Urban Governance and Community Resilience Guides

USAID
FROM THE AMERICAN PEOPLE

adpc

Mainstreaming Disaster Risk Reduction

4

World Disaster Reduction Campaign on Making Cities Resilient

United Nations
International Strategy for Disaster Reduction

Sign up **today** to make your **city** resilient to disasters

The "Urban Governance and Community Resilience Guides" is a series of references for local governments who choose to be on the path to community resilience. It is designed to raise awareness of the challenges of reducing disaster risks in urban and urbanizing areas, and to present the essential tools and possible solutions.

Compiled by Christine Apikul

Technical Team
NMSI Arambepola; Padma Karunaratne; Gabrielle Iglesias

Editor: Gabrielle Iglesias
Layout and graphic artist: Lowil Fred Espada

mainstreaming disaster risk reduction

book 4

ADPC dedicates the Urban Governance and Community Resilience Guides to

David Hollister
(1952 -2010)

who pioneered Urban Disaster Risk Management in ADPC and in the region by initiating the Asian Urban Disaster Mitigation Program funded by USAID/OFDA, contributed to make ADPC a regional resource center dedicated to DRR, and witnessed and took part in the growth of the DRR discipline from the sidelines to the center of the development discourse for over two decades. Dave, a tireless "American Asian", inspirational mentor to a generation of young professionals, champion of South-South and South-North partnerships, and partner of emerging champion institutions in Asia, who dedicated a major part of his professional career to making cities safer before disaster strikes, whose life was tragically cut short in an accident this March. In remembering Dave we renew our firm commitment to building resilience in urban communities and cities of Asia.

Foreword

As a former Governor of Bangkok, I know firsthand that mayors and other local officials can take action for fighting floods, fires and other hazards. Sometimes, it just takes leadership, inspiration and good examples to follow to get going in the right direction.

If you are an urban or municipal planner, this guidebook series is for you with its examples on risk reduction planning. If you are a health officer, community health worker, social worker, NGO staff, or community leader, this guidebook series is for you because of our firm belief in the ability of all stakeholders and communities to reduce disaster risk. Whether you are in charge of cleaning drains, issuing business permits or inspecting buildings for safety, this guidebook series will remind you how important all of that is for reducing risk. If you are an elected official, then this book series will show you what directives and policies are possible in your town or city because other towns and cities mentioned in these books have paved the way for you. We are inviting your comments as readers and users of the guidebooks, as these can help shape future editions.

I have witnessed the strong advocacy of many disaster management professionals for local governments to take on the cause of disaster risk reduction. The ideas and processes in this book have been tested and shaped by the team of people working for the Program on Hydro-Meteorological Disaster Mitigation in Secondary Cities in Asia (PROMISE) that was implemented from 2006 to 2010. This team includes ADPC staff who directly worked for PROMISE and on the content of the guidebooks, and our consultant Christine Apikul for helping craft the messages in the books.

There are other national-level champions who also contributed in numerous ways, and whose contribution we acknowledge with much gratitude.

I would like to thank our PROMISE implementing partners who indirectly contributed to the guidebooks through the disaster mitigation practice that they shaped during the program:

Chittagong City Corporation and Jamalpur Pouroshava and the people of the wards in PROMISE Bangladesh, the Bangladesh National Institute for Local Governance, CARE Bangladesh, and Bangladesh Disaster Preparedness Centre;

Jakarta Provincial Government and South Jakarta City Government and the people of the kelurahan in PROMISE Indonesia, SMAN 8 high school, and Bandung Institute of Technology;

Hyderabad District Council and Hyderabad District Coordination Office and the people of the union councils in PROMISE Pakistan, and Aga Khan Planning and Building Service in Pakistan;

Dagupan City Government and Pasig City Government and the people of the barangays in PROMISE Philippines, the Philippine Department of the Interior and Local Government, and the Center for Disaster Preparedness;

Kalutara Urban Council and Matara Municipal Council and the people of the GN Divisions in PROMISE Sri Lanka, University of Peradeniya, the Sri Lanka Disaster Management Centre, the Sri Lanka Institute of Local Governance, Lanka Jathika Sarvodaya Shramadana Sangamaya, the National Building Research Organization, and The Asia Foundation;

People's Committee of Da Nang City and Cam Le District and the people of the wards in PROMISE Viet Nam, Da Nang Committee on Storm and Flood Control, the Viet Nam Disaster Management Centre, and Center for International Studies and Cooperation Vietnam.

We want to give thanks to the Center for International Studies and Cooperation (CECI) and the Uniterra project who provided research interns under its voluntary service program during the early days of the project.

ADPC would like to acknowledge the support from the Office of Foreign Disaster Assistance of the U.S. Agency for International Development (USAID/OFDA). They have provided funding assistance for urban disaster mitigation, through not only PROMISE, but also beginning with the landmark Asian Urban Disaster Mitigation Program (AUDMP) that was implemented from 1995 to 2005. That program helped 30 Asian cities develop mitigation plans and activities for urban natural hazards such as earthquakes, landslides, and floods. It also provided the seed for many of our regional courses, such as the Earthquake Vulnerability Reduction Course, Urban Disaster Mitigation, and Urban Flood Mitigation. ADPC strongly encourages other donor and financing institutions to look toward the subject of urban disaster risk management just as USAID/OFDA did for fifteen years.

This guidebook series is a tribute to the good work done by advocates of urban disaster risk management. There have been many experts who helped shape the PROMISE program design out of their desire to help. Among such champions is the late Lionel Hewawasam, former Deputy Director of the Sri Lanka Centre for Housing Planning & Building, whose contribution to urban disaster risk reduction and to building the capacity of local government we acknowledge with gratitude.

Most of all, we wish to thank Dave Hollister, former ADPC Deputy Executive Director, program manager of AUDMP, who set the direction of many of our early programs and projects in urban disaster mitigation. He was one of the initiators for a PROMISE city demonstration project in Jakarta. ADPC dedicates the *Urban Governance and Community Resilience Guides* to the memory of Dave and other urban risk management champions who worked with ADPC towards urban resilience and have faded away.

Dr. Bhichit Rattakul
Executive Director, ADPC

Contents

Preface

Asia ...

... is the most urbanized region in the world

- Asia's urban population is rising at a rapid rate.
- Forty per cent of Asia's four billion people currently live in urban areas.
- Projections indicate that one out of every two Asians will live in cities before the year 2025.

... has high levels of poverty

- In Asia, about 60% of the poor live on less than $2 a day, most of them still living in rural areas.
- In Asian cities, almost 25% are living below the poverty line.
- The rate is increasing with the continuous influx of poor people into cities.

... has some of the fastest-growing economies in the world

- At the same time, rapid urbanization has been the key driver of Asia's dynamic growth.
- East Asia's urban population produces 92% of its wealth, with South East Asia not very far behind at 77%, and South Asia at 75%.

... is very prone to disasters

- It accounted for 40% of the world's disasters between 1999 and 2008.
- Disasters affect over 200 million people annually.
- Compared to 1989–1998, the past decade has seen disaster deaths in Asia rise by 52 % and the numbers affected by disasters rise by 26%.

... is affected by climate change

- Many cities in Asia are located along the coastline or in river deltas, exposing populations to hazards that are excacerbated by climate change such as floods and storm surges.
- Asia contains more than half of the world's cities which are most vulnerable to rising sea levels as ice sheets in the North and South Poles melt. Concerns are rising that communities in Asia will need to be relocated, or that there will need to be costly investments in sea defenses.

What does all this mean for people living in Asian cities?

Urban dwellers and local governments will be forced to cope with rising incidents of disasters.

As people and assets concentrate in cities, there is more to lose when hazards strike.

These disasters are likely to be more severe than before. They have the potential to destroy fast-growing economies, health and education facilities, public infrastructure, and cultural heritage sites. Already evident in some cities, disasters have the potential to stall or even reverse development.

Many of Asia's urban poor bear the brunt of disasters because they live in high-density conditions in degraded slums, and lack access to basic services such as a water supply, sanitation, health and education.

This is because many local governments have focused their efforts on responding to disasters rather than preventing or minimizing their impacts.

The disruption of urban systems can have implications beyond the city, affecting nations, and the wider world, due to the globalized connections between economies.

Many local governments feel that despite their best efforts to deal with disasters, conditions are actually becoming worse in their area.

Can we make our cities safer?

The short answer is **Yes!**

Some people believed that disasters are acts of their god, and therefore unavoidable. Because of this belief, some countries focus on providing relief and response as quickly as possible after a disaster, to prevent further loss of life and damage. Naturally this is seen as the responsibility of emergency specialists.

More people are recognizing disasters are as failures of development or as the result of unsustainable development. This implies that we ourselves are creating the social, economic and political conditions that lead to disasters.

Individuals, communities and governments can increase their disaster risk by:

- Living in ways that degrade the environment
- Overpopulating urban centers, pushing the urban poor into hazard-prone areas
- Creating and supporting structures and practices that promote unequal access to, and control over, resources
- Allowing the construction of unsafe/substandard houses and buildings, and building in high-risk areas

This understanding of risks has led to approaches for disaster risk management that consist of:

- Identifying potential hazards
- Determining their probability of occurrence
- Estimating their impact on the communities at risk
- Promoting practices for reducing vulnerability
- Planning measures and taking action to reduce risk
- Creating awareness of how to implement disaster risk reduction (DRR) measures
- Providing opportunities for the sharing of experiences on DRR by local government offficials

Disaster risk reduction needs to take place at the local level. Why?

Because even in the event of catastrophic disasters like the 2004 Indian Ocean tsunami, the 2005 Pakistan earthquake, or Typhoon Ketsana in 2009, the impacts from each disaster in each municipality differ widely.

The degree of economic losses and amount of damage to buildings and infrastructure are determined by the different levels of exposure and vulnerability of the population, infrastructure, facilities, etc. of each locality.

The more local governments and local communities know about their risks by doing their own risk assessment and evaluation, the more they can learn about what they can do to protect themselves. We then have a better chance of reducing risks, loss and damage, and using the recovery period as an opportunity to create a stronger, more resilient community.

At the same time, many of the causes of disasters are not local. Flooding in one area can be affected by deforestation several kilometers away. One single local authority cannot resolve all risk factors. Therefore, it is also necessary to work with networks and associations of municipalities on a larger scale.

"I call for the need of world leaders to address climate change and reduce the increasing risk of disasters – and world leaders must include Mayors, townships and community leaders."

Ban Ki-Moon, United Nations Secretary-General

"A lesson from the Hat Yai flood crisis is that a disaster is never caused by any one factor. The success of overcoming this crisis depends on the effective cooperation of all departments concerned."

Kreng Suwanwongse, Mayor of Hat Yai (1999-2002) in the aftermath of the major flood of November 2000 in Hat Yai, Thailand

"Urban risk reduction delivers many benefits. When successfully applied as part of sustainable urbanization, resilient cities help reduce poverty, provide for growth and employment, and deliver greater social equity, fresh business opportunities, more balanced ecosystems, better health and improved education."

Margareta Wahlström, Special Representative of the Secretary-General for Disaster Risk Reduction, United Nations International Strategy for Disaster Reduction

Introduction

With escalating disaster risks, particularly in cities, there is growing consensus that the key to sustained risk reduction lies in 'mainstreaming' the reduction of risks into development.

Essentially, this is a process of incorporating the key principles of disaster risk reduction (DRR) into development goals, governance arrangements, policies and practice.

On one hand, mainstreaming requires the analysis of how potential hazard events could affect the performance of policies, programs and projects, and on the other hand, it needs to look at the impact of the same policies, programs and projects on vulnerability to hazards. Results from the analyses should lead to risk-sensitive development, which is now widely recognized as critical to achieving sustainable development.

Effective mainstreaming results in DRR being embedded in the day-to-day operations of national and local organizations, in various sectors, with sufficient resources – human, financial, technical, material, information – allocated to managing the risks.

What is mainstreaming?

ProVention Consortium defines the mainstreaming of disaster risk reduction (DRR) in development as the consideration and address of risk issues in:

- Medium-term strategic development frameworks
- Legislation and institutional structures
- Sector strategies and policies
- Budgetary processes
- Design and implementation of individual projects
- Monitoring and evaluating all of the above

Since the late 1990s, there has been increasing recognition by both governments and donors of the need to 'mainstream' DRR into development.

They now acknowledge DRR as a crosscutting issue that needs to be 'owned' by all government agencies rather than by a single department.

As a result, an increasing number of countries are strategically mainstreaming DRR into national development strategies. A number of international and UN agencies are providing technical and financial support to national government in mainstreaming DRR in development. They include:

- The United Nations Development Programme's Global Mainstreaming Initiative for Disaster Risk Reduction
- The Global Facility for Disaster Reduction and Recovery managed by the World Bank
- The ProVention Consortium's project on Measuring Mitigation: Tools for Mainstreaming Disaster Risk Reduction
- The Regional Consultative Committee on Disaster Management (RCC) Program on Advocacy and Capacity Building for Mainstreaming Disaster Risk Management in Development Policy, Planning and Implementation in Asia (MDRD) managed by ADPC.

The MDRD identified a handful of priority sectors to initiate the mainstreaming of disaster risk reduction. See Box 1.

Box 1

Hanoi RCC 5 Statement on "Mainstreaming Disaster Risk Reduction in Development and Enhancing Regional Cooperation" (2005)

Adopted by 26 RCC member countries, the statement calls upon every RCC member country to "Mainstream Disaster Risk Reduction into Development" over the coming decade, and to undertake Priority Implementation Projects in several thematic areas:"

Education

- Introducing DRM modules into the school curriculum
- Promoting hazard resilient construction of new schools
- Introducing features into schools for their use as emergency shelters

Environment and Natural Resources

- Including Disaster Risk Impact Assessment into Environmental Impact Assessments for new development projects
- Linking with the National Adaptation Plan of Action under the UN Framework Convention for Climate Change
- Action on other environmental hazards and links between environmental degradation and disaster risks

Financial Services

- Incorporating flexible repayment schedules into micro-finance schemes
- Encouraging financial services and local capital markets to finance DRM measures

Health

- Vulnerability assessment of hospitals in hazard prone areas
- Promoting hazard resilient construction of new hospitals
- Implementing of disaster preparedness plans for hospitals

The statement recognizes that national and local-level mainstreaming in sectors will not be limited to the priority sectors or themes listed above but will involve a greater number of sectors, agencies and themes. It emphasizes that all disaster-prone sectors mainstream enhanced disaster resilience in post-disaster recovery programs.

Housing

- Promoting the increased use of hazard-resilient designs in rural housing in hazard prone areas
- Utilization of national building codes; and the compliance and enforcement of local building laws in urban hazard prone areas

Urban Planning and Infrastructure

- Introducing Disaster Risk Impact Assessments into the construction of new roads and bridges
- Promoting the use of hazard risk information in land-use planning and zoning programs

Why is mainstreaming necessary for local governments?

A local government cannot afford to ignore risk considerations, particularly with recent catastrophes and increasing concerns related to climate change, unplanned urbanization and environmental degradation. As the body responsible for the long-term development of its area and the well-being and safety of its citizens, it should set these DRR goals:

1. Reduce disaster risk accumulated from previous urban development
2. Avoid creating new urban disaster risks in the future
3. Build the capacity to effectively respond to any type of emergencies

When 168 nations and multilateral institutions adopted the Hyogo Framework for Action 2005–2015 (HFA) on January 2005, they formalized the need to mainstream DRR into development. The HFA is centered around three principal strategic goals, the first of which is "the more effective integration of disaster risk considerations into sustainable development policies, planning and programming at all levels, with a special emphasis on disaster prevention, mitigation, preparedness, and vulnerability reduction." It calls on local government to:

Mainstream disaster risk considerations into planning procedures for major infrastructure projects, including the criteria for design, approval and implementation of such projects and considerations based on social, economic and environmental impact assessments… [To] develop, upgrade and encourage the use of guidelines and monitoring tools for the reduction of disaster risk in the context of land-use policy and planning… [To] encourage the revision of existing, or the development of new building codes, standards, rehabilitation and reconstruction practices at the national or local levels…particularly in informal and marginal human settlements…

Table 1 summarizes the links between disasters and development.

Table 1 The Linkages between Disasters and Development

	Economic Development	Social Development
Disaster limits development	Destruction of fixed assets. Loss of production capacity, market access or material inputs. Damage to transport, communications or energy infrastructure. Erosion of livelihoods, savings and physical capital.	Destruction of health or education infrastructure and personnel. Death, disablement or migration of key social actors leading to an erosion of social capital.
Development causes	Unsustainable development practices that create wealth for some at the expense of unsafe working or living conditions for others or degrade the environment.	Development paths generating cultural norms that promote social isolation or political exclusion.
Development reduces disaster risk	Access to adequate drinking water, food, waste management and a secure dwelling increases people's resiliency. Trade and technology can reduce poverty. Investing in financial mechanisms and social security can cushion against vulnerability.	Building community cohesion, recognizing excluded individuals or social groups (such as women), and providing opportunities for greater involvement in decision-making, enhanced educational and health capacity increases resiliency.

(Source: Reducing Disaster Risk: A Challenge for Development, 2004)

The objectives of mainstreaming DRR into local government are to:

1. Empower the local governments to undertake effective measures to reduce disaster risks within the existing legal framework by formulating and implementing appropriate strategies, action plans and programs to reduce disaster risks.

2. Enhance and strengthen the mandate/scope of local governments for reducing disaster risks by modifying existing laws and other legal provisions, building partnerships, strengthening institutional and human resource capacities, and better communication strategies with citizens, city groups, non-governmental organizations, civil society etc.

Mainstreaming DRR could bring about a number of positive results:

- Improved safety of the people
- Protected built environment
- Safety of critical facilities such as schools, hospitals etc.
- Risk-based land use planning practices to ensure reduction of future risks
- Developed emergency response capacity at the city level
- Prepared community with greater awareness on potential disasters and capacity to respond and mange disasters
- Efficient and capable institutions at the local government level with strengthened capacity to manage disasters
- Sustainable urban growth and governance

How can disaster risk reduction be mainstreamed into local development?

The building blocks to successful mainstreaming include the following:

I. **Legislation** for DRM, including the mainstreaming of DRR into development, provides an enabling environment in which DRM strategies can be 'empowered'.

National legislatures can provide an overarching framework for risk reduction and can enable risk reduction strategies in the line ministries. Local governments with powers to draw up locally enforceable legislation can often issue appropriate executive orders, ordinances and other directives to require departments and agencies, private companies, voluntary groups and citizens in its jurisdiction to carry out certain risk reduction actions.

Aligning local and national legislation, policies and practices with global frameworks for DRR and sustainable development (e.g. HFA, MDGs, and Habitat Agenda) can generate support from international agencies for local DRR initiatives, in the form of technical advice and/or financial resources.

II. **A comprehensive DRM** plan that has been developed through the active participation of stakeholders at all levels of government has the best chance at successful implementation of the legislative and policy framework. The stakeholders include the private sector, civil society and local communities.

Government and non-government disaster risk reduction projects and programs need to be aligned with the objectives and strategies presented in this plan.

Moreover, the plan needs to indicate specific entry points and mechanisms for mainstreaming DRR concerns into both the broader local development agenda and, more specifically in relevant sectors (see Table 2).

An important milestone in mainstreaming is the integration of the DRM plan into the social and economic development plan.

III. **Appropriate institutional arrangements** for mainstreaming DRR need to be established.

The institutional structure should strengthen the horizontal and vertical integration of DRR between different levels of government, between various line agencies, between other stakeholders (civil society, private sector, academia, etc.) and between neighboring localities.

Multi-sector and multi-level communication and cooperation seems more likely to happen in many countries when the highest level of executive power i.e. the Prime Minister or President oversees the coordination of DRM.

Many countries have established disaster management committees, with members representing different economic sectors and interests, to facilitate the mainstreaming process. In the Philippines for example, cities are activated their City Disaster Coordinating Councils and Barangay (or village) Disaster Coordinating Councils as part of their strategy to mainstream DRM (see the case study of Dagupan City, Philippines).

iV. **Budget** lines should be created at the level of local government to support the basic functioning of DRM offices and their activities.

In reality, most local governments still do not have a budget line for mitigation and preparedness, although some do have a contingency or calamity fund for emergency response.

Moreover, in most cases, local governments are expected to finance mitigation and preparedness activities out of existing budget heads.

We may therefore consider a dedicated budget line for mitigation and preparedness as another important milestone for a local government.

Local government also needs to explore other sources of disaster-related funding (see Book 3).

Table 2 Comparing Disaster Risk Management and Disaster Risk Reduction

	Disaster Risk Reduction
Definition	The concept and practice of reducing disaster risks through systematic efforts to analyse and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events.
Components	• Risk Assessment • Integrating DRM • Preparedness Plan for Response and Recovery • Training, Awareness, Drills, Exercises • DRM at Local-level • Policy, Legislation and Institutional Arrangements for DRR • Mitigation Planning • Implementing DRR Projects
Fields of action	• Risk awareness and assessment including hazard analysis and vulnerability / capacity analysis. • Knowledge development including education, training, research and information. • Public commitment and institutional frameworks, including organisational, policy, legislation and community action. • Application of measures including environmental management, land-use and urban planning, protection of critical facilities, application of science and technology, partnership and networking, and financial instruments. • Early warning systems including forecasting, dissemination of warnings, preparedness measures and response capacities

Disaster Risk Management

The systematic process of using administrative directives, organizations, and operational skills and capacities to implement strategies, policies and improved coping capacities in order to lessen the adverse impacts of hazards and the possibility of disaster.

- Mitigation
- Preparedness
- Response
- Recovery

Mitigation
- Hazard assessment
- Vulnerability analysis
- Risk assessment
- Risk evaluation
- Vulnerability reduction / mitigation strategies
- Integration of DRR activities in all development activities

Preparedness
- Prediction/forecasting
- Early warning
- Emergency preparedness
- Education, training and public awareness

Response
- Mobilisation
- Assessment
- Requirement analysis
- Rescue and evacuation
- Emergency assistance

Recovery
- Rehabilitation.
- Reconstruction
- Psychological counseling
- Long-term assistance to rebuild the community

V. **Skills, capacities and tools** need to be developed by government agencies for incorporating risk considerations in their day-to-day operations.

Local government officials and other stakeholders need to be trained, not only in disaster-related topics, but also in skills related to good governance. Local officials should know how to promote cooperation and coordination, improve communications within the local administration and towards their public, facilitate participatory processes and multi-stakeholder dialogue, and resolve conflict over development priorities.

Good training programs should provide the relevant risk information for local needs, encourage the utilization of indigenous knowledge, and respect and promote traditional practices of coping with disaster risks. They could also seek to ease the 'mainstreaming fatigue' by introducing tools that incorporates other cross cutting issues, including gender and climate change.

A capacity assessment will help formulate a capacity development response to address those capacities that could be strengthened, and optimize existing capacities that are already strong.

VII. Monitoring and measuring progress against performance indicators are essential for gauging the success of the mainstreaming process, and for generating evidence on results and impacts, as well as lessons learned that will be useful to other cities.

VI. **Awareness-raising** among government officials as well as the public is required to secure a solid appreciation and understanding of the linkages between DRR and sustainable development.

As the most immediate public service provider and interface with citizens, local governments are in the best position to raise public awareness of disaster risks and to respond to citizens' concerns and needs.

Successful awareness-building among the general public and engagement of communities in DRM offer potentially important mechanisms for creating demand for risk reduction and ensuring that DRR remains on the development agenda despite changes in political leadership.

Schools play a major role in ensuring the future generations are well equipped with risk knowledge. Work together with schools, colleges and universities to find out how well students understand risk issues.

Explore the integration of disaster awareness in disciplines such as urban planning, civil engineering, housing and project management, as they provide a foundation for promoting DRR as a crosscutting concern.

Awareness raising and knowledge building should be carried out continuously and in a strategic manner, rather than as ad hoc or one-off activities. Political interest, commitment to DRR, and the capability to maintain appropriate DRM mechanisms can rapidly wane without continuous effort.

VIII. **Identifying possible assistance and engaging with other stakeholders** in mainstreaming DRR at the local level is required.

By definition disasters are events which are beyond the coping capacity of one person or entity. Addressing DRR concerns therefore should not be the responsibility of one person or entity. It is more than evident that the national or central government alone cannot handle disasters without the support and the cooperation of many other relevant stakeholders. Disasters could therefore be effectively handled with the participation of many stakeholders.

In the case of local governments there are number of key stakeholders such as local government ministries/departments, local government associations, non-governmental organizations, professional bodies, etc. whose cooperation is of immense importance in strengthening the capacity of local governments.

The following are the possible interventions by other stakeholders in supporting local governments in mainstreaming DRR and in DRM in general:

- Assist in the development of generic guidelines to facilitate integration of risk reduction in all functions carried out by local governments
- Provide resource inputs in conducting risk assessments, revising building codes, public awareness creation etc.
- Carry out local government level projects/demonstration activities to demonstrate the appropriateness of DRR in local government operations
- Organize lessons learned workshops to share experience and thereby convince authorities of its importance
- Publish good practices examples
- Organize and hold regional/national level meetings, seminars, conferences, round table discussions, study tours, etc. to present findings of pilot demonstrations at city level
- Assist in organizing capacity building programs

QUESTIONS TO ASK

Here are some questions reflecting the different clues or indicator that the mainstreaming of DRR is indeed happening in the country, province, town or city.

At the national level:

- Has legislation been passed (with necessary compliance and accountability process) that requires risk assessments, disaster risk reduction (DRR) planning, and the mainstreaming of DRM in development?
- Does an inter-ministerial or multi-sector DRR coordinating committee (or the equivalent) exist? Can it access the highest political office?
- Do national policy statements refer to the importance of disasters/vulnerability and the commitment to the mitigation of risks? Has the national government translated this commitment been into practice?

At the local level:

- Is responsibility for DRR planning and implementation devolved to local government and communities?
- Are local government and communities equipped with human, financial, and organizational capacities/ resources?
- Are local government DRR policies, strategies and implementation plans in place?
- Are there relevant and enabling local legislation (ordinance), land-use regulations, building code, etc. addressing and supporting DRR at the local level?
- Are there mechanisms for compliance and enforcement of laws, regulations, building codes, etc., and penalties for non-compliance defined by laws and regulations?
- Is DRR integrated into local planning in key sectors such as agriculture, climate change, education, environment, health, housing, poverty alleviation and social welfare?
- Are DRR roles and responsibilities clearly designated?

- Do guarantees of the relevant rights (to safety, to equitable assistance, to be listened to and consulted) underpin the legal and regulatory system?
- Did your local government author its disaster/development plans in partnership with community representatives?
- Is there a budget line for DRM (not only for disaster response and recovery but also for mitigation and preparedness)
- Is a budget allocated to local governments and other local institutions adequate to enable DRR to be integrated into planning and actual activities?
- Are financial resources available to build partnerships with civil society for DRR?
- Does the national government provide training in DRR for local officials and community groups?
- Are local stakeholders capicated with the relevant skills, knowledge and attitudes for DRR?
- Do community members have feelings of responsibility to prepare for disasters and reduce their own risks?
- Is a system of accountability in place, including transparency in the conduct of DRR activities and use of funds for the same?
- Has a permanent DRM body been established, or are DRM responsibilities integrated into the duties of existing local government officers?

Sector Integration of Risk Factors

Land-Use Planning

Land-use planning provides a set of useful planning tools for mainstreaming DRR into urban development processes, such as mapping, zoning and participatory planning.

Land-use planning is important because the location of settlements and infrastructure is a key vulnerability factor.

Land-use plans lay down regulations and guidelines for future urban developments, and can set controls on the expansion of existing settlements and infrastructure in disaster prone areas.

Land-use plans can also provide details on any adjustments in land-use and building techniques required to enhance public safety, without depriving communities' access to resources and opportunities.

For example, in Naga City Government in the Philippines used its Integrated Disaster Management Plan to guide site selection for a slum resettlement program to ensure that the displaced families were not relocated to flood prone areas. Other decisions were guided by the plan, and the case study in Book 3 has more details.

Risk-sensitive land-use planning is informed by an assessment of risks (including hazards, vulnerability and capacity). Risks can be mapped throughout a city to show the zones with different levels of risk. If risk maps are overlaid on land-use maps, patterns of land-use can be correlated with susceptibility to disasters.

The Municipality of Tehran utilized the process of land-use planning to reduce the city's risk to earthquakes. The Master and Comprehensive Plans of Tehran, used to guide and regulate future land use, were being revised to take into account seismic elements.

Implementation and enforcement challenges

Nevertheless, even when risk-sensitive land-use plans are developed, the implementation and enforcement of the guidelines and regulations often remain problematic.

The main barriers to the implementation of land-use management practices are lack of political will, capacity and a legal framework that establishes clear authorities and responsibilities.

Other obstacles include the political influence of landowners and developers, societal disregard for government policies and regulations, governmental disregard for policies and regulations established by other governmental levels or agencies, corruption, economic factors, and a perceived (or real) lack of viable alternatives.

Greater inclusion of those at risk in land-use planning and decision-making offers a way forward. Community participation that strengthens local understanding, trust and support is critical. Without these elements, interventions are likely to fail.

For example, if the local government constructs drainage channels without local participation and understanding, they may soon become useless and unable to perform their function in a flooding situation because households will tend to dump solid waste materials inside drains.

Be sure to involve the urban poor and marginalized groups living in slum settlements. They are often living in disaster-prone sites and are continuing to expand. These urban communities tend to have limited access to resources, thus limiting their ability to respond to hazards or to manage risk.

Get to know and understand their coping strategies and initiatives to reduce disaster risks. Provide support to strengthen and build upon their strategies, and ensure that interventions do not hinder their ability to cope.

Inform the public about hazards and land use as a mitigation tool, so that they will consider the risks of both where they currently live and of other residential locations.

Another strategy to overcome some of the obstacles involves offering development incentives and disincentives to encourage disaster risk reduction practices and appropriate land use.

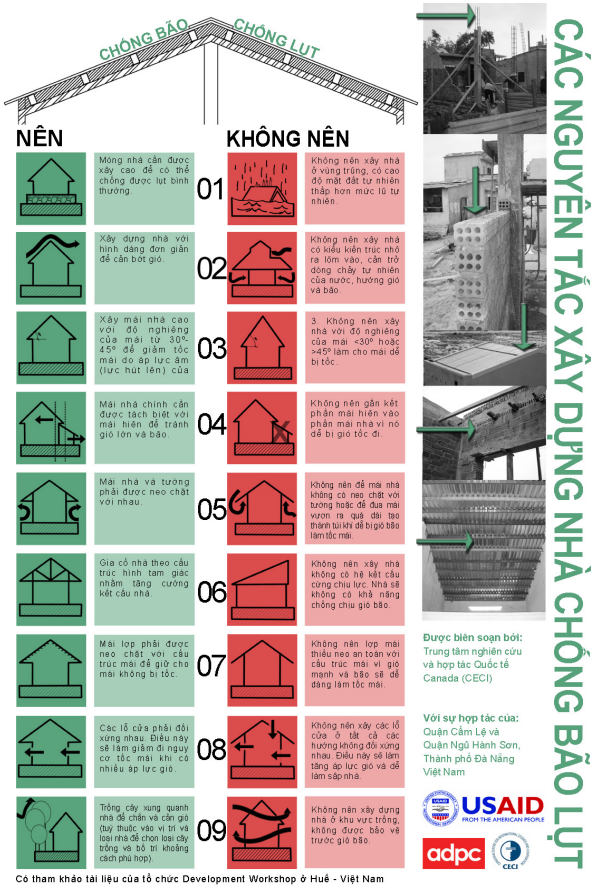
Possible incentives and disincentives include:

- Offering land development subsidies in some areas and levy development overhead charges in others
- Encouraging the location of industries and residents in safe areas by giving those areas priority for installation of utilities and urban services
- Encouraging the use of certain areas through differential land pricing (in the case of undeveloped or underdeveloped land) or by subsidizing transportation from those areas to areas of employment, shops and businesses

In summary, land-use planning should contain the following key elements to be effective:

- Conduct multi-hazard risk assessments to build an urban risk profile for use in identifying safer locations for development initiatives
- Map risk information together with other information such as evacuation routes, and location of temporary shelters and critical facilities (hospitals, schools, etc.)
- Maintain an updated land inventory with details of residential, commercial and industrial buildings, parks, and recreational areas, with their levels of vulnerabilities
- Create and maintain affordable housing opportunities
- Identify low-lying areas and promote schemes to protect the natural environment as a way of retaining the flood retention capacity
- Avoid reclamation of flood retention areas
- Avoid practices in mountainous areas that will destabilize the slopes such as cutting of slopes, removal of vegetation, etc.
- Create an urban spatial database to monitor development in hazard prone areas
- Develop zoning regulations and strictly follow zoning guidelines
- Deal with environmental issues connected with slums in consultation with residents in poor settlements
- Maintain parks and recreational facilities that can be used during emergencies for evacuation

Image source: Dagupan City Government



This poster of the Do's and Don't's of construction was developed jointly by the Da Nang city engineers, house owners, carpenters, masons, and local NGO staff.

Building Codes and Disaster-Resilient Construction

The reality that somewhere between 75 and 90 percent of all earthquake fatalities result from building failures, highlights the importance of implementing mitigation measures specifically associated with building design and construction.

(Source: Living With Risk, 2004, p. 325.)

The inclusion of hazard-resilient measures in building codes contributes to vulnerability reduction. Most countries have national building codes in place, but not all are risk sensitive.

It is important that building codes be designed in light of current and possible future hazard risks. Take into account prevalent building materials and architectural customs of the locality.

Building code implementation

Local governments are normally charged with overseeing construction standards. Unfortunately, even where the appropriate building codes exist, the implementation and enforcement of building codes have generally been weak.

The 2005 Pakistan earthquake destroyed 4,844 educational buildings, 18,000 children died in the collapse of school buildings, and 300,000 children were still unable to attend school six months after the event. The collapse of schools was presumed to have resulted from:

- Poor quality construction and construction materials
- Inadequate monitoring in the building processes
- Lack of awareness of seismic risk and appropriate standards

Failure to implement the building code often worsens the losses and damaged caused by disasters. Other reasons for failures in implementing and enforcing the building codes include:

- Poor governance
- Lack of human and financial resources
- Political interference with the regulatory system

Non-engineered structures

The building code is a technical document and requires skilled engineers, architects and builders to apply the codes. 'Engineered buildings' are designed and supervised by an architect/engineer to ensure that the structures comply with existing building code and planning bylaws.

However, most people construct in developing countries buildings and from outside of the formal housing and planning systems. Local masons and artisans spontaneously and informally construct these non-engineered buildings in the traditional manner without any or little intervention by qualified architects and engineers in their design. Almost 90 percent of Kathmandu's buildings are non-engineered.

Although traditional or indigenous construction techniques are not always inferior to modern ones, the growing demand and rapid urbanization have resulted in sub-standard non-engineered structures.

Focus on compliance

Seek opportunities for partnerships between engineers, masons and low-income households to improve building safety by targeting their compliance to the building code, in addition to building code enforcement by the local government (see the case study of Lalitpur Sub-Metropolitan City, Nepal).

House owners who are aware of the practical measures to reduce the vulnerability of buildings often prefer to follow the standard, which is not only cost effective but save lives in the case of earthquakes. Contrary to common perception, the implementation of hazard-proof measures in building can be relatively inexpensive in terms of construction costs.

What is required though, is investment in awareness raising, skills training, appropriate risk assessments and research into low-cost strengthening solutions. Case studies have shown that a large group of the public who is aware of the disaster risk in their locality will not only comply with the building code provisions but also create demand for trained masons.

At the same time, trained masons committed to building code compliance and the implementation of hazard-safe techniques, play key role in convincing and motivating owners to invest in disaster-resilient construction.

In summary:

- Promote strict application of appropriate building codes that integrate hazard-resistant elements in construction
- Periodically review and revise building laws to integrate hazard-related aspects
- Train local government officials to supervise, execute controls and restrictions, and ensure building code compliance
- Implement certification programs for those who are involved in the construction process (masons, contractors, etc.)
- Obtain assistance from qualified professionals for developing guidelines for shelter and infrastructure development in hazard prone areas
- Allocate funds for minor infrastructure that reduces flood risk (e.g. construction of drains to divert water from stagnated areas)
- Promote hazard-resilient housing designs in disaster prone areas
- Ensure periodic maintenance of main roads, especially the access roads to critical facilities such as hospitals, power stations, transformer stations, water reservoirs, etc.
- Practice routine maintenance of infrastructure, government buildings, etc.

Other Local Government Sectors, Development Functions and Services

Apart from land-use planning and the promotion of safe construction, local governments are generally expected to deliver a wide range of services and functions. They include:

- Budget allocation, tax collection and investment promotion
- Solid waste management
- Health, sanitation and hygiene
- Road construction and maintenance
- Urban services (drainage, water supply, electricity, gas, etc.)
- Information and communication
- Emergency services
- Welfare services during emergencies

Budget allocation, tax collection and investment promotion

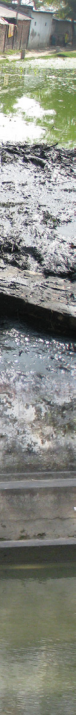
- Introduce new tax regulations, tariff systems, etc. for hazard prone areas to discourage development in unsafe areas
- Reduce tax and improve services to encourage development in safer areas
- Allocate a percentage for disaster risk reduction initiatives from the annual budget process
- Allocate funds to other city departments for the training of officials and purchase of emergency response equipment
- Develop city-wide programs to encourage and mobilize the support of the private sector, non-governmental organizations and civil society organizations to undertake risk reduction activities
- Allocate an annual budget for developing action plans, contingency plans, etc. and for conducting regular simulations, drills, etc.

Solid waste management

Poor management of solid waste in many cities has aggravated flood problems and increased health hazards, including spread of diseases. The absence of a proper solid waste disposal system meant that many fragile ecosystems have been used as dumpsites for all types of waste.

However, solutions acceptable to all in safely disposing solid waste in cities do exist as listed below:

- Avoid disposing solid waste in flood retention areas
- Locate landfills away from flood prone areas
- Plan and implement ways of disposing hazardous waste separately
- Plan to reduce un-systematic disposal of solid waste and implement proper waste disposal
- Explore the potential benefits of converting solid waste into other products such as energy and fertilizer, and take advantage of globally-promoted programs such as Cleaner Development Mechanism
- Promote Cleaner Production in which reducing waste at source is possible instead of disposing at the end of the pipeline
- Promote production of compost fertilizer at the levels of household and community
- Popularize "Reduce, Recycle and Reuse" waste among people
- Strictly enforce existing law against haphazard dumping of waste



Health, sanitation and hygiene

The local government in many countries are mandated to provide health and sanitation facilities, as well as ensure that shops, restaurants, markets and the environment in general are clean and hygienic for healthy living.

The following functions can contribute to reducing disaster risks:

- Establish an effective monitoring and evaluation system to ensure routine health and sanitation functions
- Arrange immunization programs to minimize the spread of diseases
- Develop awareness programs to prevent epidemics of dengue, malaria and other vector borne diseases
- Implement prevention programs for controlling outbreaks of seasonal health hazards
- Provide training to community health workers
- Organize mobile clinics and medical assistance, with the help of health authorities and non-governmental organizations, after the monsoon season
- Set up maintenance units to help clean up polluted water sources after flood events
- Lead public-private partnerships and campaigns to promote effective hygienic practices, and make the city free from diseases
- Strictly enforce law on hygienic and civic conditions

Road construction and maintenance

Road construction is very often outside the domain of local governments, except for some roads in a few metropolitan cities. Yet, local government should consider getting involved in the construction and maintenance of roads that are in their locality.

This is because road networks link urban centers throughout the country, and poor quality roads in a locality can lead to negative economic and social impacts for the locality. Secondly, facilities such as terminal buildings and stands for public transport systems that are within the purview of local government need to be located away from hazard prone areas. These should be constructed to higher safety standards with accessible roads for any emergencies. Thirdly, as local governments are responsible for the safety of those living in the locality, it is important that people have easy access to critical facilities and evacuation shelters by road, particularly during emergencies.

The following are suggested actions for local governments:

- Conduct loss estimation surveys for bridges, overhead crossings, terminal buildings, etc. within the locality and ensure higher safety standards in their construction
- Make arrangements to (re)locate terminal buildings and central stands for mass transport systems away from high risk areas
- Suggest alternative arrangements for continuity during emergencies to relevant authorities
- Implement special maintenance programs for roads located in hazard prone areas
- Ensure that emergency maintenance groups are available at all times for speedy action
- Execute emergency response guidelines for staff involved in the control and maintenance of roads and mass transit services for quick recovery

Urban services (drainage, electricity, water supply, gas, etc.)

Urban services with economic returns are presently being either privatized or taken over by the national level public entities in many countries. For example, the electricity and water supply services originally delivered by the local governments in Sri Lanka have been taken over by public sector corporations at the national level. This is the general trend in many countries.

Despite the nature of urban services provided by local governments, there is a possibility of incorporating disaster risk reduction into the planning and operations of urban services as outlined below:

- Undertake routine maintenance of drainage facilities before the monsoon periods
- Incorporate hazard-resistant features in the design of urban services
- Plan alternative arrangements for the continuity of city services during emergencies and be prepared to activate the plan when required
- Solicit the assistance of professionals in developing guidelines for the location of infrastructure away from hazard prone areas and providing high safety standards to urban services located in hazard prone areas
- Develop emergency response guidelines for service departments for quick response and recovery
- Constitute maintenance teams and ensure that emergency service facilities are available at short notice in the event of an emergency
- Train maintenance personnel on speedy action to return services to normalcy in the event of a disaster and keep them ready and prepared to respond at the occurrence of a disaster

Information and communication

The following are areas that local government can easily adopt with no or minimal cost:

- Conduct awareness programs for various stakeholder groups to provide hazard-related information
- Develop information products (including a web portal if possible) to provide useful information to citizens (such as hazard prone areas, policies, regulations, tax systems, etc.)
- Assist professionals in developing guidelines to reduce disaster impacts and disseminate such information (using posters, calendars, billboards, handbills etc.)
- Organize disaster safety day events to commemorate past disasters
- Organize annual school competitions to raise awareness
- Create, maintain and regularly update databases of people and disaster losses, and inventory of elements at risk
- Maintain an inventory of service providers for emergencies (medical first responders, suppliers of heavy machinery, food suppliers, etc.) with information on their location, mobility and equipment available

Emergency services

The emergency services expected at a city level encompass services such as fire fighting, ambulance services, search and rescue, establishment of evacuation areas, etc. Unfortunately, the capacity of these emergency services are often insufficient in terms of number of personnel, their skills level and the equipment they have, such as fire engines, fire extinguishers, ambulances, boats, etc.
In some instances, donor agencies donated equipment for emergency services but the responsible personnel were not trained to use and maintain the equipment.

There are several options for improving emergency services found within the present mandates of most local governments. These include the following:

- Establish Emergency Operation Centers at the local level
- Establish a city-level platform involving all relevant stakeholder groups (government, non-governmental organizations, private sector, civil society) as a forum for obtaining technical assistance and resource sharing/mobilization
- Set up Emergency Service Units for fire, ambulance services, search, rescue and evacuation, and expand the services depending on need
- Explore the possibility of arranging with neighboring localities for emergency assistance. More resourceful local bodies can help neighboring local government optimize their capacity
- Organize periodic simulations and drills with the assistance of responsible agencies
- Develop first responders' capacity by establishing community responder teams and developing skills. Organize periodic first responder training to train community volunteers
- Assist in establishing city/community level early warning system and set up mechanisms for quick dissemination of early warning messages
- Educate the general public including school children on how to respond to an emergency situation
- Pre-position essential equipment for rescue of trapped people or people in need of assistance
- Identify places/areas suitable for evacuation of people during emergencies and ensure that the facilities, including cooking area and toilets in the designated places, are adequate for emergency evacuation

Welfare services during emergencies

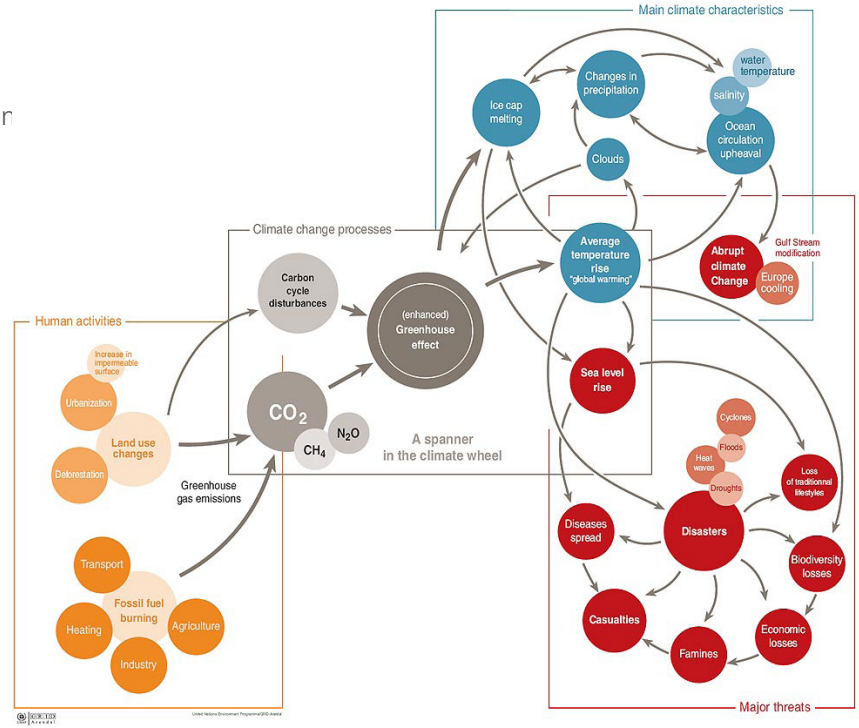
- Develop a database of local-level non-governmental organizations, private companies, etc. to obtain assistance and encourage their participation in delivering welfare services during disasters
- Encourage Red Cross Societies and civil society organizations to undertake regular programs with the involvement of volunteers to improve response capacity
- Organize regular city level meetings with non-governmental organizations, community-based organizations and civil society organizations before monsoon seasons to ensure adequate supply of resources and engagement in welfare activities during disaster events
- Identify evacuation centers and improve their facilities
- Involve Guides / Scouts, Red Cross volunteers, etc. in first aid and first medical response during emergencies
- Develop a welfare / emergency fund to assist victims during disaster events through volunteer contributions (not only cash but also in-kind contributions).
- Formulate community level teams and train them in emergency response

Linking Climate Change and Disaster Risk Reduction

The challenges posed by climate change and the development of strategies to address these challenges have quickly risen to the top of the international agenda over the past few years (see discussion in Book 1). Climate change is already said to undermine efforts to reduce poverty and achieve development goals by increasing people's vulnerability to climate-related disaster risks (such as risk to coastal flooding and extreme weather events).

Countries have been called upon to 'adapt' to the effects of climate change by reducing the vulnerability of natural and human systems to anticipate new environmental changes. This is an opportunity for a more integrated approach to climate change adaptation and DRR, particularly since they both need to be mainstreamed into development plans, poverty reduction strategies and sector development policies if they are to be sustainable. This could result in the following benefits:

- Reduce climate-related losses, through more widespread implementation of DRR measures
- Provide opportunities for sharing tools and approaches to avoid reinventing the wheel
- Prevent competition for financial and human resources, and encourage more efficient and effective use of them
- Avoid 'mainstreaming fatigue' where over-stretched personnel are expected to apply a number of different tools and methodologies to policy and program development.



Source: Vital Climate Graphics, 2005

For disaster risk managers, it is important to ensure that all DRR policies, measures and tools account for new risks and the aggravation of existing risks posed by climate change. Disaster risk reduction could contribute to risk generation if it does not account for and address the consequences of climate change. For example, a flood defense designed to withstand 'inappropriate' probabilities of flooding (i.e. without adequate consideration of climate change) could lull communities into a false sense of security in the ability of the defense to provide protection.

An initial move to facilitate mainstreaming would involve merging approaches to DRR and climate change adaptation in a single framework, under a single administrative unit. Here are two tools developed to help mainstream DRR and climate change in urban development:

The Operational Framework for Integrating Risk Reduction and Climate Change Adaptation into Urban Development is a detailed and comprehensive tool for doing the following:

- Evaluating the relevance of integrating risk reduction and climate change adaptation within an organization
- Identifying and prioritizing the various possible strategies for integrating risk reduction and climate change adaptation into the work of an organization
- Formulating activities and measures to implement the selected strategies
- Evaluating the possibilities of financing the activities
- Defining a step-by-step implementation plan

The tool is developed for operational and management staff, with indicators to monitor progress. It also includes sector-specific reference activities and recommendations for organizations working in urban development.

The World Bank, the Global Facility for Disaster Reduction and Recovery and the United Nations International Strategy for Disaster Reduction developed a Primer for local governments on how to reduce proactively the vulnerabilities to the impacts of climate change and natural hazards. The Primer presents information about climate change and DRR with examples of what cities can and are doing about it. It also presents a systematic city assessment process, and encourages governments and other stakeholders to undertake deeper analysis for mainstreaming climate change adaptation and DRR.

Case Studies

The two case studies illustrate mainstreaming DRR by two different cities - Dagupan City in the Philippines, and Lalitpur Sub-Metropolitan City in Nepal. Each mainstreaming case illustrates the vital role that any local official can play in the attempt to reduce disaster risk.

1. Dagupan City (Philippines) is one of the most successful demonstrations of community resilience to flood and tropical cyclone disasters, out of eight cities that participated in the Program for Hydro-Meteorological Mitigation for Secondary Cities in Asia (PROMISE). It was the only city in the program that mainstreamed DRR in its local governance processes. The case study provides the key changes that happened in the city.
2. The LSMC, located in Kathmandu Valley, is the first municipality to implement the National Building Code in 2003 before the implementation became mandatory. This case study demonstrates how legislation alone was insufficient for the effective implementation of the National Building Code and the incorporation of hazard-safe techniques in building construction. The municipality's structure, procedure, capacity, and commitment to safety are equally important.

Mainstreaming Disaster Risk Reduction in Dagupan City, Philippines

Dagupan City is a bustling urban center in Ilocos Region on Luzon Island of the Philippines, located along a seacoast and a river delta. Recurrent floods in the city's low-lying coastal delta areas cause regular damage and destruction to infrastructure, properties and economic activities. Increased siltation of the delta area due to upstream erosion and a growing population along riverbanks has increased Dagupan City's vulnerability to flood risks.

This case study is a showcase of a successful project of the that Dagupan City officials and the Philippines-based Center implemented this project for Disaster Preparedness.

The project activities have promoted the mainstreaming of risk management into local governance through the following mechanisms:

- A Technical Working Group dedicated to long-term disaster risk reduction (DRR)
- Local resolution establishing Dagupan City's Disaster Preparedness Day and its annual observance
- Local ordinance creating a Dagupan City's Emergency Operations Center, with staffing, initial capital outlay and an annual operating budget

Formation of a Technical Working Group

Prior to the ADPC project, Dagupan City had already begun taking steps to organize disaster response systems through a City Disaster Coordinating Council (CDCC). However, this body was primarily reactive in nature and did not have a comprehensive risk reduction plan in place. Moreover, the corresponding disaster management organizations at the barangay[1] level had become inactive, and communities continued to be dependent upon city and national authorities to provide assistance during flooding and other disaster events.

When the project began in 2006, the city government created a Technical Working Group comprised of members from the CDCC to focus on DRR, and to work closely with local communities and other stakeholders including non-governmental organizations and international agencies. The strategy was to form a multi-disciplinary group composed of heads and staff from various departments, namely:

- Bureau of Fire Protection
- City Agriculture Office
- City Engineering Office Office
- City Health Office
- City Information Office
- City Planning and Development Office
- City Public Order and Safety Office
- City Social Welfare and Development
- City Tourism Office
- Waste Management Division

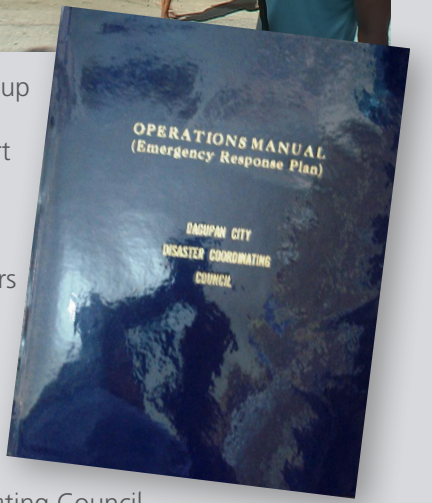
This approach meant that the CDCC would be active during all disaster phases, and not just during an emergency. Furthermore, since the members were mostly professional civil servants and not political appointees, the Technical Working Group's risk reduction efforts has not been affected by changes in political leadership. The plans and activities it formulated were implemented through its members' own roles as officials of the City Government. They included:

- Monitoring their evacuation centers' readiness for disasters
- Surveying each barangay for information on vulnerability to floods
- Promoting capacity building in DRR
- Coordinating its DRR activities with other interested parties

1 Barangay means "village". It is the smallest administrative unit in both rural and urban settings in the Philippines.

In formulating and implementing risk reduction activities, the Technical Working Group invited the active participation of other government agencies and civil society to provide inputs, including human, technical and financial resources. The key organizations involved included:

- The Philippine Atmospheric, Geophysical and Astronomical Services Administration for their expertise in flood early warning system
- The Philippine Institute of Volcanology and Seismology on the preparedness and mitigation of volcanic, earthquake, tsunami and other geotectonic hazards
- The Region 1 Office of the Department of Education to involve schools in raising awareness on disaster risk issues in Dagupan City
- Bantay Dagupan, an association of 17 Dagupan-based non-governmental organizations, service groups, special groups and businesses



The Technical Working Group divided itself into three facilitating teams to support eight pilot communities undertaking community-based DRM. The members guided community members in identifying appropriate and doable risk reduction measures.

The Group also catalyzed the revitalization of the Barangay Disaster Coordinating Council.

The Group built community awareness of the risks around them, encouraged community ownership of solutions that they can implement by themselves, and promoted the spirit of cooperation between communities, the city government and civic organizations.

Local Legislation for Disaster Risk Reduction

The Technical Working Group worked with the legislators of the City Council and developed Resolution No. 5469-2006 that designates 16 July of every year as Dagupan City Disaster Preparedness Day. This is a significant development because the resolution has made Disaster Preparedness Day part of the city's culture, ensuring the observance of disaster preparedness by succeeding city officials. This is an important point because the continuity of disaster preparedness must not be vulnerable to electoral cycles.

As the Technical Working Group continued its advocacy, and the City Council passed City Ordinance No. 1908-2007 on 10 December 2007 that mandated the establishment of a permanent Emergency Operation Center (EOC) in the city, with a budget for three regular staff and an EOC Manager. The EOC operates 24 hours a day for emergencies to ensure public order and safety. The EOC team later became part of the CDCC structure.

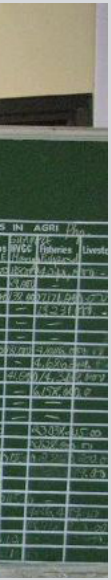
This "Disaster Data Board" is one of the simple systems that Dagupan City developed and installed in its EOC. Image source: Dagupan City Government.

Furthermore, the ordinance expands the concept of hazard from typhoons and flooding to include other natural hazards such as tsunami, earthquake, and drought, as well as human-made hazards including terrorism, bomb attack and robbery. The ordinance provides a PHP 2,000,000 annual operating budget to come from the annual budget of the City Government, and PHP 8,000,000 for capital outlay. Funds for emergency response come from the city's Calamity Fund.

Lessons Learned

From the experience in Dagupan City, they have the following key lessons to share:

Create a local group or committee dedicated to reducing disaster risks. Creating a Technical Working Group within the CDCC ensures continuity in the focus on DRM. This arrangement makes possible continuous capacity building, continuous risk monitoring, and close cooperation with key stakeholders, thus contributing to the successful mainstreaming of DRR in local governance.



Aim for vertical and horizontal integration of disaster management. Involved key players from government offices national to village (barangay) level, and from the private sector and civil society for effective disaster management.

Advocate for the passing of local legislation that provides an enabling environment and creates a multiplier effect in reducing disaster risks. This project in Dagupan City began when Mayor Benjamin Lim was in office and ended with Mayor Al Fernandez in office. Mayor Lim passed the resolution for the annual disaster safety day, and following successful advocacy by the Technical Working Group, Mayor Fernandez advocated that the City Council pass the ordinance to create an EOC.

Achievements

In August 2009, the Republic of the Philippines National Disaster Coordinating Council awarded the Dagupan CDCC the national Gawad Kalasag Award for disaster preparedness.. It was finally recognized as a model city for DRM in the country and the region, with the Philippine national government facilitating replication courses and regular exchanges of city officials to determine how to apply the successes of the Dagupan City model to other locations.

However, a harsh test was yet to come. On September/October 2009, typhoon Pepeng caused extensive damage and completely inundated Dagupan City. Utilizing the early warning systems and disaster management systems developed by the project, the city implemented pre-emptive evacuations of residents of the high-risk barangays.

Other neighboring cities and municipalities were badly affected by floods, but Dagupan City was well prepared even before the storm entered the country, and the result was that there were no casualties from one of the worst floods in the country's history.

Image source: Government of Nepal

Lalitpur Sub-Metropolitan City, Pioneer in Building Code Implementation in Nepal

Nepal's National Building Code was approved in 1993 although the national government did not make it mandatory for all municipalities and some village development committees to implement the code until 2006. However, up until now, only three of 58 municipalities have applied the National Building Code.

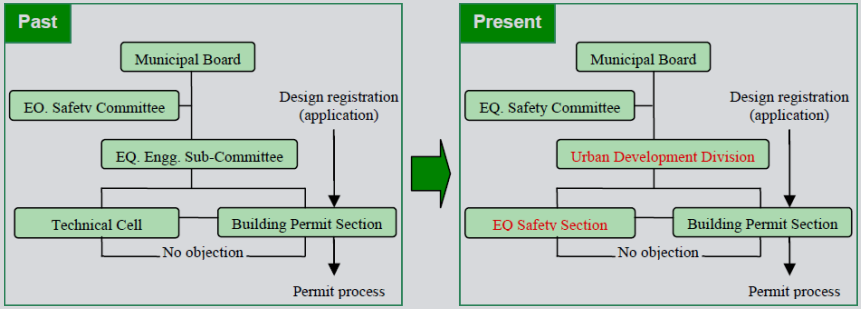
Lalitpur's decision to implement the National Building Code, announced on Earthquake Safety Day on 16 January 2003, was an historic milestone as it represented local government taking control of the safety of its own locality, and raised awareness on the need for building code implementation.

Changes to the municipal organization structure

Initially, a Technical Cell implemented the National Building Code. The cell was composed of a group of municipal engineers, engineers from the Department of Urban Development and Building Construction, National Society for Earthquake Technology, NESF and Nepal Electricity Authority. It was formed under the Engineering Sub-Committee of Lalitpur to oversee the building permit process. The cell checked if the applications for building permits conformed with the National Building Code and to building by-laws.

Figure 1

Changes in the municipal organization structure
(Source: Handbook on Building Code Implementation, 2008, p. 11)



To increase its efficiency and effectiveness, an Earthquake Safety Section was established, which worked in consultation with the Earthquake Safety Committee comprised of engineers from the Department of Urban Development and Building Construction, academics and other professionals to help LSMC in technical matters related to National Building Code implementation (see Figure 1 for changes to the municipal organization structure).

The building permit application process

The building permit application process has three stages. The first stage begins with application by the owner and ends with a temporary permit for construction up to plinth level.

In the second stage, the owner applies for a permanent permit and the Building Permit Section and Earthquake Safety Section carry out a field inspection jointly. If the construction is in conformity with the National Building Code and to building by-laws, the Section issues a permanent building permit.

In the third stage, field inspectors observe the work at the different phases of construction and finally, the Section issues a Completion Certificate to the owner. Figure 2 shows the process.

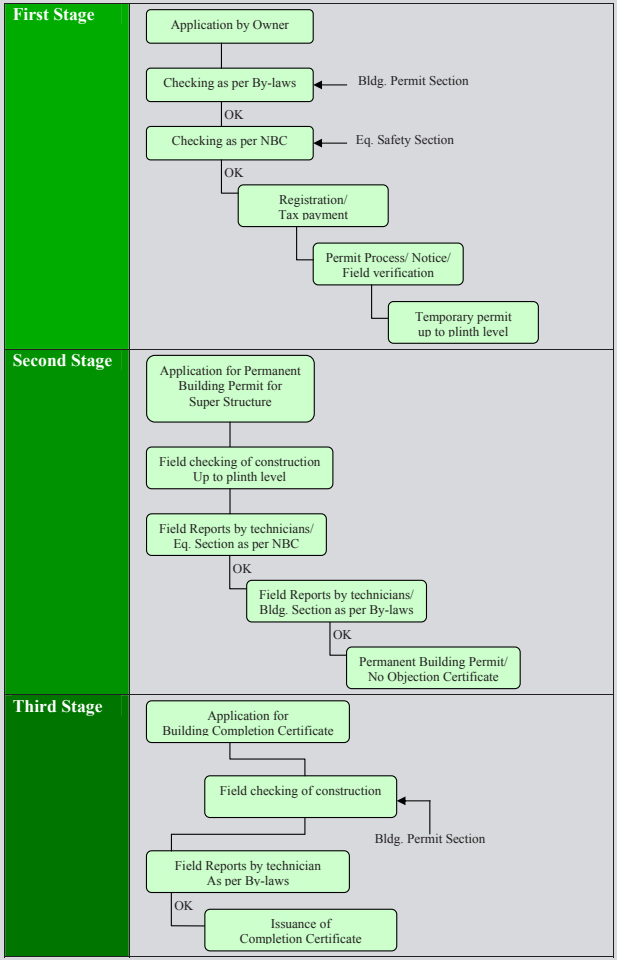


Figure 2 The three stages of the building permit process
(Source: Handbook on Building Code Implementation, 2008, p. 13)

Promoting compliance

The three-stage implementation process is a standard approach for the implementation of the National Building Code. However, LSMC subsequently decided to change temporarily the three-stage process to two stages due to complaints from house owners on the lengthy permit process. LSMC strategically focused its efforts on encouraging compliance to the building code (instead of strict enforcement). To promote compliance, LSMC:

- Carried out public awareness campaigns, involving the mass media
- Offered orientation classes to house owners on the process of building permit application
- Provided regular technical training to masons, engineers, designers and supervisors on the building code and on earthquake safe construction practices
- Published guidelines on Building Permit and Earthquake Safety

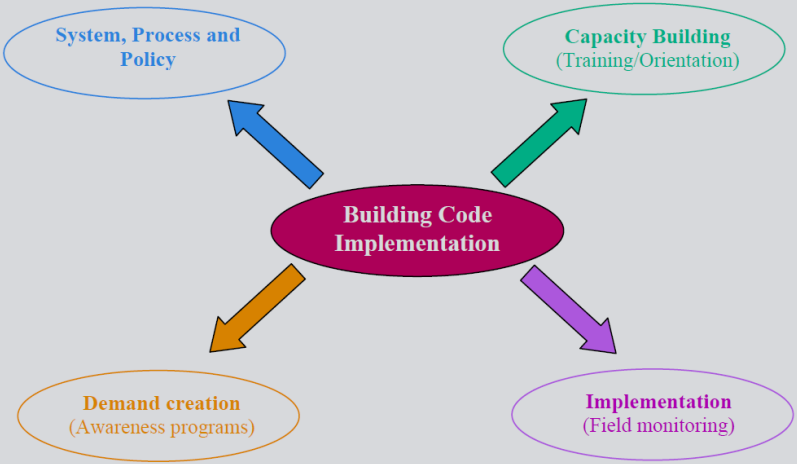
Technical persons from the Earthquake Safety Section often visited the construction sites for inspection, and provided one-to-one advice to masons, supervisors and owners on earthquake safety measures for houses.

LSMC made it clear in its awareness campaign that the National Building Code is not to penalize people for not following the code but to encourage earthquake safe construction and fulfill LSMC's vision for an earthquake safe city.

The last earthquake in Nepal was in 1934, which killed more than 4,000 people in Kathmandu Valley; 2,000 of those who died were in LSMC. Moreover, geological experts have shown evidence that an earthquake is long overdue in Nepal.

The masons who participated in the training organized by LSMC established a Lalitpur Earthquake Resistant Constructors Group with strong commitment to work together with LSMC to achieve the vision of earthquake safe city. The group has been instrumental in implementing the National Building Code in LSMC.

Figure 3 Four key components of building code implementation
(Source: Handbook on Building Code Implementation, 2008, p. 25)



Sound practices and lessons learned

A set of sound practices and lessons learned has been derived from the experience of implementing the National Building Code in LSMC. Figure 3 presents a model showing the basic components for effective implementation of the National Building Code.

1. Establishment of a process

Implementation of the building code requires a well-documented and systematic process. It also needs to be flexible. In order to ensure smooth implementation of the National Building Code, it is necessary to establish a realistic process.

One of the main features of the National Building Code is its recognition of the Mandatory Rules of Thumb, which simplifies the implementation process significantly in municipalities where large building construction is rare.

To encourage owners to comply with the building code and apply for building permits, municipalities can begin with the implementation of the Mandatory Rules of Thumb, while at the same time building up the other three components listed below – capacity building, field monitoring and demand creation.

2. Capacity building

It is critical to provide training to all stakeholders from owners to engineers. It is useful to conduct a training needs assessment to analyze the capacity gaps.

Regular training needs to be organized, including the provision of refresher courses. Training can also be informal through one-to-one consultations during field inspection.

3. Field monitoring

One of the important aspects of building code implementation is its effective implementation in practice. Building performance is more a function of the way that they are constructed rather than the way that they are designed. Field inspection is one of the key components to ensure earthquake resilient construction.

4. Demand creation

Public awareness will create demand for safe building, as well as demand for trained masons, designers and artisans who are knowledgeable in earthquake safe construction. Moreover, public awareness will encourage owner's own monitoring of the construction, as technical staff for field inspection is likely to be limited.

Summary

Now is an opportune time to mainstream DRR in urban development processes. Catalyzed by the HFA Priority 4 specifies incorporating DRR into urban planning, the Indian Ocean tsunami disaster in 2004, and increasing concern related to climate change, unplanned urbanization, rapid population growth and environmental degradation have escalated the profile of disaster risk reduction (DRR) and the need for its consideration as an integral part of development efforts.

The past several years have witnessed important commitments by both governments and donor agencies to integrate DRR into development frameworks, legislation and institutional structures, economic sector development strategies and policies.

The national government plays an important role in providing an enabling environment for mainstreaming DRR by:

- Strengthening the legal and regulatory instruments
- Determining broad DRR policies and strategies
- Advocating for the inclusion of DRR concerns in broader development policies
- Defining responsibilities at different levels of government towards a coordinated, multi-sector, multi-tiered risk management process
- Providing resources to support DRM mainstreaming, including funds and training opportunities
- Monitoring and evaluating progress towards DRR

Local governments and communities play key roles in the mainstreaming process by incorporating information on hazard, vulnerability, capacity and risk in local development plans, and by integrating risk reduction measures into their day-to-day functions and services, as described in section 3. Local governments are also in a position to ensure that the implementation of measures such as land-use planning, building controls and others development activity reduce vulnerability and do not generate new risks. Broad objectives of mainstreaming DRR at the local government level include the following:

- Plan for change to ensure public safety, protection of built environment and sustainable urban development
- Follow the principles of good governance
- Raise awareness
- Develop capacity and provide relevant training to government staff and partners
- Develop guidelines and tools for the mainstreaming of DRR

Steps proposed for mainstreaming DRR at the local level are as follows:

- Understand the hazard environment, and the vulnerabilities and risks of your locality, including the impact of climate change (obtain the assistance of professional bodies/mandated national level agencies to conduct a risk assessment)
- Develop a long-term action plan for the city identifying areas for reducing risks (develop a city level forum to engage stakeholders)
- Identify existing service functions of local government or development projects in which DRR can be mainstreamed
- Build alliances to enhance the resource base. Identify external assistance needed that can be provided by national/state/provincial governments, international and UN agencies, non-governmental organization, professional bodies, private sector, etc.

The interaction with non-governmental organizations, community-based organizations, businesses, academia and media, is key to raising awareness and to initiating participatory processes that enable concrete actions through innovative tools. Possible interventions by other stakeholders in supporting local government and in advocating for mainstreaming DRR in development include the following:

- Assist in development of generic guidelines to facilitate the integration of risk reduction in all functions carried out by local governments
- Assist in organizing capacity building programs
- Facilitate local level projects/demonstration activities to convince the authorities
- Conduct lessons learned workshops
- Publish and disseminate sound practices
- Organize regional and national level meetings and seminars to share experience and knowledge

references

Preface

Asian Development Bank, Managing Asian Cities: Sustainable and inclusive urban solutions, 2008.

International Federation of Red Cross and Red Crescent Societies, World Disasters, Geneva, 2009.

Shaw, R. et al., Reducing Urban Risk in Asia: Status Report and Inventory of Initiatives, Kyoto University, 2009

United Nations Human Settlements Programme, State of the World's Cities 2008/2009: Harmonious Cities, 2008.

United Nations Human Settlements Programme, Global Report on Human Settlements 2007: Enhancing Urban Safety and Security, 2007.

Introduction

—, Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters, Section 4, paragraph 19 (iii), p. 12.

Asian Disaster Preparedness Center, Towards a Tool Kit on Mainstreaming Disaster Risk Reduction, November 2006, p. 49.

Benson, C. and J. Twigg, Tools for Mainstreaming Disaster Risk Reduction: Guidance Notes for Development Organisations, January 2007.

United Nations Development Programme, Reducing Disaster Risk: A Challenge for Development, table 1.1, 2004, p. 20.

How can disaster risk reduction be mainstreamed into local development?

Mitchell, T.," An Operational Framework for Mainstreaming Disaster Risk Reduction," Disaster Studies Working Paper 8, 2003.

Pelling, M. and A. Holloway, Legislation for mainstreaming disaster risk reduction, Tearfund, 2006.

United Nations International Strategy for Disaster Reduction and Kyoto University, A Guide for Implementing the Hyogo Framework for Action by Local Stakeholders, consultation version, 2010, box, p. v

Sector integration of risk factos?

Bendimerad, F. et al., Urban and Megacities Disaster Risk Reduction: Manual of Sound Practices, Earthquakes and Megacities Initiative, 2007.

Benson, C. and J. Twigg, Tools for Mainstreaming Disaster Risk Reduction: Guidance Notes for Development Organisations, January 2007.

United Nations Human Settlements Programme, Global Report on Human Settlements 2007: Enhancing Urban Safety and Security, 2007.

Venton, P. and S. La Trobe, Linking climate change adaptation and disaster risk reduction, July 2008, p. 14.

Wamsler, C., "Operational Framework for Integrating Risk Reduction and Climate Change Adaptation into Urban Development," working paper, August 2009.

World Bank, Climate Resilient Cities: A Primer on Reducing Vulnerabilities to Climate Change Impacts and Strengthening Disaster Risk Management in East Asian Cities, June 2008.

Case Studies

Iglesias, G., "Cooperation between Local Authority and Communities: Reducing Flood Disaster Risk in Dagupan City, Philippines," Safer Cities series, April 2007.

Subedi, J. and N. Mishima (eds.), Handbook on Building Code Implementation: Learning from Experience of Lalitpur Sub-Metropolitan City, Nepal, 2008.

glossary

Note: All definitions provided in this series of "Urban Governance and Community Resilience Guides," are the terminology promoted by the UNISDR in 2009, unless otherwise stated.

Adaptation - The adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.

Capacity - A combination of all the strengths and resources available within a community, society or organization that can reduce the level of risk, or the effects of a disaster. Capacity may include physical, institutional, social or economic means as well as skilled personal or collective attributes such as leadership and management. Capacity may also be described as capability.

Climate Change - The Inter-governmental Panel on Climate Change defines climate change as: "a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forcings, or to persistent anthropogenic changes in the composition of the atmosphere or in land use."

Disaster - A serious disruption of the functioning of a community or a society causing widespread human, material, economic or environmental losses which exceed the ability of the affected community or society to cope using its own resources.

Disaster Risk Management - The systematic process of using administrative decisions, organization, operational skills and capacities to implement policies, strategies and coping capacities of the society and communities to lessen the impacts of natural hazards and related environmental and technological disasters. This comprises all forms of activities, including structural and non-structural measures to avoid (prevention) or to limit (mitigation and preparedness) adverse effects of hazards.

Disaster Risk Reduction - The conceptual framework of elements considered with the possibilities to minimize vulnerabilities and disaster risks throughout a society, to avoid (prevention) or to limit (mitigation and preparedness) the adverse impacts of hazards, within the broad context of sustainable development.

Exposure - People, property, systems, or other elements present in hazard zones that are thereby subject to potential losses.

Hazard - A potentially damaging physical event, phenomenon or human activity that may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation.

Mitigation - Structural and non-structural measures undertaken to limit the adverse impact of natural hazards, environmental degradation and technological hazards.

Preparedness - Activities and measures taken in advance to ensure effective response to the impact of hazards, including the issuance of timely and effective early warnings and the temporary evacuation of people and property from threatened locations.

Prevention - Activities to provide outright avoidance of the adverse impact of hazards and means to minimize related environmental, technological and biological disasters. Depending on social and technical feasibility and cost/benefit considerations, investing in preventive measures is justified in areas frequently affected by disasters. In the context of public awareness and education, related to disaster risk reduction changing attitudes and behavior contribute to promoting a 'culture of prevention'.

Recovery - Decisions and actions taken after a disaster with a view to restoring or improving the pre-disaster living conditions of the stricken community, while encouraging and facilitating necessary adjustments to reduce disaster risk. Recovery (rehabilitation and reconstruction) affords an opportunity to develop and apply disaster risk reduction measures.

Response - The provision of assistance or intervention during or immediately after a disaster to meet the life preservation and basic subsistence needs of those people affected. It can be of an immediate, short-term, or protracted duration.

Risk - The probability of harmful consequences, or expected losses (deaths, injuries, property, livelihoods, economic activity disrupted or environment damaged) resulting from interactions between natural or human-induced hazards and vulnerable conditions.

Vulnerability - The conditions determined by physical, social, economic, and environmental factors or processes, which increase the susceptibility of a community to the impact of hazards.

About the guidebooks

Recognizing the important role local governments can play in reducing disaster risks, the Asian Disaster Preparedness Center has developed a series of "Urban Governance and Community Resilience Guides" to guide local governments in understanding disaster risks in the locality and in identifying measures to enhance their citizens' safety.

The intention is not to develop a technical guide, but rather to raise awareness of the challenges local governments face in reducing disaster risks. These guidebooks offer essential tools and possible solutions to make that will help local governments to make effective decisions.

The series, comprised of four guidebooks, is designed in such a way that they can be used as self-study material by individual readers, as a resource for participants in a training course or program, or as a reference for government officials. Each guidebook is a standalone book as well as linked to the others. Effort has been made in each guidebook to link with discussions in the other guidebooks in the series.

Each guidebook contains case studies and questions that are designed to enable readers or trainees to think reflectively on the concepts and issues presented, and draw on their own experience to benchmark the content. The aim is to make the content as closely relevant to their work experience as possible, and to enable readers to link the knowledge gained to their own experience in order to solve problems.

The first guidebook provides the basics of disaster risk management. Subsequent guidebooks in this series serve to provide the 'how-to' of disaster risk management. The topics include essential tools, good practices and step-by-step guides that are vital to the successful implementation of risk reduction projects in urban communities.

Book 1 demonstrates the potentially destructive impacts of various hazards and climate change on urban communities. It examines the causes of increasing urban risks, and stresses the urgency to act now in a collaborative and integrated manner involving all sectors of society. It shows the importance of understanding the unique conditions at the local level, and of harmonizing efforts over larger geographic areas.

Book 2 provides guidelines in selecting appropriate assessment methodologies to evaluate risks and support decision-making processes.

Book 3 outlines the planning process in managing urban disaster risks. This book focuses on the process of transforming the knowledge gained through various assessments into appropriate, effective and sustainable actions, towards safer urban communities.

Book 4 introduces the concept of 'mainstreaming' as the core framework for local government to reduce disaster risks. This guidebook demonstrates how to integrate the principles of disaster risk management into development goals, governance arrangements and action strategies.

Do you have comments or suggestions about the guidebook? If yes, kindly send us an email at *adpc@adpc.net*

ADPC resources on mainstreaming DRR into local governance

RCC Working Paper, "Mainstreaming Disaster Risk Reduction: A Road Towards Sustainable Urban Development and Creating Safer Urban Communities,": http://rccdm.net/sites/default/files/MainstreamingDRR%20Urban%20Local%20Governance-Working%20Paper.pdf

Webpage on PROMISE country demonstration projects on mainstreaming DRR into local governance: http://www.adpc.net/v2007/Programs/UDRM/PROMISE/PROGRAM%20COMPONENTS/Component3/Component3.asp

Regional Course on Mainstreaming Disaster Risk Reduction into Local Governance: http://www.adpc.net/v2007/Programs/UDRM/PROGRAMS%20&%20PROJECTS/CAPACITY%20BUILDING/TRAINING/05GDRR.asp

PROMISE

The development of the guidebook series was supported by the Program for Hydro-Meteorological Disaster Mitigation in Secondary Cities in Asia (PROMISE). PROMISE ran from 2005 to 2010, with city demonstration projects in Bangladesh (Chittagong and Jamalpur), Indonesia (Jakarta), Pakistan (Hyderabad), the Philippines (Dagupan and Pasig), Sri Lanka (Kalutara and Matara), and Viet Nam (Da Nang). Support came from the local governments of each city, and from the Office of Foreign Disaster Assistance of the U.S. Agency for International Development (USAID/OFDA). This paper was developed under the component "Regional Information and Networking." Learn more about PROMISE at: http://www.adpc.net/v2007/Programs/UDRM/PROMISE.

Urban Governance and Community Resilience Guides

USAID

adpc

Our Hazardous Environment 1

Urban Governance and Community Resilience Guides

USAID

adpc

Risk Assessment in Cities 2

Urban Governance and Community Resilience Guides

USAID

adpc

Planning for Disaster Risk Reduction 3

Urban Governance and Community Resilience Guides

USAID

adpc

Mainstreaming Disaster Risk Reduction 4