Urban Governance and Community Resilience Guides

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Our Hazardous Environment

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our hazardous environment

book 1

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.

Dr. Bhichit Rattakul
Executive Director, ADPC

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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

Recent Urban Disasters and their Impact

A number of urban disasters have recently occurred in the Asia region. The short case studies in the next pages a glimpse at the extent of the damages and losses caused by disasters.

They also demonstrate that these disasters are a result of failures in development (e.g. unsafe buildings that could not withstand the Pakistan earthquake) and a lack of capacity to prepare for and manage various risks (e.g. lack of a system in place to communicate the tsunami warning message to communities at risk).

The case studies show that disasters are closely linked with development in that disasters can both destroy development initiatives and create development opportunities and that development projects and programs can both increase and decrease disaster risks.

❊ Disasters set back development gains: Disasters can destroy years of development interventions, including infrastructure and property. They can stall or even reverse progress made in social and economic development.

❊ Disasters also contribute to delays to development programs, cancellation of programs, disincentives to new investment, and diversion of development funds for relief and recovery. The 2004 Indian Ocean tsunami, for example, raised Aceh's poverty rate from 17.6% in 2004 to 20.4% in 2005. However, the urban poverty rate fell the next year to 14.7%, likely reflecting the effects of the initial relief and reconstruction effort.

❊ Unsustainable development increases disaster risk: Unplanned urbanization, environmental degradation and inappropriate land use are key factors contributing to the increase in disasters. For example, the filling in of natural drainage channels to construct roads and houses increase the risk of flooding.

* Disasters may become opportunities for building back better development practices: Rebuilding after a disaster provides opportunities to implement positive changes to enhance the safety of urban communities, through revision and development of new policies, awareness raising activities, relocation, etc.

* Disaster losses may be reduced by integrating disaster risk management practices in development programs: This will require the strengthening of institutions and mechanisms for disaster risk management; and the adoption of disaster risk management practices and principles in sectoral development. For example, housing projects constructed under building codes designed to withstand high winds during the next tropical storm.

THINK ABOUT THESE

As you read through the short case studies, consider these questions:

* Was your locality affected by these disaster events?

* If not, have you experienced similar disaster events?

* How do you think the impact of these disaster events can be minimized or avoided?

TYPHOON ONDOY (KETSANA) AND TYPHOON PEPENG (PARMA)

In September 2009, Typhoon Ondoy lashed at Metro Manila in the Philippines.

In less than a week came Typhoon Pepeng, with the entire nation still in shock by the devastation wrought by Ondoy. It carved a trail of destruction in Northern Luzon for almost two weeks.

The extreme effects of the two tropical cyclones are deaths due to massive flooding and landslides brought about by continuous rain.

The scale of the disasters was magnified by the impact of the disasters in **highly populated economic centers**.

Ondoy flooded Metro Manila and nearby provinces, while Pepeng flooded most parts of Northern Luzon, specifically the province of Pangasinan.

A post-disaster assessment led by the World Bank estimates the total cost of recovery and reconstruction at US$ 4.42 billion.

Given the very limited capacity of the flood management system in Metro Manila and the possibility of increased frequency and intensity of floods and typhoons, such costs can be expected to **recur more frequently unless urgent efforts are made to mitigate the effects of future disasters**.

Photo by Erik de Castro/REUTERS

DENGUE OUTBREAK IN THAILAND

In 2008, a combination of rising temperatures, longer rainy seasons and increased urbanization led to an explosion of dengue fever cases in Thailand.

Over 40,000 people were diagnosed with dengue haemorrhagic fever, and Bangkok was the hardest hit with about 4,000 patients.

Dengue is a tropical, mosquito-borne infection found mostly in urban and semi-urban areas. The disease is more common than malaria in Thailand.

According to the World Health Organization (WHO), the disease was first detected in Thailand in 1949 when about 2,100 cases were reported. Since then there has been two major epidemics – in 1987 and 1998.

The outbreak in 2008 has been more severe because of increased population and warmer and wetter conditions.

A WHO report in 2006 stated that the higher dengue infection rates were a result of "**demographic explosion**" and "**rapid growth of urban centers with a strain on public services**, such as potable water."

Bangkok's growing slums are especially susceptible to dengue outbreaks. Residents have poor access to drinking water and often use ceramic jugs to collect rainwater. The jugs are ideal breeding grounds for dengue mosquitoes.

PAKISTAN EARTHQUAKE

Balakot used to be a bustling city with visitors and tourists pouring in from all over the world. It is known as a gateway to the countryside of northern Pakistan, and most people passing through would stop for food or fuel, hire a jeep, or stay overnight before continuing their journeys.

Many Balakot residents derived their livelihoods from this constant flow of visitors.

All of this changed in an instant on the morning of 8 October 2005 when an earthquake completely leveled the city.

It was the hardest-hit town in Pakistan - not a single house remained undamaged and more than 80% of the infrastructure was damaged.

Estimates show that less than one in every two inhabitants of the city survived the horrific quake.

According to UNDP, Pakistan will need **at least 10 years to fully recover from the damage**.

The Government of Pakistan decided to rebuild Balakot in a safer location and is estimated to cost US$200 million.

This has brought to the fore a wide array of issues and challenges related to:

❊ The long-term displacement of the urban residents
❊ Provision of basic services and livelihood support at the relocated site
❊ Development and enforcement of earthquake-safe standards in construction

INDIAN OCEAN EARTHQUAKE AND TSUNAMI

The Indian Ocean Earthquake and Tsunami of December 2004 wreaked havoc and devastation on the coastlines along the Indian Ocean rim, including a number of **coastal cities** such as Banda Aceh (Indonesia), Hambantota (Sri Lanka) and Phuket (Thailand).

In all, about a quarter of a million people from 14 countries died as a result of the disaster.

While the tsunami waves caused by the earthquake could not have been prevented, its extensive impact was preventable.

Many of the communities struck by the waves were hit about two hours after the earthquake that triggered them. Anecdotal reports emerging in the aftermath of the catastrophe told of isolated teams of experts who tracked the progress of the tsunami remotely but **did not have the means to raise the alarm among the communities at risk**.

The disaster has prompted cities and communities to protect themselves against future disasters by:

∗ Creating disaster preparedness institutions and policies
∗ Developing new regional and national early warning systems
∗ Promoting community-based disaster awareness and preparedness

BHOPAL INDUSTRIAL DISASTER

The accident at Union Carbide's pesticide plant in Bhopal, India in 1984 exposed 500,000 people, the majority living in **low-income settlements close to the plant**, to toxic methyl isocyanate gas and other toxins.

Not only did the incident cause thousands of deaths and injuries, its **heath impacts have carried over generations** and are still being recorded today in newborns whose parents were exposed to the released gas.

Bhopal is a prime example of urban processes generating disaster risk.

On one hand, foreign investment can bring prosperity and be a resource for risk management.

On the other hand, it can lead to increased vulnerability through the **lowering of employment rights as well as poor regulation of housing construction** as settlements grew around the plant.

The gas released from the Union Carbide plant was associated with **technical and management failures** inside the plant.

The lack of preparedness and response capacity further increased the vulnerability of those living near the plant.

Images taken from (clockwise from top): 1) http://www.biomedcentral.com; 2) http://enews.toxicslink.org; 3) http://www.bhopal.net

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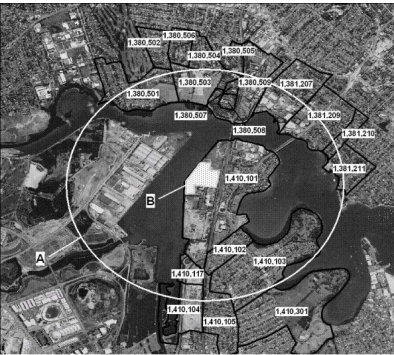
ABC's of Disaster Risk Management

There are a handful of commonly used terms in disaster risk management that all local governments should become familiar with and understand. They include disaster, hazard, vulnerability, capacity and risk.

* The typhoons Ondoy and Pepeng in September/October 2009
* The outbreak of Dengue in Thailand in 2008
* The Pakistan Earthquake in October 2005
* The Indian Ocean Earthquake and Tsunami in December 2004
* The industrial accident at Bhopal in 1984

These events are all disasters because they caused widespread human, material, economic and/or environmental losses that exceeded the ability of the affected community to cope using its own resources.

Hazard

Disasters are caused by one or more hazards such as earthquake, storm and tsunami. Notice that some of these events are not caused by a natural phenomenon.

Hazards can be divided into natural hazards, human-made hazards and human-induced hazards.

Natural hazards are natural processes or phenomena within the earth system (lithosphere, hydrosphere, biosphere, or atmosphere) that may constitute a damaging event.
Examples: cyclones, earthquakes, floods, landslides, storms

Human-made hazards include dangers originating from technological or industrial accidents, dangerous procedures, infrastructure failures or certain societal activities such as conflicts that may cause the loss of life or injury, property damage, social and economic disruptions or environmental degradation.
Examples: industrial pollution, nuclear activities and radioactivity, toxic wastes, dam failures, and transport, industrial or technological accidents (explosions, fires, spills)

It is important to understand that the hazard itself does not result in a disaster.

Hazard is 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.

A cyclone that surges over an uninhabited island does not result in a disaster; however, it would be a disaster if it hit a populated coast and caused extensive loss of lives and property.

Vulnerability

A family living on the coastline is more exposed to cyclones, storms and tsunamis than another family whose house is located further away on higher land.

But for a family living in a poorly constructed house along the coast, they are more vulnerable to cyclones, storms and tsunamis than a family living in a strong house in the same area.

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

Where families are living, whether their houses are strong, and their ability to anticipate, cope with, resist and recover from the impact of a hazard, are determined by a complex set of conditions that contribute to vulnerability.

Vulnerability can be grouped into three categories:

Physical and material vulnerability: Weakness of the built environment and lack of access to resources, i.e. proximity and exposure to specific hazard (living on a hazard prone areas or in unsafe buildings), and lack of resources, savings and assets.

Social and organizational vulnerability: Inequality in social systems that discriminate against and marginalize certain groups of people from accessing resources and services, including assistance after disasters; and because of their status, prevents them from voicing their needs and participating in decision-making processes. This social process of exclusion is based on:

❋ Age	❋ Gender
❋ Class	❋ Occupation
❋ Ethnicity	❋ Religion

Often, a combination of these social divisions magnifies people's vulnerability. Children and the elderly or widowed women belonging to a minority ethnic group of the poor class tends to be more vulnerable to hazards.

Attitudinal and motivational vulnerability: Existence of fatalistic myths and religious beliefs influence people's vulnerability to disaster risks. If people believe that disasters are 'acts of God' and if they have low confidence in their ability to affect change or have 'lost heart' and feel defeated by events they cannot control, these people are often harder hit by disasters than those who have the strength to survive and a sense of confidence to bring the changes they desire.

Disasters can happen when people who are vulnerable simply do not know how to get out of harm's way or what protective measures to take. There may be a lack of awareness about measures that can be taken to build safe houses. Some people may not know about evacuation routes and procedures whereas others may not know where to turn for assistance in times of acute distress.

See the section "Factors contributing to the increasing vulnerability of urban areas" for a detailed discussion.

Risk

Risk is the combination of hazard and vulnerability.

Risk is 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.

A community is said to be 'at risk' when it is exposed to hazards and is likely to be adversely affected by the impact of those hazards when they occur.

People (their lives and health), household and community structures, facilities and services (houses, access roads, bridges, schools, hospitals, etc.), livelihood and economic activities (jobs, equipment, etc.) are described as '**elements at risk**'.

Risk can be represented as follows:

$$\text{Risk} = \frac{\text{Hazard X Vulnerability X Exposure}}{\text{Capacity}}$$

From the equation, it becomes clear that protection against risk can be achieved – by reducing or modifying the nature and behavior of the hazard, by reducing vulnerability and exposure, and/or by increasing capacity.

In certain circumstances, the impact of the hazards can be reduced. The construction of levees along the banks of rivers can reduce the chance of flooding in surrounding areas. It is also possible to prevent potential known landslides and rockfalls by stabilizing land pressures, constructing retaining walls and improving the drainage of slopes. Engineering works can contain the destructive agents of some hazards or divert the threat away from important elements with channels and excavation. In some cases, tree planting can be an effective way to reduce the potential for floods and mudslides.

Risk reduction, however, is increasingly being recognized as a vital strategy in disaster risk management, by building or strengthening capacity of an individual, household or community to adjust to threats, to avoid or mitigate harm, and to recover quickly from disaster events.

Human capacities include:

* Physical and material resources, e.g. cash, food, land, properties, tools
* Social and organizational capacities, e.g. access to social networks, leadership, various skills, experiences and knowledge
* Attitudinal and motivational capacities, e.g. beliefs, compassion, confidence, creativity

In most disasters, people suffer their greatest losses in the physical and material realm.

However, even when everything physical is destroyed, people still have their skills, experiences and knowledge; they have family and social networks. They have leaders and systems for making decisions. They also have local, collective 'wisdom' reflected in their cultural practices that help them reduce or cope with disaster risks.

People also have positive attitudes and strong motivations such as the will to survive and willingness to help each other.

People's social/organizational capacities and attitudinal/motivational capacities are important capacities and form the basis for development just as much as the material resources that people have (see Table 1).

	Vulnerabilities	**Capacities**
Table 1	Summary of the different vulnerabilities and capacities in a locality	

	Vulnerabilities	**Capacities**
Physical/material	Proximity and exposure to specific hazard (living on a hazard prone areas). Poverty – few options, no financial savings, few assets. Limited resources, technology, skills or employment.	Money, assets, land, jobs, savings. Insurance Good health Protected location Skills and expertise
Social / organizational	Marginalization- people excluded due to politics, religion, ethnicity or social customs and norms. Organization – limited community or legal structures. Discrimination – lack of support, reduced access to resources and services.	Community support, Leadership, institutions. Political structures, adequate management. Community cohesiveness.
Motivational/ attitudinal	Perception of risk – deny the threat, unaware and misconception of threat. Attitude – no confidence in their abilities, View themselves as dependent. Power – no influence in the community.	People with confidence, dignity and independence. Ability to influence their environment. Hold a strong belief system. Aware of how disasters affect them.

QUESTIONS TO ASK

* In your city or local government area or community, what hazards do you face?

* List out the biggest disaster events experienced by the citizens of your local government area during the last 10 years. Do you have a system to record them in detail?

* What actions were taken by your local government to help the affected people in the most serious disaster event during the last 10 years? Which units or departments were actively involved? What resources were used?

* Within your city or community some areas are safer than others. Can you identify which areas are safer from the hazards you mentioned above, and why each are safer than the rest of the areas?

* Is your office capable of managing during a disaster? In what ways? List down your office's capacities.

Perception of risk

Different people have different perceptions of risk depending on their values, culture, experience, age, profession, and other social and economic factors. These perceived risks may be different from 'real' risks that are measured scientifically.

For example, a community who has not experienced severe flooding may deny that it can happen, even when they are presented with results of a risk assessment showing evidence that severe flooding can occur.

People's perception of risk is important because it is one of the key factors determining their susceptibility to participate in disaster risk reduction activities.

For example, living near a chemical processing plant may pose certain risks but may also bring the benefit of employment for the nearby population. To those who choose to live near the plant, the benefits may outweigh the risks of a chemical accident.

Perceptions are shaped by a number factors based on
* Personal experience
* Rate of occurrence and nature of past disaster events
* Availability of disaster-related information
* Socio-economic status

Each person will determine a unique level of acceptable risk based on these and other factors.

It is this very personal and individual perception of risk that needs to be examined, discussed and understood in order to build a culture of safety. Knowing different people's perception of risks is critical to the successful implementation of disaster risk reduction projects and programs, including public awareness campaigns.

Perceptions can change, and when they do, the level of acceptable risk may also change. Some people may become less 'risk tolerant' while others may be willing to tolerate a higher level of risk to sustain activities necessary for immediate survival. These changes may depend on experience, education or even misinformation.

Factors Contributing to the Increasing Vulnerability of Urban Areas

By their nature, cities are particularly vulnerable to natural and human-made disasters due to a complex set of interrelated processes, including:

Vulnerability
i.   The concentration of people and assets
ii. The location of urban centers

Drivers of vulnerability
iii. The rapid growth of urban areas and unplanned urbanization
iv. The modification of the built and natural environment through human actions

Root causes
v.   Poverty and other social vulnerabilities
vi. Weak urban governance

The Progression of Vulnerability

1   2   3

Figure 1 — Blaikie's framework of the progression of vulnerability, with examples from an urban area

Root Causes

Limited access to
- Power
- Structures
- Resources

Ideologies:
- Political Systems
- Economic Systems

Dynamic Pressures

Lack of:
- Local Institutions
- Training
- Appropriate skills
- Local investments
- Local makets
- Press freedom
- Ethical Standards in public life

Macro-forces
- Rapid population
- Rapid ubanization
- Arms expenditure
- Debt repayment schedules
- Deforestation
- Decline in soil productivity

Unsafe Conditions

Fragile physical environment
- Dangerous locations
- Unprotected buildings and infrastructure

Fragile local economy
- Livelihoods at risk
- Low income levels

Vulnerable society
- Special groups at risk
- Lack of local institutions or DRR and /or emergency preparedness
- Low literacy levels

Public actions
- Lack of disaster preparedness
- Poor public health services
- Poor urban planning

Disaster

Risk= Hazard + Vulnerability (R=H+V)

Hazards

NATURAL
Earthquake
High winds (tropical cyclone)
Flooding
Volcanic eruption
Landslide
Drought
Viruses, bacteria and pests

MAN-MADE
Traffic accidents
Fires
Chemical spills
Radioactive spills
Armed conflict

The concentration of people and assets

High concentrations of people and physical and financial assets in today's fast-growing cities means that a single disaster can result in human catastrophe and destroy decades of development gains.

All of the 10 most populous cities in Asia, for example, are vulnerable to earthquakes and storms; about half of them in high risk zones, and 90% are vulnerable to floods (see Table 2).

The location of urban centers

Location is a major determinant of the type and frequency of natural hazards a city may experience.

Urban populations are also often located in inland water systems such as rivers, lakes, floodplains, reservoirs and wetlands.

Settling near large bodies of water has clearly been an important factor in the economic and demographic growth of cities.

Locations near water offered opportunities for fishing and agriculture, which helped ensure a steady food supply.

Coastal cities and cities located in river deltas served to link local economies to regional and global supply chains and trade.

But at the same time, the strategic location of cities also exposes them to various hazards.

Table 2		Ten most populous Asian cities and associated disaster risk						

City	2010 Projected Population (in thousands) Source: Global Report on Human Settlements, 2007	Ranking of Risks by Hazard (3 = high; 2 = medium; 1 = low; 0 = none) Source: Megacities - Megarisks, 2004						
		Earthquake	Volcanic Eruption	Tropical Storm	Other Storms (winter storms, hailstorms, tornado)	Flood	Tsunami	Storm Surge
Tokyo	36,094	3	1	2	2	1	1	2
Mumbai	20,072	2	0	1	1	1	0	1
Delhi	17,015	2	0	0	2	2	0	0
Shanghai	15,789	1	0	3	1	2	0	3
Kolkata	15,577	2	0	3	2	3	0	2
Dhaka	14,796	3	0	3	2	3	0	1
Karachi	13,052	3	0	1	1	2	1	2
Beijing	11,741	2	0	0	2	0	0	0
Manila	11,662	3	2	3	2	2	2	1
Osaka-Kobe	11,337	3	0	2	2	2	1	2

Figure 2

Urban density by ecosystem
Source: Global Report on Human Settlements, 2007
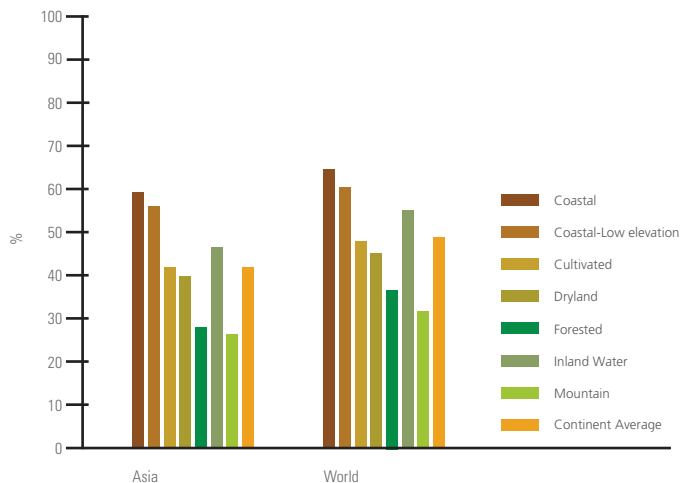
As shown in Figure 2, urban densities are greatest in the coastal zone, and even more so in low elevation coastal zones (LECZs) – the area that is less than 10 meters above sea level. In the LECZs, populations, assets and the large concentration of economic activities are exposed to a number of hazards including flood and tropical storms.

Recent catastrophes that occurred in the LECZs included the 1998 flood in Dhaka, Bangladesh that lasted for about 50 days, and the 2002 flood in Jakarta, Indonesia.

Climate change threatens to further increase coastal cities' risk to hazards, including sea level rise (see the section on "Climate Change and Cities").

The rapid growth of urban areas and unplanned urbanization

The rapid growth of urban areas due to in-migration and natural population increases has in many instances led to unplanned expansion of cities.

The haphazard growth often far exceeds cities' capacity to adequately plan development.

This has contributed to the growth of slums (often in hazardous locations) characterized by various conditions of vulnerability, including overcrowding, poor or informal housing, inadequate access to safe water and sanitation, and insecurity of land and property tenure.

As shown in Figure 3, unchecked growth of settlements in unsafe areas increases people's vulnerability to various hazards.

Figure 3	Site after pressures from population growth and urbanization

Vulnerable sites

unstable slope
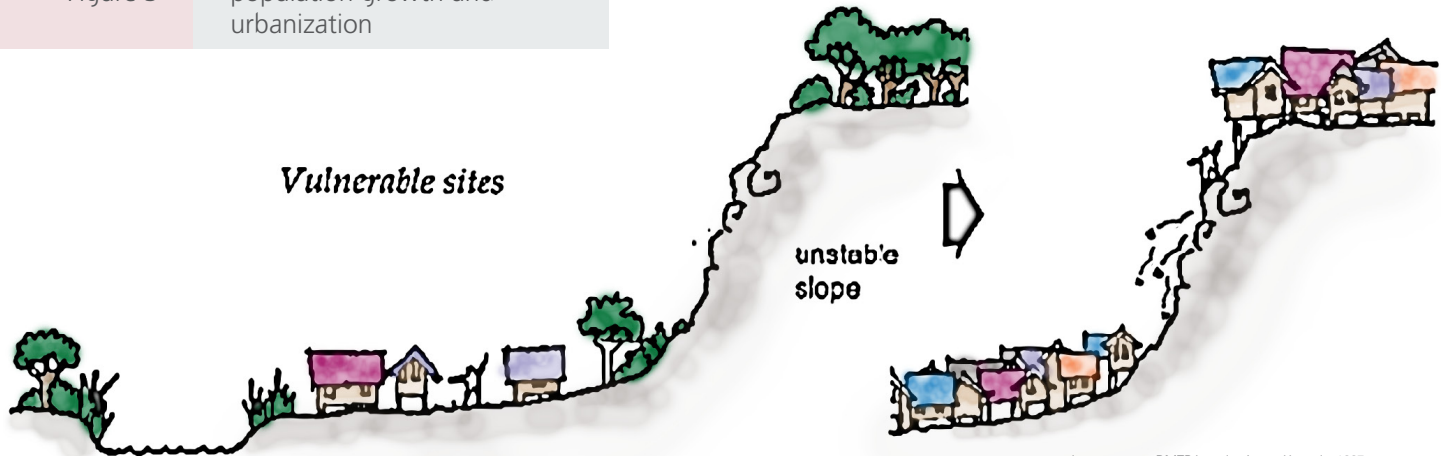
Image source: DMTP Introduction to Hazards, 1997

Migration packs what was once dispersed rural poverty into unsafe land within the urban area in what can be described as the "urbanization of poverty and disaster risk".

Some built up areas have grown due to their close proximity to industries. The close proximity of residential, commercial and industrial land uses in a city increases disaster risk.

In cities such as Mumbai, India, 60% of its population lives in slums occupying 7% of land.

During the 2005 monsoon that brought disastrous flooding to Mumbai, those worst affected were the slum dwellers. Because the majority of these slums were located on hill slopes, low-lying areas, coastal locations and pavements along water mains and open drainage systems, they were the most prone to flooding during heavy rainfall and high tide.

The modification of the urban built and natural environment through human actions

Flooding, perhaps more than any other hazard type, has been made worse by the physical processes of urbanization. The construction of roads and houses, infilling of drainage canals, and covering land with concrete restricts where floodwaters can go, to raise the risk of flooding as drainage systems become overwhelmed.

The loss of mangrove ecosystems on urban fringes leads to coastal erosion and exposure to storm wind and waves.

Deforestation on hill slopes within and arround settled land can create slope instability, and result in rain-induced landslides.

Large concrete expanses used in urban construction absorb summer sun and create heat waves.

Poverty and other social vulnerabilities

Too often, poverty and marginalization force the most vulnerable to accept risk from natural and human-made hazards as a trade-off for access to shelter and work.

Poverty and its complex dimensions – discrimination, lack of opportunities for acquiring and developing skills and capabilities, and lack of access and control over basic necessities – is often at the root of what makes most people vulnerable to the impact of most hazards.

Twenty-five per cent of Asia's urban population is poor, and the rate is increasing, as there is a continuous influx of poor people into cities.

Frequently afflicted by malnutrition, low educational levels, and lack of access to basic services, public amenities and livelihood opportunities, the urban poor are more vulnerable to disasters, and have a harder time recovering from a disaster than people who are better off.

Poor people with few physical and material resources may not be able to afford to build a strong house or may have little choice but to live on marginal lands.

But the poor is not a homogenous group; not all poor people are vulnerable to disaster risks in the same way. 'Being poor' is not a synonym for 'being vulnerable', and 'being rich' is not 'being non-vulnerable'. A well-informed and prepared 'poor family' may be less vulnerable to earthquake than a 'richer family' that is not well-informed nor well-prepared.

Women and children, the elderly and disabled, and ethnic minorities tend to be more vulnerable to hazards. This is due to the social disadvantages and inequalities that persist in the urban setting.

Migrants also face significant challenges in adapting their past experience and coping strategies to the new risk environment in cities.

When people move from rural to urban centers, they may lose the social support system or network that traditionally would have assisted them in recovering from a disaster.

Weak urban governance

In many developing countries, legislative and institutional arrangements can inhibit local action.

While it is recognized that disasters are initially local events, accountability, authority and resources are often not sufficiently decentralized to enable local governments to assume ownership and take actions to manage disaster risk effectively.

Local governments may experience limitations in their capacity to assess local risks, or to use risk analyses and information for effective decision-making and urban management (e.g. land-use planning and ensuring compliance to building standards).

Disaster risk management is complex, and few administrators have experienced implementing disaster risk reduction initiatives. It takes time, effort, tools and training to incorporate disaster risk reduction in city functions and ongoing operations.

But this does not mean that disaster risk management could take a back seat. On the contrary, it is more important than ever to act now to minimize loss of lives and assets.

The urgency to reduce disaster risks is very rapidly being recognized internationally. The tragic 2010 earthquake disaster in Haiti's capital Port-au-Prince and other cities is yet another wake up call.

The next two sections highlight this urgency with discussions on the impact of climate change, and the global frameworks and mechanisms in place that local governments can leverage to accelerate urban disaster risk reduction.

QUESTIONS TO ASK

❊ What are the main factors that are contributing to vulnerability in your area?

❊ List five projects that your office does for the city. Can or do these projects help reduce vulnerability to disasters?

❊ What are the ways in which other organizations (such as NGOs, private sector etc.) in your area can help your office to reduce these vulnerabilities together?

Climate Change and Cities

An increasingly important factor that makes cities particularly vulnerable is climate change, as there is evidence from the Intergovernmental Panel on Climate Change (IPCC) showing that climate change is and will continue to increase the frequency and intensity of some hazards.

In order to plan for urban sustainability, we must better understand the impact that a changing climate will have on the hazards that cities face.

What is the IPCC?

The Intergovernmental Panel on Climate Change is the leading body for the assessment of climate change, established by the United Nations Environment Programme and the World Meteorological Organization to provide the world with a clear scientific view on the current state of climate change and its potential environmental and socio-economic consequences.
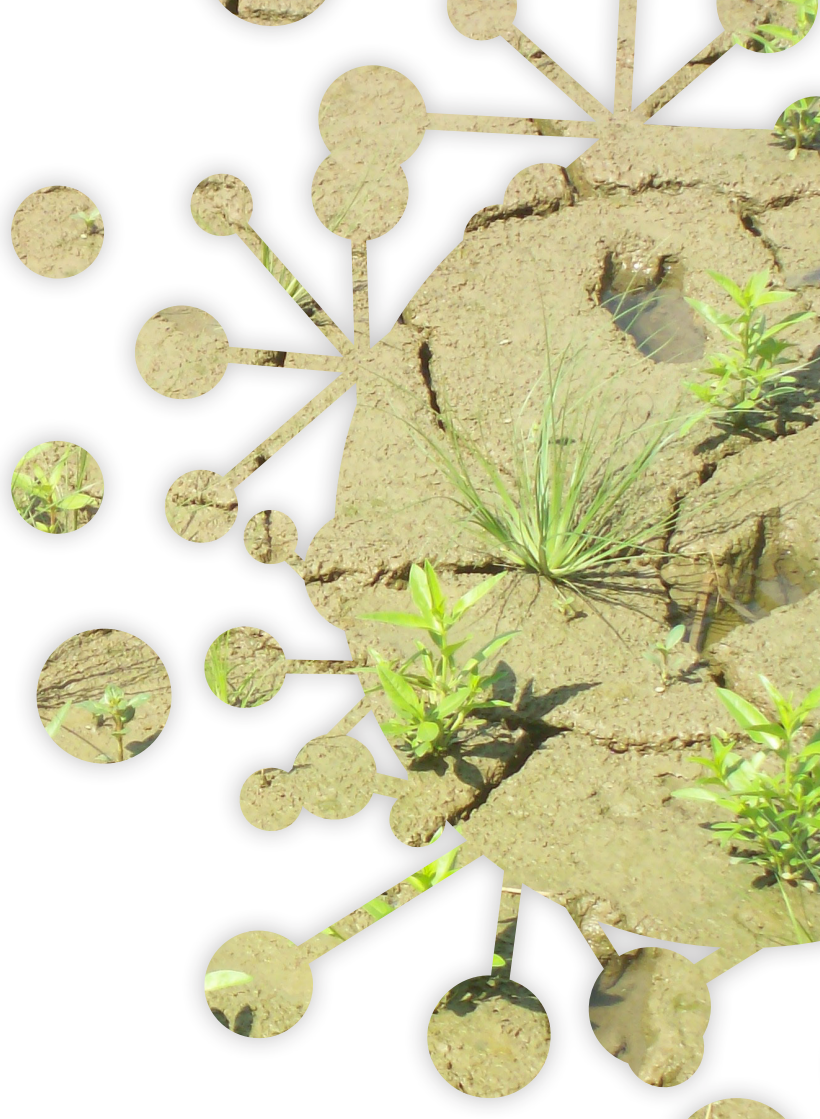
What is climate change?

It is a change in the climate that persists for decades or longer, arising from either natural causes or human activity.

There are certain gases that help to retain the heat to create a conducive environment for human beings, animals, flora and fauna on Earth. Such gases are called 'greenhouse gases'.

Due to human activity such as industrial development and deforestation, these greenhouse gases have increased at rates faster than ever before. As the concentration of the greenhouse gases increases, the global temperature also tends to increase. The global climate change and related occurrences are result of that.

Specific effects of climate change include:

* Sea level rise caused by melting glaciers and thermal expansion in the oceans
* Changes in precipitation patterns and a greater frequency of intense precipitation events, including flooding
* More extreme temperatures
* More intense 'heat island'
* A higher risk of drought
* An increased probability of tropical storms
* Worsening air pollution, increasing allergic and respiratory disorders
* Rising risk of illness such as malaria and dengue fever, related to an increase in areas suitable for the breeding of mosquitoes that carry the diseases

In addition to these direct effects, there are also some serious indirect impacts.

For example, excess runoff from overwhelmed sewer systems could permit the infiltration of contaminants into the local water supply.

Why is climate change a consideration in urban disaster risk management?

Although the onset of the effects of climate change is slow, its impact can be permanent.

Coastal cities are exposed to tsunamis, storm surges and climate change effects, but inundation due to tsunamis is very rapid and may last for a few hours, and similarly for storm surges, inundation will last a few days.

Structural modifications and structural solutions are insufficient for tackling climate change effects. It is important ensure that planning takes into consideration future disaster scenarios for the next 25 years or more, that incorporates the impact of climate change.

Coastal cities

Settlement on marginal or unstable land such as coastal areas, mountainous areas, river basin and urban slums heightens their exposure to the impacts of climate hazards.

Recently, coastal zones have captured international attention and a handful of studies were commissioned to examine the impact of climate change on coastal cities. This is because coastal zones in Asia, which are highly urbanized and densely populated with large concentrations of economic activities, are particularly at risk to climate change impacts including sea level rise and extreme climate events.

Seventeen per cent of the total urban population in Asia lives in the LCEZ, while in Southeast Asia, more than one-third of the urban population lives in this vulnerable zone.

Climate change impacts and variability threaten to worsen existing vulnerabilities and further intensify development disparities.

Scientists estimated that even if emission of all greenhouse gases stopped today, some degree of climate change would still occur and developing countries would bear the brunt of the impact.

Thus, there is a need to build a resilient community with the capacity to adapt to climate change and associated disaster risk, particularly extreme climate events.

Climate risk of cities located in other ecosystems

The impact of the expected rise in global temperatures will vary from place to place.

Some cities may become exposed to prolonged and /or heavier rainfall. This can cause more severe flooding, affecting cities located on floodplains. This can also trigger landslides affecting settlements built on steep slopes.

In many other cities drought may become more frequent and severe as rainfall lessens or becomes irregular with climate shifts. Cities located in drylands in particular will suffer from water shortages and higher food prices.

Image credit: Kham/REUTERS

Box 1

Some key facts and figures

The United Nations noted a 50% rise in extreme weather events associated with climate change from the 1950s to the 1990s. (State of the World's Cities 2008/2009)

Studies have revealed that the number of hydro-meteorological disasters (such as flood, drought, cyclone, heat-wave, rainfall-induced landslides) has doubled in the last five years whereas, geological hazards (such as earthquakes, tsunamis, volcanic eruptions) remained the same. (IPCC Working Group II Workshop Report, 2003)

Eighty-seven of Asia's natural disasters in this period are climato-/hydro-meteorological disasters. (World Disasters Report, 2009)

Temperatures in Asia have risen about 1°C to 3°C over the last 100 years. (Mega-Stress for Mega-Cities, 2009)

Climate change projections indicate that temperatures will continue to rise. Precipitation patterns will become more variable. Extreme weather events, such as intense rain storms, tropical cyclones and heat waves will increase in frequency and intensity. And sea levels will continue to rise. (Mega-Stress for Mega-Cities, 2009)

In the 20th century, sea levels rose by an estimated 17 centimeters, and conservative global mean projections for sea level rise between 1990 and 2080 range from 22 centimeters to 34 centimeters. (State of the World's Cities 2008/2009)

QUESTIONS TO ASK

❊ Has your locality been experiencing more frequent and severe disasters?

❊ Is your city keeping a database of disaster events?

❊ How prepared are your city officials and citizens to deal with an extreme climate event?

❊ Do you have any hazards that can worsen with climate change?

❊ Does your locality or country have a plan to deal with climate change impacts?

Understanding Global Frameworks and Efforts to Reduce Urban Risks

Urban disaster risk reduction and the important role local governments play in reducing urban risks are now recognized as a global priority.

It is therefore important that you are aware of the international agendas and agreements made, and your country's commitment to these agreements. This can help you leverage support for disaster risk reduction initiatives in your locality.

Disaster risk management can be visualized as a continuous cycle comprised of five overlapping phases – Response, Recovery, Mitigation, Prevention and Preparedness, (see Box 2 for their definitions).

Although it is at the phases of response and recovery when disaster-related issues continue to receive the most attention, mitigation and preparedness are being recognized as key phases that will save lives and contribute to sustainable social and economic development.

Recent studies by the World Bank, the Asian Development Bank and the US Government have shown that every dollar invested in disaster preparedness not only saves lives, but can also save between $4 and $7 in humanitarian relief and reconstruction costs after a disaster occurs.

Box 2

Five phases of the disaster risk management cycle

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

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 behaviour contribute to promoting a "culture of prevention".

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.

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.

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.

MITIGATION
RECOVERY
PREVENTION
RESPONSE
PREPAREDNESS
DISASTER

With mounting international concern at the rising frequency and severity of natural hazards and disasters, in part due to factors related to climate change, there is increased impetus in many countries to put in place policy, legal, institutional, technical and financial measures that will reduce the destructive effects on the lives and livelihoods of individuals and communities.

These concerns were intensely debated during the World Conference on Disaster Reduction, held in Kobe, Hyogo Prefecture, Japan on 18-22 January 2005.

The Hyogo Framework for Action (HFA), adopted by the Conference with 168 nation and multilateral institution signatories, seeks the outcome of "the substantial reduction of disaster losses, in lives and in the social, economic and environmental assets of communities and countries."

In order to achieve the stated outcome by 2015, the HFA emphasizes a shift from reactive emergency relief to pro-active disaster risk reduction in the pre-disaster stages by strengthening prevention, mitigation and preparedness.

Figure 4	Summary of the Hyogo Framework for Action 2005-2015: Building the resilience of nations and communities to disasters

Expected outcome, strategic goals and priorities for action 2005-2015

Expected outcome
The substantial reduction of disaster losses, in lives and in the social, economic and environmental assets of communities and countries

Strategic goals

The integration of disaster risk reduction into sustainable development policies and planning	Development and strengthening of insitutions, mechanisms and capacities to build resielience to hazards	The systematic incorporation of risk reduction approaches into the implementation of emergency preparedness, response and recovery programmes

Priorities for action

1. Ensure that disaster risk reduction (DRR) is a national and a local priority with a strong institution	2. Identify, assess and monitor disaster risks and enhance early warning	3. Use knowledge, innovation and education to build a culture of safety and resilience at all levels	4. Reduce the underlying risk factors	5. Strengthen disaster preparedness for effective response at all levels

Capacity development of key actors at different levels of government, civil society and the private sector is fundamental to effective disaster risk management. These challenges were recognized by the HFA's second strategic goal: "The development and strengthening of institutions, mechanisms and capacities at all levels, in particular at the community level, that can systematically contribute to building resilience to hazards."

Across the HFA, important elements on urban risk reduction are mentioned as one of the crucial areas of work to implement the HFA. In particular, incorporating disaster risk reduction into urban planning is specified to reduce the underlying risk factors (Priority 4).

Recognizing that there is a growing need to address the subject area of urban disaster risk reduction with concerted and coordinated efforts among stakeholders in Asia, the Asia Regional Task Force on Urban Risk Reduction was formed as a task force of the Asian Partnership on Disaster Reduction (IAP) to facilitate and accelerate efforts and actions for urban disaster risk reduction. The IAP is expected to serve as a recognized regional mechanism involving the relevant regional actors in implementing jointly disaster risk reduction along the lines of the HFA,

and will work to that end with governments and in-country partners.

An important international development framework, the Millennium Development Goals (MDGs), have had a great impact on prioritizing national development agendas worldwide. The most urban focused goal, target 11 of MDG 7, demands that a significant improvement in the lives of at least 100 million slum dwellers is achieved by 2020. This is an important impetus for pro-poor urban planning, and efforts to improve the lives of slum dwellers should take natural and human-made disaster risk into account.

More recently, in the context of increasing climate variability and climate change, there is increasing recognition for the benefits of closely linking disaster risk management and climate change adaptation efforts at different scales, particularly at the 2009 UN Climate Change Conference in Copenhagen.

The Bali Plan of Action, which provides the roadmap for negotiations up to the Conference recognizes this linkage and calls for enhanced action on adaptation, including: "Disaster reduction strategies and means to address loss and damage associated with climate change impacts in developing countries that are particularly vulnerable to the adverse effects of climate change."

Conclusion: How Can We Make Our Cities Safer?

Local governments in Asia face the common challenge of securing their locality's social, political and economic future against disasters.

There is a wide variety of ways in which disaster risk can be reduced as part of development policies and practices.

To begin with, it is important to raise public awareness.

Be sure to leverage opportunities that are presented at regional and global levels, such as the 2010-2011 World Disaster Reduction Campaign "Making Cities Resilient"

led by the United Nations International Strategy for Disaster Reduction (UNISDR) to addresses issues of local governance and urban risk.

The overall target of the campaign is to get as many local governments ready as possible, to span a global network of fully engaged cities of different sizes, characteristics, risk profiles and locations.

The campaign is focusing on raising political commitment to disaster risk reduction and climate change adaptation among local governments and mayors; including through high profile media and public awareness activities, and will develop specific technical tools that cater for capacity development opportunities.

Mayors, local government officials and other local actors are invited to play a leadership role in the campaign in different ways. UNISDR and participating partner organizations will provide support to publicizing success and practice, provide space for learning and meeting, and seek to influence policymakers at all levels. For more information, refer to http://www.unisdr.org.

As part of the campaign, UNISDR has developed a checklist for making cities resilient (see Box 3).

Box 3

Ten-point checklist - Essentials for making cities resilient

This ten-point action plan for city resilience builds on the priorities set out in the HFA.

1. Put in place organization and coordination to understand and reduce disaster risk, based on participation of citizen groups and civil society. Build local alliances. Ensure that all departments understand their role in disaster risk reduction and preparedness.
2. Assign a budget for disaster risk reduction and provide incentives for homeowners, low-income families, communities, businesses and the public sector to invest in reducing the risks they face.
3. Maintain up-to-date data on hazards and vulnerabilities, prepare risk assessments and use these as the basis for urban development plans and decisions. Ensure that this information and the plans for your city's resilience are readily available to the public and fully discussed with them.
4. Invest in and maintain critical infrastructure that reduces risk, such as flood drainage, adjusted where needed to cope with climate change.
5. Assess the safety of all schools and health facilities and upgrade them as necessary.
6. Apply and enforce realistic, risk-compliant building regulations and land-use planning principles. Identify safe land for low-income citizens and develop upgrading of informal settlements, wherever feasible.
7. Ensure that education programs and training on disaster risk reduction are in place in schools and local communities.
8. Protect ecosystems and natural buffers to mitigate floods, storm surges and other hazards to which your city may be vulnerable. Adapt to climate change by building on good risk reduction practices.
9. Install early warning systems and emergency management capacities in your city and hold regular public preparedness drills.
10. After any disaster, ensure that the needs of the survivors are placed at the center of reconstruction with support for them and their community organizations to design and help implement responses, including rebuilding homes and livelihoods.

Before a hazard strikes, it is important that cities have a disaster risk reduction strategy in place.

To develop this strategy, it is important to first assess the risk your city faces. Book 2 provides a range of tools and good practices in conducting hazard, vulnerability, capacity and risk assessments.

With results from the assessments, it is important that cities undergo a planning process to explore risk reduction options and prioritize actions to take. Book 3 provides details on this planning process.

Some key principles of disaster risk reduction that should be kept in mind include the following:

❊ Involve stakeholders in decision-making, implementation and monitoring processes. Different stakeholders including community members, civil society groups, the private sector, UN agencies, academia and research institutes, all have multiple resources and capacities to deal with disasters that should be tapped, e.g. indigenous knowledge, technical expertise, machinery and equipment, social networks, etc.
❊ Provide open and inclusive consultation opportunities. The consultative process must give a voice to poor and marginalized groups, who are often among the most vulnerable to hazards, and ensure that their needs are adequately addressed and their rights protected.
❊ Adopt a multi-hazard approach as an urban community is likely to be vulnerable to more than one hazard.
❊ Engage stakeholders from different sectors (land use planning, education, health, housing, water resources management etc.) in managing disaster risks.
❊ Foster better understanding and knowledge of the causes of disasters through the transfer and exchange of experience, and offer greater access to relevant data and information.
❊ Cooperate with other municipalities and with national government agencies since disasters do not adhere to territorial boundaries

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glossary

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

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Urban Governance and Community Resilience Guides

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Our Hazardous Environment — 1

Risk Assessment in Cities — 2

Planning for Disaster Risk Reduction — 3

Mainstreaming Disaster Risk Reduction — 4