombo and cities along Kelani River. Also, SLUMDMP advocates policy enhancement by revising the Emergency Management and Response Plan in collaboration with the Disaster Management Steering Committee of Ratnapura as well as attempts to institutionalize the subject of Urban Disaster Mitigation in the academic discipline. The Centre for Housing, Planning and Building, in partnership with the National Building Research Organization and the Urban Development Authority implements the SLUMDMP. The following table shows the allocation of responsibilities among the implementing agencies.

Agency	**Responsibilities**
The Center for Housing Planning and Building (CHPB)	Managed project and conducted training
The Urban Development Authority (UDA)	Local level planning throughout country
National Building Research Organization (NBRO)	Conducted landslide studies and hazard mapping

The project began in October 1997 and was completed in October 2003. While the original completion date was February 1999, the project has had five extensions, including four no-cost extensions.

These national agencies worked during the main project phase with selected municipalities during the main phase of the project: Ratnapura demonstration site and the replication sites in the cities of Nawalapitiya and Kandy. Activities in Kandy were focused on a hazard identification workshop, analysis, hazard mapping and the preparation of an environmental map workbook. In Nawalapitiya, activities also included training and promoting awareness among officials and the public.

A second replication phase followed the main project phase and expanded replication activities to Colombo and nearby river towns along the Kelani River. The Colombo Municipal Council joint

activities focused on flood mapping and development of (EMRP). This project worked with selected organizations at the national level.

Project Objectives and Evolution – baseline data collection

The Sri Lanka Urban Multi-Hazard Disaster Mitigation Project (SLUMDMP) aimed to reduce the vulnerability of urban areas from natural disasters. The objectives were to:

- Improve the capacity of municipal officials to manage risk and apply mitigation skills and technologies,
- Improve access to hazard information and skills, and
- Improve the policy environment for disaster mitigation.

Components

SLUMDMP effectively integrated training, information, and networking activities into the demonstration project. The three components formed a coherent strategy for implementing activities and sustaining their benefits.

Demonstration and Project Implementation Framework

SLUMDMP coincided with and influenced the Sri Lankan central government's evolving approach to natural disasters. This approach included the establishment of a central coordinating agency, the National Disaster Management Centre within the Ministry of Social Services, and the designation of a number of technical agencies to support specific disaster management activities. While Sri Lanka engaged in disaster preparedness, SLUMDMP introduced the concept of disaster mitigation.

During 1990 to 1995, the National Building Research Organization (NBRO) implemented the Landslide Hazard Zonation Mapping Project (LHMP), which was supported by UNDP and UNCHS. That project identified the most vulnerable landslide districts in Sri Lanka, seven in all, and prepared a number of detailed 1:10,000 landslide maps that could be used by all government agencies involved in planning in these areas.

During LHMP, NBRO completed mapping for two of the seven most vulnerable districts. SLUMDMP was a natural continuation of LHMP and helped to supplement government funds in two more of the most vulnerable districts. Two more districts subsequently began in 2001 and a final district is to be completed by the middle of this decade. Through working within the government program, SLUMDMP was able to both assist the government in its regular work and to introduce the concept of disaster mitigation to Sri Lanka.

Technical Foundation of Demonstration Project

Sri Lanka has several strong central government technical departments that are responsible for disaster management related fields. The disaster mitigation project built upon these strengths in four ways:

- NBRO undertook hazard mapping in collaboration with professional specialists from a broad range of other technical departments. The LHM Project used six factors in its Landslide hazard zonation maps: slope category, bedrock geology, landform (shape of slopes), land use, human settlement and infrastructure, and hydrology. In order to reduce the amount of time and money required, NBRO for SLUMDMP initiated a rapid assessment process that focused on three factors: bedrock geology, slope range and land use.
- UDA combined the availability of the land use maps with the government's system of urban planning. Local authorities in Sri Lanka do not undertake urban planning on their own but rely on the local office of the UDA. In SLUMDMP, UDA planners were responsible for the preparation of municipal map work books in each of the selected sites.

- NBRO, working with SLUMDMP, developed and published Guidelines for Construction in Disaster Prone Areas, Guidelines for Stabilization of Areas Prone to Landslide Disaster, and associated training for different groups involved in the construction process, including craftsmen and building inspectors. Improving building construction activities was a major goal of the project.
- The project made use of CHBP and other government training arms including the Sri Lanka Institute of Development Administration (SLIDA) for training and public awareness.

Demonstration Sites

The project began its efforts in Ratnapura and had replication activities in Nawalapitiya and Kandy and subsequently Colombo and eleven small towns along the Kelani River.

Ratnapura

The city is the center of gem mining activity in Sri Lanka and the primary demonstration site of the project. The region is subject to annual floods and an ever-present danger of landslides due to topography and land use practices. The project built strong community and political support. The stakeholders appreciated the mitigation activities based upon the hazard mapping. The mayor supported the project, while he was mayor and later when he became chief minister for the Subaragamuwa province and most recently as a Member of Parliament. Ratnapura was also able to take advantage of funds from an on-going Asian Development Bank local government infrastructure project for use in SLUMDMP proposed mitigation activities.

SLUMDMP identified all of Ratnapura's natural disasters. The project analyzed the risks and helped to establish a local disaster management committee with some representatives from the local council. The project worked with the committee and council to prioritize mitigation strategies, prepared a disaster mitigation action plan, and implemented selected mitigation activities. These activities included tree planting, designating emergency evacuation routes, moving the public bus station to a site not prone to flooding, training youth organizations, improving municipal drainage system with ADB funds, and staffing the city fire department.

Nawalapitiya

Nawalapitiya is a town of 14,000 and the first replication site. The project developed hazard maps, an emergency action and response plan, public awareness and training activities.

With support from the Nawalapitiya Urban Council (NUC) and ITDG, an NGO, two Community Based Organizations were established to undertake a forest fire and rock falls mitigation project in Dolosbage and a community drainage project to mitigate landslides in a crowded hillside settlement in Soysadele.

With roughly equal proportions of Sinhala, Tamil and Muslim communities in Nawalapitiya, disaster management could be an issue that would unite these communities.

Kandy

Kandy has a population of 30,000, is a UN World Heritage Site, and is the second replication city. Kandy joined the project as a substitute for another city, so the only project activities have been hazard mapping and a hazard zonation workbook. City officials indicate that they want to continue working with the project partners.

Colombo and Kelani River towns

The project has focused on floods in addition to landslides. In Colombo, the project developed flood maps, which the Colombo Municipal Corporation (CMC) used in its public awareness campaigns. The project assisted CMC in the preparation of an Emergency Management and

Response Plan (EMRP), which has been formally approved by CMC. The project also conducted awareness programs for political leaders.

In each of the Kelani River small towns, the project developed action plans for flood mitigation measures. In this activity, the project collaborated with the Clean Rivers Program of the Ministry of Environment and Natural Resources, which helped to get that Ministry to adopt principles of disaster mitigation in its own programs.

Training

The project held about 30 training activities and over 50 one-day workshops on disaster mitigation related topics. The trainees included profession and technical staffs of government agencies, their contractors, policymakers, NGOs and CBOs and schools. The project provided public awareness activities for these groups and the broader public. CHPB is the NPTI and also the project implementer. This helped with the integration of project components and also kept a focus on building the capacity of partner institutions, particularly local governments.

Project-based training

The project had four categories of project-based training: technical training and training for policymakers, NGOs and schools.

Technical training

The first beneficiaries of technical training were officers of the three government agencies implementing the project (CHPB, NBRO and UDA). Later CHPB with partners designed and offered training to urban planners, construction engineers, and craftsmen.

The project conducted a needs assessment among engineers and craftsmen and used this input to design three training modules:

- Construction considerations in natural-disaster-prone areas (engineers and technicians)
- Crisis management (engineers and technicians)
- Counter-disaster building measures (for craftsmen)

These modules were offered in targeted municipalities, in two provincial governments, and in professional organizations. Attendees for some training programs also included administrative and technical staff of the municipalities, architects and health personnel.

In urban planning, the project trained 60 town planners and 86 town planning assistants in disaster mitigation principles so that this would be part of the standard planning process throughout the country.

Training for policymakers

Policymaker attendees included elected officials at the municipal, district, division and provincial levels. Following elections in 2002, the project offered training to the new elected officials. There was also a special workshop for journalists.

Natural Disaster Mitigation Course in Sri Lanka

Twenty-two participants representing disaster-prone districts in Sri Lanka attended the fifth Natural Disaster Mitigation Course organized during January 2-7, 2003 by Center for Housing, Planning and Building (CHPB) in collaboration with ADPC.

The participants consisted of town planners, engineers, university lecturers, Municipal Council officers, Fire Department's officers, environmental officers, and district land use planners. The

content of the training course was adjusted and re-designed in line with the ADPC's regional training course on Urban Disaster Mitigation to suit the natural disaster environment in Sri Lanka.

Overall response was positive, as the participants were satisfied with knowledge gains and content covered in the sessions. However, some participants perceived the need for extra content areas to suit the changing context in Sri Lanka. This recommendation will be taken into account for further development of the course.

NGO and CBO training

The project invited NGOs and CBOs to send representatives to many of the awareness raising sessions and held one session just for NGOs.

Training for students

As a part of the government's curriculum reforms, the project along with the National Institute of Education (NIE) developed and conducted training programs for GCE 'A' level teachers. The objective was to include disaster mitigation projects and assignments into the curriculum. The NIE now takes charge of the project but still calls on project staff for presentations. The NBRO has provided hazard maps and brochures to teachers.

The project also implemented awareness raising and training activities for students. These included radio and television programs, disaster mitigation orientation sessions for students, teachers and parents, and essay, art and poster competitions and exhibitions. The project prepared a television drama for use in public awareness programs, including a telecast on national television.

National Partner Training Institutions

The project selected two NPTIs: CHPB and the Sri Lanka Institute of Development Administration (SLIDA). The University of Moratuwa also developed a strong training relationship with AUDMP and ADPC.

Center for Housing Planning and Building (CHPB)

The CHPB provides training in construction management and housing and human settlements. The Center presented the Natural Disaster Mitigation course three times:

National Disaster Mitigation Course

Name/Number	Date	Funded by
NDM 1	Oct. 99	SLMDMP
NDM 2	Mar. 00	ITDG and SLUMDMP
NDM 3	Jan. 02	Participant fees, NDMC, SLUMDMP

The NDM course is based on ADPC's Urban Disaster Management Course, which SLMUDMP staff attended. The NDM is an abbreviated five and a half day course based on the two week ADPC UDM course. ADPC staff helped the CHPB adapt the course to Sri Lanka and helped modify the course with feedback from the trainees from the first NDM course. The course materials have not yet been translated into Sinhala and Tamil because of a problem finding translators and the need for a glossary of disaster mitigation terminology.

CHPB has offered the Community-Based Disaster Management (CBDM) course twice, once in Sinhala and once in Tamil. The project sent seven CHPB staff to attend the ADPC training of trainers course for CBDM in Thailand. ITDG South Asia supported the localization of the course for Sri Lanka and two other countries. While the course has been offered in local languages, the materials are still in English.

CHPB has developed a sound curriculum and training materials for the project, using videos, field trips, hands-on exercises, lectures and group discussion. The center will continue to offer the courses as long as the costs can be recovered. Staffs are overworked but manage to produce work of a professional quality.

Sri Lanka Institute of Development Administration (SLIDA)

SLIDA provides training to managers and administrators. Prior to the project, SLIDA had provided a three-day disaster management course. It has given the NDM course an administrative focus, which it presented in September 2001. SLIDA has had more trouble filling up the NDM course than CHPB perhaps because the National Disaster Management Center also focuses on the same target as SLIDA.

University of Moratuwa

The University plans to incorporate elements of the NDM course into its curriculum for undergraduate and graduate programs in architecture, planning and building economics. Rahuna University is also integrating disaster mitigation modules to its courses. The faculty member encouraging these processes attended the 2002 ADPC workshop on "academization" of the UDM course. SLUMDMP will support training of trainers using government funds to be used for additional disaster management training.

Information and Networking

SLUMDMP partners view the information and component as a key mechanism for informing the public and government officials about natural disasters and also as a means of mobilizing support among the government, private sector and general population. The component's aims are to forge disaster mitigation partnerships at all levels of government and within project site communities and to develop disaster mitigation materials, including lessons learned materials, to disseminate to various project stakeholders.

Public awareness strategy

CHPB formulated an outreach plan and a public awareness strategy. CHPB sought to introduce and define key concepts for different levels of society. The focal groups comprised (1) those vulnerable to natural disasters, (2) those whose behavior contributes to disaster risk, (3) those who plan or implement disaster mitigation activities, and (4) those responsible for training, education, public awareness campaigns, and dissemination of disaster management information. The strategy has had a positive impact in all of the project sites. The project forged linkages to the Central Environmental Authority, which included disaster mitigation topics into its "environmental circles" within the school system.

Information sharing tools

The project generated a wide range of information products in local languages, including the "Vipath Puwath" newsletter, leaflets on floods, landslides, etc. These are circulated at awareness-raising events and one-day workshops.

The project has used all forms of media to get the disaster mitigation message out. The television drama "Of an Event Foretold" was broadcast nationally and was selected by UNESCO for showing at the Himal Association of Kathmandu. Television and radio channels have also broadcast discussion groups on disaster mitigation. The project also provided workshops for journalists. Local newspapers have printed disaster mitigation articles geared towards parents and school children.

Disaster Safety Day in Sri Lanka

The second Disaster Safety Day was held in Ratnapura on March 16, 2003, one day prior to the 8th AUDMP Annual Working Group Meeting in Colombo. This event was organized by the Sri Lanka Urban Multi-Hazard Disaster Mitigation Project (SLUMDMP) in collaboration with the Sabaragamuwa Province Chief Minister's Office and Ratnapura Municipal Council with an objective to promote public awareness, particularly among school children, teachers, and parents, on the significance of disaster mitigation and preparedness.

The representatives of AUDMP partner countries, OFDA/USAID who were in Sri Lanka to participate in the 8th AUDMP Working Group Meeting also visited Ratnapura and participated in the activities organized on Disaster Safety Day. Activities conducted to celebrate this special occasion included an art and poster exhibition, a procession of school children from Bus Stand to Ratnapura Town Hall, awareness sessions for school children conducted in Ratnapura Town Hall, prize giving and certificate awarding to the winners of the Art and Poster Competition 2003. Discussions in an attempt to make Disaster Safety Day a national event are underway.

Major Accomplishments

Demonstration projects

While disaster preparedness existed in Sri Lanka, the project introduced the concept of disaster mitigation.

The three implementing organizations worked well together. While originally the three organizations were in the same Ministry, they were separated. The links that had already been forged survived the reorganization. The three organizations incorporated disaster mitigation concepts into their daily work throughout the country.

The project introduced a streamlined, faster and cheaper hazard mapping process. By combining the hazard mapping with the UDA's planning function, the hazard maps became accessible and user friendly to local authorities.

The project prepared guidelines for building construction, especially building retainer walls. This holds promise of making buildings more disaster resistant and changing the building industry in Sri Lanka.

In the main participating cities, Ratnapura, Nawalapitiya and Kandy, the project created political enthusiasm and some concrete mitigation measures. In Ratnapura, a disaster mitigation mentality is taking hold. The city now has a crosswalk bridge that spans a flood zone so that people can be evacuated in the event of flooding. The bus station was also moved to higher ground. The project also encouraged the construction of a water drainage system in a low-income community on a hillside and a firebreak on a hillside where landslides damaged poor homes.

Training

SLUMDMP successfully integrated high quality training into demonstration and replication activities. Training courses included the Natural Disaster Mitigation course, targeted training for different stakeholders, and awareness raising events, which increase the demand for training.

The project trained Sri Lanka's entire cadre of urban planners and their assistants in disaster mitigation. The planners are attached to the regional offices of UDA, through which they offer their services to local communities and to whom they have disseminated the disaster mitigation message.

Information and networking

In all project sites, SLUMDMP worked through city councils and community-based organizations. Most council members have attended project workshops or training and are involved in community outreach or technical disaster mitigation projects. The project worked through CBOs and NGOs to spread the mitigation message to school children, religious institutions, architects, the business community, universities, and international NGOs, which resulted in some outside funding. The spread of the message to so many different groups encouraged maximum community involvement and ownership of the projects and the public awareness campaigns.

At the national level, the project sponsored a wide variety of public awareness activities and distributed information products. In January 2002, the project conducted an awareness-raising workshop for three departments of the University of Moratuwa (Town and Country Planning, Architecture, and Building Economics). In July and August 2002, the project conducted three one-day workshops for professionals, planners and politicians with a specific disaster mitigation focus that catered to their needs.

Significant Shortcomings

Demonstration projects

The National Disaster Management Center (NDMC), located within the Ministry of Social Services, is the lead national disaster management agency. However, the NDMC is focused on disaster response and not preparedness or mitigation. This means that the government is not yet talking with one voice on the importance of disaster mitigation.

Many of the reforms advanced by the project require council or government approval of plans and regulations. Due to the short life of the project, some of these formal approvals were not sought. Given the periodic changes in the composition of the councils and government, there is a need to keep training the new members of the councils and government.

While the project did a good job involving the different levels of government in the project, community participation in the design and implementation of the project was less than it was in some other AUDMP countries.

Training

CHPB is overworked and understaffed. Because the quality of its programs is good, CHPB is creating demand for further assistance that it cannot meet. At a workshop for 12 local authorities representing 12 districts, several requests cam for further assistance. If it does not respond, there is a danger that the momentum of the mitigation message will slow.

Information and networking

While high quality information tools were created, there is a need to improve the information sharing and networking activities. Public libraries are a new option to explore. There is also a need for more materials in local languages; however, CHPB does not have the time or resources to devote to translation.

While CHPB has made progress within municipal councils and local communities, more needs to be done at the national level. At the time the project started, there was political turmoil at the national level that made working with local communities logical. However, the project should shift some of its attention now to the national level to build national networks among the various ministries committed to disaster mitigation.

Links to AUDMP and other organizations

SLUMDMP has had good interaction with ADPC and AUDMP. All of the project partners have sent a total of 24 people to participate in ADPC's regional training. This includes eight people for UDM, 11 people for CBDM, and five people for TRMC. In addition, ADPC has sent staff and consultants to assist in each of the NDM courses.

The project initially relied on AUDMP for sample information products and tips on how to distribute them. AUDMP also made useful suggestions on networking opportunities, particularly with universities. While CHPB knew of links that AUDMP established for its partners; however, it did not use them beyond occasional emails. This was due in part to the high costs of internet usage and the slow speeds.

Budget Highlights

The Sri Lankan project fully utilized the amount budgeted for Sri Lanka; although the project under spent in the First Phase and overspent in the Second Phase. While the budget for the First Phase was $285,000, the project only spent $267,519.54. While the Second Phase only had a budget of $70,573, the project spent $107,806.41. The excess amount is accounted for by AUDMP centrally funded expenditures on the local project's behalf. For the two phases combined, the project overspent but by about 6%; while the combined budget was $355,573, the total expenses amounted to $375,320.95.

Lessons Learned

NGOs can implement training and public awareness programs

Working together with Non Governmental Organizations (NGO) in the implementation of training and public awareness programs is a successful strategy. Nevertheless, choosing the right organizations as partners is essential. In Sri Lanka, AUDMP was not afraid to change the initial partners to achieve a correct balance. In Sri Lanka, the combination of training, technical mapping and urban planning organizations was successful because each agency brought different expertise to the project and was a dedicated partner.

Having the implementing organization (CHPB) as the NPTI ensures that the country's disaster management and mitigation situation are reflected in the training curriculum that the project develops.

More weight should be given to the long-term costs of public awareness activities at the time of project design. CHPB felt that it should have allocated more of the budget to awareness activities during the life of the project.

Government can facilitate implementation and public awareness

Cooperation of local political leadership and officials is essential for successful implementation of activities. Without enforcing regulations and mandatory guidelines, such as, Acts of National Authorities, Statutes of Provincial Councils and Ordinances or Acts of Local Authorities, it is difficult to make the people and officials use them effectively.

Getting political commitment is mandatory for a successful public awareness program as the government's backing of the program raises its profile and encourages inter-ministerial and inter-departmental cooperation. Government financial support is necessary for sustainability of public awareness campaigns.

It is desirable that at the time of formulation of a project of this nature, the Cabinet Memorandum, which provides statutory empowerment, addresses the issue of co-ordination between relevant organizations in order to evoke mandatory co-operation between them. Such an arrangement would have facilitated the acquisition of data and maps that were necessary to expedite the

project. It would also have provided more flexibility at UDA to commission staff to the project component of mapping by relieving them of their normal chores and duties.

SLUMDMP's strategy of working with provincial councils and then implementing replicating projects in the same province was effective but requires that there are resources available to continue the activities in the province.

NBRO should do landslide mapping but UDA can do other types of mapping

At Local Authority level, NBRO should handle landslide mapping, being a very specialized activity, while UDA planners at the local level can prepare flood maps and other minor hazard type maps. However, as UDA planners do not possess the skills necessary training must be provided.

EMRPs must be kept simple

An EMRP developed to be used during a disaster, must be simple, so that those involved will find it easy and convenient to act according to the instructions provided

Training professionals during their university training is most effective

It is beneficial to expose university students, to disaster mitigation subjects in their degree and postgraduate courses. This is more effective than training them after they become professionals and enter their respective industries

Sustainability and Replicability

The three implementing agencies (CHPB, NBRO, and UDA) have the capacity but not the funds to plan and carry out disaster mitigation activities at the municipal level. Political commitment at the local level has been strong. The spread of the mitigation message appears to be more from city to city within the same province rather than from the national government to the local authorities because of weak national disaster mitigation policy and because the people actually implementing the projects tend to work on the local level. Thus far the scope of the project has been limited to the four cities where mitigation activities have been implemented. Another concern is that the lead agency, the CHPB, is a training institution and not a project implementer. While the National Disaster Management Center should have such implementation as part of its mandate, the NDMC has not been active in policy advocacy or guidance.

While there is no indicator of how many cities need to be reached before the mitigation activities spread through the whole country, there are clearly opportunities to extend the project's activities to other cities.

SLUMDMP Consolidation Phase

The consolidation phase started on April 1, 2003. Activities included multi-hazard mitigation, training and public awareness, and information and networking. Accomplishments of the reporting period could be summarized as follows: -

Community Based Landslide Mitigation Project

SLUMDMP initiative to identify a suitable project in Kandy had to be dropped due to floods and landslides. SLUMDMP was requested by Educational Administrators in Ratnapura to strengthen school buildings, which were damaged by flood and landslide disasters that had occurred in the area. Therefore SLUMDMP, with the concurrence of the Department of Education, initiated action to select a damaged school to be implemented as a community based landslide mitigation project in Ratnapura. Investigations have been initiated to identify the suitable site out of three proposed by the Provincial Department of Education, Sabaragamuwa Province, Ratnapura.

Community Based Flood and Drought Mitigation Project

The originally selected site was changed due to insufficient financial provisions set apart for this activity compared to the estimated cost of work involved. An alternate site i.e. Medawewa Tank, Adippala has been selected and would be fully supported by community members such as Adippala Farmer's Society, International Health Organization (IHO), Pradeshiya Sabha, Divisional Secretariat and Agrarian Services Department etc. The work on this activity began in July 2003.

Glossaries of Technical Terms (Sinhala & Tamil)

The first draft of the English/Sinhala Glossary was completed and circulated among the Panel of Advisors for their comments and suggestions. Work on English/Tamil Glossary will be started with the finalization of English/Sinhala version.

4.9 Thailand

Country Context and AUDMP focus

While ADPC has been based in Thailand since the mid-1980s, the Center only began to become involved in disaster mitigation in Thailand since it became an independent Thai foundation in 1998. Since then, through continuing dialogue with Thai officials and the organization of an April 2002 seminar on institutional arrangements for risk management, ADPC has begun to play a role in disaster issues and in helping to clarify the appropriate institutional arrangements for disaster management. Legislation passed in 2002 concerning disaster management reflected the input from ADPC. As a result, ADPC's reputation in Thailand has been enhanced and disaster management issues have attained a higher profile in Thailand.

In the Second Phase of AUDMP, which terminated at the end of 2003, the April 2002 seminar and a proposal for a Thailand Urban Disaster Mitigation Project were the major outputs. The TUDMP will be implemented in the third phase of AUDMP, which began in January 2004.

The Thailand Urban Disaster Mitigation Project (TUDMP) aims to reduce disaster vulnerability of urban populations, lifeline facilities, infrastructure and shelter to natural hazards through demonstration activities and training. Hat Yai and Klong Luang are the TUDMP□s project sites due to their history of annual catastrophic floods. The partner for implementing the project is the Faculty of Natural Resources, Prince of Songkla University, Hat Yai, Songkla Province. TUDMP targets to establish disaster management committees at the city levels to prepare action plans for flood mitigation, which focuses mainly on non-structural mitigation measures. The project also aims to establish a Regional Disaster Management Study Center at Prince of Songkla University to act as a research center on disaster management and related topics in order to sustain mitigation activities initiated under TUDMP.

Project Objectives and Evolution

The Thailand Urban Disaster Mitigation Project (TUDMP) will take place in two cities, Hat Yai in southern Thailand, and Klong Luang Municipality in the Pathumthani Province outside of Bangkok. The majority of activities will be centered on Hat Yai. The project proposal has the following five objectives:

- To introduce a sustainable operational strategy at the city level for disaster management.
- To promote appropriate disaster mitigation practices.
- To improve the capacity of local government officials to evaluate hazards and apply mitigation skills.
- To demonstrate methodologies for capacity building to improve community understanding of disasters and disaster mitigation.
- To advocate for the replication of disaster mitigation activities throughout Thailand.

Components

Demonstration

Hazard and Vulnerability Assessment

As part of its demonstration phase activities, the compilation and analysis of information/data relating to the physical environment of Hat Yai Municipality as well as historical information/data on the occurrence of previous flood events has been conducted by Hat Yai Demonstration Project team in order to create hazard and risk maps of Hat Yai. Up to this period, more than 90% of the assessment works have been completed so far.

Hat Yai Disaster Management Committee

Hat Yai Disaster Management Committee under the chairmanship of the Mayor of Hat Yai was established in March 2003. The Governor of Songkla Province is an Honorary Chief Consultant of the Committee.

Prince of Songkla University (PSU) in collaboration with Hat Yai Municipality will conduct a workshop at the end of the project implementation Phase I. The workshop will combine together an orientation meeting of Hat Yai Disaster Management Committee, a workshop on flood disasters and the use of hazard and risk maps. These subjects can be combined as the targeted audiences for these subjects are the same and the project period is very limited. The workshop's objectives are to introduce the project to authorities and key stakeholders concerned, explain how to produce and utilize hazard and risk maps, and propose the Hat Yai Action Plan to participants for comments.

Strengthening Disaster Mitigation in Thailand

February 14, 2003 marked a significant occasion for ADPC when a Memorandum of Understanding (MOU) was signed with the Department of Disaster Prevention and Mitigation (DDPM), the new Thai Government agency. Present at the signing ceremony included Mr. Kosin Ketthong, DDPM Director General; Dr. Krasae Chanawongse, Advisor to the Prime Minister and ADPC's Chairman of Board of Trustees; Mr. Pairote Promsarn, Deputy Permanent Secretary of the Ministry of Interior; and Dr. Suvit Yodmani, Executive Director of ADPC.

As part of the Thailand Urban Disaster Mitigation Project (TUDMP), the MOU facilitates collaboration between ADPC and DDPM in strengthening disaster management in Thailand, following a restructuring of the bureaucracy in October 2002. ADPC will play an important role in providing technical assistance in building capacity of DDPM officials in respect to disaster management.

Training

Establishment of Disaster Studies Center

Prince of Songkla University has established a Disaster Studies Center at the Faculty of Natural Resources on November 1, 2002. The Center will serve as an office of Hat Yai Demonstration Project where Dr. Charlchai Thanavud has been appointed by Prince of Songkla University as the director of the center as well as a project manager of Hat Yai Demonstration Project.

Seminar on Thailand Disaster Management Strategy in Bangkok

TUDMP/ADPC organized a seminar on "Thailand Disaster Management Strategy" on March 10, 2003 in Bangkok, Thailand. The seminar brought together nearly 200 representatives from 20 different government departments related to disaster management and other organizations, including the media, Non-Government Organizations (NGOs), and Inter-Government Organizations (IGOs). The seminar's objectives are to provide a forum for the participants to learn, discuss and strategize disaster management in Thailand under the new bureaucratic restructuring in order to determine their roles before, during and after disasters. The seminar also provided an opportunity for ADPC to formally introduce itself, AUDMP and TUDMP to policy makers, decision makers, government officers and other key stakeholders in Thailand as well as to establish linkages and cooperation among the various agencies.

At the seminar, the strategies for dealing with the country's four identified major disasters, comprising natural disaster, fire disaster, chemical disaster and traffic related disaster, were detailed out through group work. These strategies were discussed extensively among the participants in order to find ways to enhance disaster management in Thailand. Based on the strategies identified at the seminar, the DDPM will eventually produce a Thai Disaster Action Plan for future implementation.

Institutionalization of Foundation Level Disaster Management Course

The TUDMP/ADPC in collaboration with the Department of Disaster Prevention and Mitigation (DDPM) organized training of trainers (TOT) courses on Natural Disaster Management (NDM) and Community Based Disaster Management (CBDM) for DDPM officials and other officers from organizations concerned with disaster preparedness operations. The project conducted an NDM course on June 30 – July 4, 2003 and a CBDM course on July 7 - 11, 2003 at the Bangpoon Training Center, Pathumthani, Thailand.

The training courses aim to provide a strong foundation and increased confidence for DDPM staff that could become trainers or potential trainers in disaster prevention and mitigation. The course aims to provide more confidence and to enable participants to become core trainers after completing the two courses. NDM aims to provide generic concepts of Disaster Management to participants, and CBDM aims to impart community-based knowledge and skills through more participatory and exercise-based lessons, the participants of two courses would be the same group so that they could have an opportunity to learn and gain both theories and techniques in disaster management.

In its capacity to deliver expertise and experience in disaster mitigation through training in order to further develop and strengthen the capacity of DDPM, TUDMP/ADPC will provide technical support to the training courses in forms of course curriculum, resource persons (both Thai and foreign) and course materials.

Budget Highlights

The TUDMP activities occurred only during the Second Phase of AUDMP. The budget and expenditures for these activities was $110,508.65.

Sustainability and Replicability

While ADPC was originally a part of the Asian Institute of Technology, its spin-off as an independent Thai foundation expanded its mandate to specifically include Thailand. Up until then, ADPC had not implemented any projects for Thailand in spite of its Thai base. Since the spin-off, the Thai character of ADPC has been enhanced with more senior management roles for Thais. ADPC today is an organization that is more sensitive to the needs for enhanced disaster management and mitigation efforts in Thailand and is committed to making a contribution to these efforts in its host country. ADPC looks forward to implementing the TUDMP activities in the third phase of AUDMP in 2004.

4.10 Vietnam

Country Context and AUDMP focus

Vietnam is subject to typhoons and extreme flooding. Various international NGOs and donors work in disaster management in Vietnam, including ADPC, which manages USAID's Extreme Climate Events program.

Following consultations between AUDMP, the Vietnam Red Cross (VNRC), and a number of Vietnamese government departments, the Vietnamese Ministry of Construction requested assistance from AUDMP. On September 4 and 5, 2002, AUDMP organized a Workshop on Safer Shelter in Vietnam in collaboration with the Ministry of Construction, the Vietnam Red Cross, the International Federation of Red Cross and Red Crescent Societies Disaster Management Center, and the Central Committee for Flood and Storm Control.

After the workshop and consulting with both government and non-government organizations, AUDMP developed the September 2002 Vietnam Urban Disaster Mitigation Project (VUDMP). The project aimed to promote sustainable human settlements in Vietnam by reducing the vulnerability of urban populations, lifeline facilities, and infrastructure to floods and typhoons. Quang Tri and Thua Thien Hue, two provinces in Central Vietnam, were identified as the project□s sites. The project proposal built on the experiences and lessons of existing reconstruction and mitigation projects implemented by other organizations, including the Vietnam Red Cross and IFRC. The project□s implementation strategy consists of five components: Integration of Risk Assessment in Development Processes; Development of Shelter Delivery Systems; Capacity Building; Knowledge Networking for Disaster Mitigation; and Replication.

The major organizations that were to be responsible for implementation of the VUDMP were the VNRC and the Ministry of Construction with active participation from three agencies within the Ministry of Agriculture: the Central Committee for Flood and Storm Control (CCFSC), the Disaster Management Center (DMC) and the Disaster Management Unit (DMU). The VNRC was to establish a project management unit to undertake the project.

In the end, AUDMP did not fund the proposal because of the short time left in the Second Phase of the program and concerns about the project responding to a central planning rather than a market demand orientation.

Project Objectives and Evolution – baseline data collection

The goal of the VUDMP is to promote sustainable housing delivery mechanisms in Vietnam in order to reduce flood and typhoon vulnerability of urban populations, lifeline facilities, and infrastructure. Structural mitigation and training activities were to focus on two provinces, Quang Tri and Thua Thien Hue.

In addition to capacity building for participating organizations and public awareness efforts, the project was to emphasize the development of alternative shelter delivery options. It was to be AUDMP's first effort to focus in a comprehensive manner on shelter systems and to assist middle-income beneficiaries.

Components

Training

The Workshop on Safer Shelter in Vietnam was held from 4 to 5 September 2002 at the Vietnam Trade Union Hotel, Hanoi, Vietnam. The Workshop aimed to gather inputs, suggestions and ideas for an Urban Disaster Mitigation Project in Vietnam as part of AUDMP.

The Workshop drew 28 participants and the expertise of five resource persons. The breakdown of these is shown below:

Breakdown of Participants to Safer Shelter Workshop

	Resource Persons	Participants	Total
AUDMP/ADPC	2	3	5
Ministry of Construction		6	6
Vietnam Red Cross		3	3
IFRC		2	2
Disaster Management Center, Central Committee for Flood and Storm Control		1	1
Catholic Relief Services		3	3
Danish Red Cross		3	3
USAID		1	1
Others	3	6	9
Total	5	28	33

The two-day workshop was divided into four half-day sessions to review, analyze and discuss:

(1) the hazards, vulnerability and risks in Vietnam

(2) shelter delivery systems in Asia and Vietnam

(3) techno-financial mechanisms in Asia and Vietnam for the delivery of safer shelters

(4) promotion of safer construction through awareness raising and capacity building

This workshop provided valuable inputs towards the design of the Vietnam Urban Disaster Mitigation Project proposal.

This project would have been a mechanism for AUDMP to support research on better construction techniques and improved building materials. This is potentially a good direction for AUDMP and ADPC.

Significant Shortcomings

The project proposal may have placed too much emphasis on connections with the government and not enough on community activities. While AUDMP strove to work with NGOs and communities, it also had to be sensitive to the priorities of the Vietnamese government.

The emphasis of the proposed project was to develop financial mechanisms to provide safer and better housing to middle income beneficiaries. This would have been a departure from the AUDMP approach in other countries where the target has been the poor.

Budget Highlights

Activities in Phase I of AUDMP for the Vietnam program had a budget and expenses of $13,796.04. The Second Phase budgeted and expensed $27,249.69, largely for a workshop. Total budget and expenses totaled $41,045.73.

Appendices

Appendix 1. Monitoring & Evaluation Matrix

Performance Indicators	Baseline	Life of Program Target	Achievement To-Date	Comment on Progress
PROGRAM OBJECTIVE No. 1: Establishment of sustainable public and private sector mechanisms for disaster mitigation in Asia				
Indicator No. 1: No. of operational plans developed with resources identified by national collaborating institutions to carry out mitigation measures after demonstration activities end	0	10 plans	10	Bangladesh: Disaster Mitigation Plans for (1) Gaibandha and (2) Tongi MC areas Indonesia: (3) 1 Action Plan completed in Bandung in Apr 99 in collaboration with RADIUS IUDMP established Center for Research on Disaster Prevention and Mitigation at ITB (2002) Lao PDR: (4) Integrating risk map into URI City Planning Nepal: (5) DMC of Ward No.34 of Kathmandu Municipality prepared a plan for ward level disaster reduction Apr-Jun 2000 quarter (6) 1 Kathmandu Valley's Earthquake Risk Management Action Plan completed in Dec 98 Philippines: (7) 1 Naga City Disaster Mitigation Plan in the Philippines Jul-Sep 2000 quarter Sri Lanka: 2 Action Plans completed – (8) in Ratnapura, in Sep 98 & (9) in Nawalapitiya in Mar 99. Nawalapitiya received a 100% increase in budget allocation of the amount SLR200,000 for DM for Y2001 In replication phase, (10) SLUMDMP integrating Kelani Disaster Mitigation Action Plan into the National Program of Clean Rivers implemented by the Ministry of Forestry and Environment. Development of Disaster Mitigation Steering Committees (see MAH Jul/Aug 2001) Thailand: Hat Yai UDM Plan in pipeline

Performance Indicators	Baseline	Life of Program Target	Achievement To-Date	Comment on Progress
Indicator No. 2: No. of replications or adaptations of mitigation skills and procedures promoted in AUDMP demonstration activities by other organizations, communities, or countries in Asia	0	25 replications or adaptations	21	In Bangladesh: (1) Design of BUDMP based on lessons learned from the CBFMP. (2) Replicate BUDMP in 5 municipalities, namely Bhuapur, Shahzadpur, Goalanda, Dohar, and Bhairab. In Cambodia: (3) AAH signed MOU with CRC to train RCVs in Thong Khuom District of Kampong Cham; (4) Jul-Sep 2000 quarter DIPECHO approved IFRC's proposal to expand CBDP under CBFMP. (5) Activities of CBFMP institutionalized in CRC In Indonesia: (6) Received US$10,000 from UNCRD for EQ safe schools in Bengkulu Jul-Sep 2000 quarter. (7) Rapid risk assessment methodology replicated in Bengkulu, Denpasar, Palu and Manado during Jul-Dec 2001 and completed in Jul 2002. (8) As of Oct 2001, Ministry of National Education replicates SES TOT to other regions (2 training courses were implemented in Sep and Oct 2002) with funds from UNICEF (9) Institutionalized Earthquake Safety Program within the Ministry of National Education In Lao PDR: (10) Fire Risk Map replicated in Pakse (11) Training of Town Planners, course content adapted from SLUMDMP In Nepal: (12) the replication cities of Pokhara, Byas, and Banepa Municipalities have agreed to work with NSET on EQ Risk Management Planning. Workshop to officially launch EQ reduction activities in Dharan was held on 27 November 2000 (13) The Ministry of Home implemented a 2 year project on EQ Risk Reduction in KV with assistance from JICA in 2001/2002 (14) Replication of school retrofitting and reconstruction as part of the SES Program – 4 schools completed for ESD2001, 3 schools in pipeline for 2003 (15) Gorakha replicates SESP; (16) Books for Nepal replicates SESP (17) ESD 2002 hosted by Lalitpur Sub-Metropolitan City, ESD 2003 planned to be hosted by Bhaktapur (18) Consolidation phase started in Jan' 03 in 3 municipalities, namely Pokhara, Byas, and Banepa. With progress on the consolidation work, decision was taking to consider Dharan municipality as the 4th municipality under KVERMP consolidation phase In Sri Lanka: (19) Course on construction in disaster prone areas institutionalized at the Ministry of Local Government and Provincial Councils; (20) NIE institutionalize school teachers training on DM; (21) Disaster Safety Day in Ratnapura on 6 April 2001 and 16 March 2003 replicating Nepal's Earthquake Safety Day

Performance Indicators	Baseline	Life of Program Target	Achievement To-Date	Comment on Progress
Indicator No. 3: Amount of investment from non-AUDMP funding sources attracted by program and demonstration activities	US$7,268,090 Cumulative expenditure up to June 2003	Additional 5% in excess of required 15% committed by ADPC and project partner institutions, from local, reg'l or int'l sources, against total expenditure under AUDMP	From ADPC & 9 country project partners: TAC: US$1,128,018 (26%) (Total Actual Contributions from ADPC and country project partners against cumulative expenditure up to the end of the reporting period)	ADPC (since Feb 97) Contributions to Academization of UDM in Universities About USD 70,000 Contributions to Bali Workshop US$43,653 Total Actual Ctrbn (TAC): US$141,771 Bangladesh Total Planned Ctrbn (TPC): US$54,992 (25%) TAC: US$39,522 (18%) Cambodia (inc. rep. phase) Received funding from DIPECHO for CBFMP activities TPC: US$30,433 (15%) TAC: US$14,319 (20%) India TPC: US$76,930 (31%) TAC: US$52,297 (53%) Indonesia IUDMP received funding from IDNDR Radius Project (US$20,000) and UNESCO Project; and US$10,000 from UNCRD; MoE contributed to first batch of participants for ToT training; Local government sponsored participants to national LLW during Jul-Dec 2001; UNICEF contributed US$29,000 for ToT training. TPC: US$52,057 (29%) TAC: US$78,155 (26%) Lao PDR TPC: US$25,809 (26%) TAC: US$40,020 (50%)

Performance Indicators	Baseline	Life of Program Target	Achievement To-Date	Comment on Progress
Indicator No. 3 (Con't):				Nepal GHI committed US$45,000 for the implementation of SES Program; UNCRD committed US$15,000 for developing a system of mason/teachers training; OFDA intends to provide an institutional support grant of US$450,000 for 3 years to NSET; Funds for training by OFDA, UNDP, WHO, SEARO; Funds from UNESCO to develop school construction manual; Funds from JICA to replicate SESP TPC:US$188,914 (47%) TAC: US$284,874 (77%) Philippines TPC: US$140,156 (51%) TAC: US$101,107 (62%) Sri Lanka From UNDP to NBRO for mapping Rs.346,000; for printing school books US$36,000; R&D Workshop Rs.500,000; From ITDG for printing construction guidelines Rs.100,000; Rain-induced Earth Failures Rs.75,000; NIE Rs.955,000; Ins. Corp. for Teledrama Rs.64,000; Land Use Training by NBRO Rs.150,000; Trainer Training (CBDM-4) Rs.257,449.71 (2 participants); Awarded APMN's grants for activities in SLUMDMP US$2,900; For NDM-2, ITDG contributed Rs.450,000; Funds from ADB, NDM-4 Govt. contributed TPC: US$212,839 (55%) TAC: US$362,787(111%) Thailand TPC: US$15,664 (26%) TAC: US$ 6,438 (14%)
Indicator No. 4: Number of households potentially benefiting from AUDMP activities to reduce vulnerability	0	100%	43,191	5496 households of 15 communities received benefit from CBFMP, Cambodia Lao PDR estimated that 15,000 households in 100 communities has benifitted 1500 reported by IUDMP through their public education campaign + workshops in schools Sri Lanka estimated that 50% (21195) of the population of the Ratnapura MC area has benefited

Performance Indicators	Baseline	Life of Program Target	Achievement To-Date	Comment on Progress
Result No. 1	Improved capacity of municipal officials to manage risk and apply mitigation skills and technologies			
Indicator No. 1.1: No. of new or improved assessment methods and guidelines/standards used for public and private sector development	0	10 new or improved methods, standards or guidelines	23	In Bangladesh: (1) City-level community-based risk assessment methodology developed by BUDMP. Ward level flood maps integrated into municipal-level map during Jan-June 2001 (2) BUDMP Training Manuals on Disaster Risk Mitigation (3) Vulnerability assessment using PRA tools and (4) Geographical Information System software In Indonesia: (5) Standard Operating Procedure of SATLAK PB improved Oct-Dec 1999 quarter; (6) Technical guideline on building regulation; (7) Guideline (leaflets and booklets) on earthquake resistant simple building planning and construction, both developed Jan-Mar 2000 quarter; (8) Bandung Earthquake Scenario; (9) Rapid risk assessment method consolidated and replicated; (10) 3 manuals for SES training for teachers, both during Jul-Dec 2001 In Lao PDR, (11) Created fire risk maps for Vientiane and Pakse – methodology will be replicated in 2 other cities, namely Luang Prahbang and Suwannaketh (12) Produced community fire risk map in Oct 2002. (13) Established Fire Code and improved standard operating procedures at Fire Brigade In Nepal: (14) School Earthquake Safety Manual in 1999; (15) KV Earthquake Scenario; (16) Projection of Education Buildings Against Eqs: A Manual for Designers and Builders, January 2002 In Ratnapura, Sri Lanka: (17) rapid assessment method developed by NBRO in Phase 1 (18) building regulations revised to include disaster impact; (19) construction guidelines in disaster-prone areas completed; (20) planning guidelines for use in disaster prone areas; (21) procedures developed for risk based mitigation planning approach; (22) risk control planning workbooks developed for integration of natural hazards into the planning process (23) procedures for integration of hazard maps promoted and training provided to UDA planners in 3 cities, all by March 1999. In the replication phase, there are plans to improve guidelines for construction in disaster prone areas and adoption of legal provisions to make the guidelines mandatory; create flood mapping models of CMC; & develop a handbook for school teachers on natural disaster aspects for projects & assignments. Also in process of incorporating guidelines for housing in natural disaster prone areas in the Environmental Guidelines for the Housing Sector developed by the Ministry of Housing and Plantation Infrastructure and the Ministry of Environment and Natural Resources In Thailand: In process of flood risk assessment in Hat Yai

Performance Indicators	Baseline	Life of Program Target	Achievement To-Date	Comment on Progress
Indicator No. 1.2: No. of emergency preparedness and response plans written or revised to reflect improved information on hazards and vulnerability	0	8 plans written or revised	5	Bangladesh: Contingency Plan developed for (1) Gaibandha and (2) Tongi during Jan-June 2001 approved by MDMC Both plans revised bw Jan-June 2002 Indonesia: (3) Bandung Emergency Response Plan completed Jan-Mar 2000 quarter Nepal: Nepal Telecommunications Corporation (NTC) has expressed interest in working with NSET to develop an Emergency Response System for NTC Nepal: NSET will be working with NZ volunteers and Bir Hospital to develop emergency response system for Bir Hospital starting from Oct. 2000 Nepal: A guideline for emergency response planning for schools in KV, Nepal will be prepared. Pilot plans will be prepared for 3-4 schools Sri Lanka: (4) Ratnapura EMRP was completed in the Jan-March 1999 quarter; and enacted at Provincial Council level; (5) EMRP for CMC completed during Jul-Dec 2001
Result No. 2 Improved access to hazard mitigation information and skills (e.g. techniques, methodologies, experience) through the region				
Indicator No. 2. 1: Percent of public and private sector professionals with AUDMP-initiated disaster mitigation training who are employed and using the knowledge gained in fields impacting disaster management or urban development	0	75% of all trainees (Goal: 112 out of approx. 150 trainees over LOP)	Average 95%	Regional training courses UDM-1 held Oct. ’97 – 22 trained UDM-2 held May ’99 – 32 trained TRMC held Nov ’98 – 22 trained UFM-1 held Sep ’00 – 29 trained UFM-2 held Sep ’01 – 28 trained EVRC-1 held May ’02 – 25 trained EVRC-2 held Nov ’02 – 25 trained FRM-3 held Sep ’02 – 17 trained FRM-4 held Jan’ 03 – 21 trained EVRC–3 held Jun ’03 – 35 trained Planned regional courses include: FRM-5, DRC-1 FRM-5 planned Sep’03 in China DRC-1 planned early ’04 in Thailand

Performance Indicators	Baseline	Life of Program Target	Achievement To-Date	Comment on Progress
Indicator No. 2. 1 (Con't):				National Training Courses In Bangladesh, foundation course conducted in October 2000 for BUDMP staff and PNGOs; 60 volunteers trained to carry out BUDMP activities; training for municipal disaster management committee members; SIC training – 279 trained (100%) In Cambodia, 84 Red Cross Volunteers (RCV) were trained in Phase I and 75 RCV in Phase II. Total: 159 (100%) In Indonesia, 45 staff of City Government of Bandung and 25 journalists were trained in disaster-related issues. Total: 70 (100%); In Bengkulu, 46 attended the training program on earthquake resistant building in September 2000; 60 teachers trained in SES in October 2001 2 ToT courses under the Earthquake Preparedness Program for Schools were conducted and 60 participants from school community were trained for each course In Lao PDR, UDM-1 in March 2000 (29 trained), UDM-2 in July 2000 (21 trained), UDM-3 in Dec 2002 (25 trained) 160 volunteers trained on community-based fire prevention in Feb 2003. ToT on Fire Fighting and Fire Rescue – 10 trainers trained in March 2003. Training on Fire Fighting and Rescue for Fire Brigade Officials in May 2003 – 44 officials trained. First Aid Training for Vientiane Traffic Police in May 2003 – 16 trained Land Use Planning Course in June 2003 (about 25 trained) In Philippines, UDM-1 in March'03 UDM-2 in May' 03 In Nepal 724 professionals are trained and currently active in risk reduction activities (100%) UDM-1 in May 2001 (30 trained) In Sri Lanka for CHPB's NDM-1 (28 trained), NDM-2 (22 trained) NDM-3 (16 trained); NDM-4 (19 trained); for SLIDA's NDM-1 (34 trained); CBDM-1 in Oct 2001 (21 trained); 19 profs. from NBRO, CHPB, NDMC, UDA, RMC, Nawalapitiya UC, CMC trained in UDM, TRMC, CBDM & DMC; 65% (Kandy MC staff were not trained due to delay in Council selection for replication project) 160 personnel trained on SAR operations 100 craftsmen trained on counter disaster measures (CDM) NDM-5 in Jan 2003 (22 trained) UDM for Thailand and Lao PDR partners, 6-10 August 2001 in Bangkok (17 trained) NDM and CBDM for Department of Disaster Prevention and Mitigation (DPPM) officials plan to be held from June 30 – July 11 2003

Performance Indicators	**Baseline**	**Life of Program Target**	**Achievement To-Date**	Comment on Progress
Indicator No. 2.2: No. of institutions where AUDMP-initiated training and professional development course modules are institutionalized	0	12 institutions; courses should be offered for at least 3 years following program completion	12	In Bangladesh, (1) BRAC will jointly organize EVRC-3 in June '03 In Cambodia, CBFMP training was institutionalized in (2) CRC and partner institutions In India, (3) HSMI, New Delhi, conducted UDM1 in February 2000 and UDM2 in February 2001 with NSC In Indonesia, proposal for UDM training is prepared by ITB Institutionalize of SES TOT in Ministry of National Education In Lao PDR, (4) URI and (5) NDMO identified as potential NPTI for training on UDM and Risk Based Mitigation Planning In Nepal, the NPTIs are (6) NSET and (7) IOE. National UDM-1 conducted in May 2001. EVRC conducted in May 2002; DM as an elective course is being initiatied at Masters level at Pokhara University. Training on building code will be established in the Pulchowk Campus of the Institute of Engineering. Training progs on CBDM will continue in other wards of KV In Philippines, new NPTI identified – DAP – in Jul-Sep 2000 quarter. MOU and contract being finalized UDM 1& 2 conducted in March and May '03 respectively In Sri Lanka, the NPTIs are - SLIDA and the CHPB; OUSL and LGMU (8) CHPB conducted NDM-1 to 5 and CBDM-1; (9) SLIDA conducted NDM-1 in November 2000; (10) Moratuwa University integrates UDM; (11) Ruhuna University integrates UDM In Thailand, ADPC held workshop on integration of UDM in study courses of selected universities on 1-2 July 2002 MOU between ADPC and (12) Department of Disaster Prevention and Mitigation (DDPM) has been signed on Feb 14' 03 as partners for DM training in Thailand TUDMP plan to organize NDM and CBDM for Department of Disaster Prevention and Mitigation (DPPM) officials from June 30 – July 11 2003

Performance Indicators	Baseline	Life of Program Target	Achievement To-Date	Comment on Progress
Indicator No. 2.3: Level of participation in the AUDMP regional information and contact network established during the Program	Baseline = 8; Yr1. (Oct'96) = 33	30% annual increase in participation; 1st year goal of 25 organizations Yr 2 – 33 orgs Yr 3 – 43 orgs Yr 4 – 56 orgs Yr 5 – 73 orgs Yr 6 – 95 orgs Yr 7 – 124 orgs Yr 8 – 161 orgs	5 regional networks 209 organizations 1,760 individuals	Regional networks: ASC and Co-organization of RLLW 2002 with CITYNET, UNDP's TUGI and UNISDR Links with other regional networks: World Bank Consortium approx. 100 organizations in AUDMP profile of partners Asian Urban Disaster Mitigation Network (AUDMiN) established at 6th WGM, March 2001 ADPC library online – dissemination of monthly highlights, working papers, Safer Cities case studies and VCDs. Electronic newsletter is planned for 2003. In Bangladesh, BUDMP with NIRAPAD publish quarterly bulletin on DM starting July 2001. 7 in Cambodia, two network members include AHH & Concern In Jan-Mar 2000 quarter five new members are supporting CBFMP activities: Oxfam, CWS, American Red Cross, Inner CHANGE & NAS In Indonesia, network media for communication and dissemination is established: http://www.kompak.or.id 20 organizations actively participate In Lao PDR, 60 people and 15 organizations participated LUDMP network through Stakeholder W/S, Fire Prevention Planning W/S and UDM course A project website is planned to be launched in 2nd Q of 2003 In Nepal, 17 institutions have incorporated EQ risk reduction as a permanent or significant part of their operation as a result of the project; Launch of NSET's website in March 2000: http://www.nset.org.np In Nepal, ADPC-NSET online library database link in September 2001 In Sri Lanka, 119 people and 49 organizations participated SLUMDMP network through Policy W/S, Training Appreciation Seminar, NDM courses and other programs; CHPB &NBRO website launched in September 2000: http://www.chpb.gov.lk http://www.nbro.gov.lk

Result No. 3	Improved policy environment for disaster mitigation			
Performance Indicators	**Baseline**	**Life of Program Target**	**Achievement To-Date**	**Comment on Progress**
Indicator No. 3.1: No. of policies established or revised to facilitate action, regulation, enforcement and/or incentives	0	4 national or regional policies	6	In Bangladesh, (1) Disaster Management Committees in Tongi and Gaibandha MC areas reactivated In Indonesia, (2) government organizations agreed to adopt the National Policy for UDM in Indonesia at the National Workshop held on 14 February 2001 in Jakarta In Lao PDR, (3) Fire Code is being drafted In Nepal, (4) Nepal Government's endorsement of Nepal Earthquake Safety Day (ESD). ESD National Committee created to organize programs on ESD annually. In Sri Lanka, (5) Three existing National Policies (Land Use Policy Action Plan, Environment Policy Action Plan and Urban Sector Development Action Plan) have been reviewed & presented at the Policy Review W/S on July 1999. Sri Lanka: (6) Act was passed in Aug 2000 to establish National Physical Planning Council with separate DM unit Natural Disaster Mitigation aspects are being integrated in the National Land Use Policy published by the Ministry of Lands

Appendix 2: AUDMP Conducted Regional and National Trainings, 1997 - 2003

Course Title	Date	Venue	No. of Participants
1997 *(1) UDM 1* - First Regional Training Course on Urban Disaster Mitigation	20-31 October 1997	Bangkok, Thailand	22
1998 *(2) TRMC1* - First Regional Training Course on Technological Risk Mitigation for Cities	2-13 November 1998	Delhi, India	21
1999 *(3) UDM 2* - Second Regional Training Course on Urban Disaster Mitigation	17-28 November 1999	Bangkok, Thailand	28
(4) UFM 1- First Regional Training Course on Urban Flood Mitigation	20-30 November 1999	Bangkok, Thailand	29
2000 *(5) UDM 1 Laos* - First National Training on Urban Disaster Mitigation	28-30 March 2000	Lao PDR	20
(6) UDM 2 Laos – Second National Training Course on Urban Disaster Mitigation	18-21 July 2000	Vientiane, Lao PDR	21
2001 *(7) UDM Thailand and Laos* - Training Course on Urban Disaster Mitigation for Thailand and Lao PDR	6-10 August 2001	Bangkok, Thailand	17
(8) UFM2- Second Regional Training Course on Urban Flood Mitigation	3-14 September 2001	Quezon City, Philippines	28

Course Title	Date	Venue	No. of Participants
2002			
(9) EVRC 1 – First Regional Training Course on Earthquake Vulnerability Reduction for Cities	20-31 May 2002	Kathmandu, Nepal	22
(10) EVRC 2- Second Regional Training Course on Earthquake Vulnerability Reduction for Cities	11-22 November 2002	Kathmandu, Nepal	29
2003			
(11) EVRC 3- Third Regional Training Course on Earthquake Vulnerability Reduction for Cities	9-18 June 2003	Dhaka, Bangladesh	35

Appendix 3: ADPC Publications on Urban Disaster Mitigation

WORKING PAPERS

1. Integrating Natural Hazards in the Planning Process: Risk Control Planning Workbook, prepared by Linda Noson for the Sri Lanka Urban Multi-Hazard Disaster Mitigation Project, January 2000.
2. Standard Operation Procedure for Urban Disaster Management in the Municipality of Bandung, prepared by the Indonesian Urban Disaster Mitigation Project, March 2000.
3. Lessons Learned from Community-Based Flood Mitigation and Preparedness Project in Cambodia, prepared by the Cambodian Red Cross, International Federation of Red Cross and Red Crescent Societies and Pact Cambodia, August 2001.
4. Emergency Management and Response Plan for Ratnapura, Sri Lanka, developed by the Centre for Housing, Planning and Building, National Building Organization, and Urban Development Authority, July 2000.
5. Naga City Disaster Mitigation Plan, developed by the Naga City Government and Philippines Business for Social Progress, August 2001
6. The Kathmandu Valley Earthquake Risk Management Action Plan, developed by National Society for Earthquake Technology-Nepal and GeoHazards International, USA, January 1999.
7. Kathmandu Valley's Earthquake Scenario, developed by National Society for Earthquake Technology-Nepal and GeoHazards International, USA

PROJECT REPORTS

1. Cambodia Community-Based Flood Mitigation and Preparedness Project, prepared by Cambodian Red Cross, International Federation of Red Cross and Red Crescent Societies, and Pact Cambodia, August 2000.
2. Sri Lanka Urban Multi-Hazard Disaster Mitigation Project, prepared by the Centre for Housing, Planning and Building, National Building Organization, and Urban Development Authority, August 2000.
3. Kathmandu Valley Earthquake Risk Management Project, prepared by National Society for Earthquake Technology-Nepal and GeoHazards International, USA, September 2000.
4. Indonesia Urban Disaster Mitigation Project, prepared by Institute of Technology Bandung, September 2000.

PROCEEDINGS

1. Workshop on Urban Risk Reduction in Asia, Ahmedabad, 29 March 2001, Ahmedabad, India, organized by Asian Disaster Preparedness Center and other co-organizers, April 2001.
2. Workshop on Safer Shelter in Vietnam, Towards Designing an Urban Disaster Mitigation Project, 4 - 5 September 2002, Hanoi, Vietnam, organized by Asian Disaster Preparedness Center and other co-organizers, October 2002.
3. Regional Workshop on Best Practices in Disaster Mitigation: Lessons Learned from the Asian Urban Disaster Mitigation Program and Other Initiatives, 24 – 26 September 2002, Bali, Indonesia, co-organized by Asian Disaster Preparedness Center and other co-organizers, November 2002. Regional Workshop on Best Practices in Disaster Mitigation 491

SAFER CITIES CASE STUDIES:Guidelines for Safer Cities: Case Studies on Mitigating Disasters in Asia and the Pacific, January 2002.

Safer Cities 1: Community-Based Initiatives in Kathmandu Valley: Pioneers in Earthquake Mitigation and Preparedness, January 2002

Safer Cities 2: Coping with Flood in Cambodian Communities: Enhancing Community Solidarity through Capacity Building, June 2002

Safer Cities 3: Mitigating Flood Risk in Cambodian Communities: Empowering Communities to Manage Disaster Risk, July 2002

Safer Cities 4: School Earthquake Safety Program in Kathmandu Valley: Building Safer Communities through Schools, November 2002

VIDEOS

1. Of An Event Foretold …, Tele-Drama produced by the Sri Lanka Urban Multi-Hazard Disaster Mitigation Project, August 2000. (Sinhala / English)

2. Towards Safer Communities: Risk Based Mitigation Planning – The Sri Lankan Experience, produced by the Sri Lanka Urban Multi-Hazard Disaster Mitigation Project, July 2001. (Sinhala / English)

3. A Case Study of Training Masons in Sri Lanka, produced by the Sri Lanka Urban Multi-Hazard Disaster Mitigation Project, December 2001. (Sinhala / English)

4. Enlightening the Future Generation: A Case Study of Awareness Creation Focused on School Children in Sri Lanka, produced by the Sri Lanka Urban Multi-Hazard Disaster Mitigation Project, December 2001. (Sinhala / English)

5. Of Creating Awareness: The Case of Public Awareness Creation on Earthquake Safety in Kathmandu Valley, Nepal, produced by the Asian Urban Disaster Mitigation Program of the Asian Disaster Preparedness Center, Bangkok, January 2002. (English)

6. Building for Safety: The Case of Retrofitting Schools in Kathmandu Valley, Nepal, produced by the Asian Urban Disaster Mitigation Program of the Asian Disaster Preparedness Center, Bangkok, January 2002. (English)

7. Video Documentary on Bangladesh Urban Disaster Mitigation Project Activities, produced by the Bangladesh Urban Disaster Mitigation Project, September 2002. (Bangla / English)