RCC Working Paper

Mainstreaming Disaster Risk Reduction

A Road Towards Sustainable Urban Development and Creating Safer Urban Communities

Under the Regional Consultative Committee on Disaster Management (RCC) Program on Mainstreaming Disaster Risk Reduction into Development (MDRD)

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With support from the Program for Hydro-Meteorological Disaster Mitigation in Secondary Cities in Asia (PROMISE)

"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."

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Introduction

> *"The 21st century is the Century of the city. Half of the world's population already lives in urban areas and by the middle of this century, most regions of the developing world will be predominantly urban"*
>
> State of the World's Cities 2008 / 2009
> Harmonious cities, UNHABITAT

The growth of cities experienced during the last two decades continue with specific urbanization characteristics unique to each geographical area. In Africa, urbanization is largely characterized by a high concentration of people in the capital cities, while metropolitan expansion in Asia is taking place with populations shifting to satellite cities or sub-urban areas. In addition to the rapid growth of small cities, migration from one city to another, and the continuing trend of rural-urban migration urge development decision makers and practitioners to acknowledge the fact that the 21st century is the "Century of the City".

This realization further urges the decision maker to search for innovative and proactive approaches to deliver the mandate of "sustainable human development". Stemming from this realization, this working paper focuses exclusively on the inevitable risks of natural hazards and disasters that challenge the development efforts of the urban or city development process. It further attempts to highlight how local government as the key partner of the development process could contribute effectively to reducing disaster risks in their respective operational areas.

Urbanization trends in Asia and internal and external risk drivers

The world is now half-urban, with half of the world's population or 3.3 billion people living in urban areas by 2008 (UNHABITAT, 2009). Urbanization is a continuing global trend. The same report further states that "Globally, urbanization levels will rise dramatically in the next 40 years to 70 percent by 2050." (p. 11).

Cities are growing at a much faster rate than previously; it is estimated that 193,107 new city dwellers are added daily to the urban population. This means that every second, about two people enter city life. However, the scale or the rate of urbanization is not equal in all the regions of the world. "Annually the cities in the developing world grew at a rate of 2.5 percent in the 1990s, compared to an annual growth rate of 0.3 percent in the developed world." (UNHABITAT, 2009: p. 11).

The growth of cities in the developing world is expected to be ten times that of cities in the global North. The scale of growth is significant in the Asian region compared with the developed countries. The projections indicate that one out of every two Asians will live in cities before the year 2025; thus the Asian region will continue to host the largest urban population in the world in the coming years. The majority of Asia's urban growth will be in seven developing countries: Bangladesh, China, India, Indonesia,

Pakistan, Philippines and Viet Nam.[1] For example, in China the large cities grew at a rate of 3.9 per cent each year from 1990 to 2000 - this was more than two times faster than the world's average.

However, since the 1980s the growth of large cities has slowed, and the Asian region is instead experiencing a new phenomenon of the growth of satellite or secondary cities called the "doughnut effect". This implies a difference in the growth of surrounding metropolitan areas while the inner city grows at a slower rate; Mumbai and Navi Mumbai demonstrate this point. Similarly the growth of ring cities such as Ghaziabad, Loni, Gurgaon, Bahadurgarh and Faridabad around Delhi metropolitan area is another good example of the growth of satellite cities.

The Asian region stands in the 21st century with countries that contribute to one-third of the world's economy. This economic dynamism has contributed to reduce income poverty according to the ADB, DFID and World Bank study of 2006. The study reveals that the percentage of people living on less than one dollar a day declined from 35 percent in 1990 to about 20 percent in 2003. The same dynamism has contributed to the expansion of cities and towns in the region.

Despite the positive side of the economic dynamism the study reveals that "the region is the home to the majority of the world's most impoverished people". The urban growth in southern and western Asia has been accompanied by a commensurate growth in slums over the last 15 years. The annual slum and urban growth rates in both of these areas are similar according to UNHABITAT (2.2 per cent and 2.9 per cent in south Asia and 2.7 per cent and 2.7 per cent in western Asia from 1990 to 2000). Large-scale expansion of slums on ecologically fragile ecosystems such as flood plains, marshy lands, wetlands and even on unstable slopes around cities was a result of rural to urban migration and unplanned urban growth. This compounded the negative impact on the bearing capacity of the cities that were historically sited next to water bodies such as rivers, lakes and oceans.

The economic achievements that record dazzling annual economic growth rates such as 9.5 percent in China and 8 percent in India do not necessarily correspond with similar social development. In fact the high achievement in economic growth has been at the expense of social development in some of the economically advancing countries.

The consequences of this scale and level of urbanization is summarized by Pelling (2006) in his conclusive observations that say **''The cities are at risk''**. He further states that the urban transition brought people from *security* to *risk*. **''Risk comes from increasing poverty and inequality and failures of governance''** he says. **Pelling attributes high population density, crowded living conditions, siting of residential areas close to hazardous industries or places exposed to natural hazards as factors that drive risks to the city communities.**

The dominant solutions for meeting the increasing demand of city dwellers for facilities such as housing, water supply and sanitation have been largely in the area of providing regularized urban planning and some grand engineering projects. This has resulted in bringing security for some but excluded many in the cities.

1 Managing Megacities: ADB Urban Report 2003

In addition to demographic factors influencing the dynamic nature of urbanization, the emerging issues resulting from the impacts of climate change need the attention of urban decision makers of the local governance. The frequency of hydro-meteorological disasters occurring in southern and western Asia is a serious concern that must be addressed in order to ensure security for the vulnerable urban communities.

The nature of urbanization also has a magnifying impact on hazard levels. Flooding experienced in major cities in the recent past was mainly due to the filling of flood plains for buildings by formal public sector purposes as well as encroachments by migrants and urban poor that blocked the run off. In addition, rapid runoff was prevented by the insufficient capacity of the drainage systems in the cities. This was further aggravated by chronic under-investment in infrastructure such as drainage by city authorities that resulted in poorly maintained drainage systems.

Cities evolved in many countries in the world due to economic drivers and the advantages of their connectivity to external supply sources and markets. This is the reason for the development of many cities in coastal areas and close to water bodies. The occurrence of natural disasters was not a determining factor in the urban evolution process. As a result many cities have developed in seismic zones disregarding the risk of possible earthquakes. Kathmandu in Nepal, San Francisco in the USA, Osaka and other cities in Japan, and Port-au-Prince in Haiti are some such examples of cities existing today in seismic zones of the world.

However, cities in earthquake prone areas of developed countries are substantially free from the potential risks of earthquakes compared with similar cities in developing countries. This difference is mainly because of the ability to construct earthquake resistant buildings adhering strictly to technically proven building construction standards and compliance with the rule of law in the developed world. The poor quality of the houses where the economically weak segments of the population are concentrated, and weak enforcement of building codes and standards enhance the disaster risk, in addition to the overall poverty of the people who live in these poor urban areas of developing countries. At times the substandard construction can also be attributed to a lack of technical guidance, the lack of skills of professionals involved in construction, limited understanding of the need for integration of earthquake resistant elements in construction (since earthquakes happen infrequently and a whole generation may not experience an earthquake thus reducing their awareness), and poor enforcement.

The waste disposal sites of cities and the manner in which the daily waste is collected and disposed of has become an increasingly serious development issue in many large cities in the Asian region. This has also exacerbated the disaster risk in many cities. The experience of the Payatas garbage site in the Philippines exposed the weakness of the decision making that disregarded their own decision to relocate poor people from another part of Manila and later deciding to bring 6,000 metric tons of daily waste collected in Metro Manila to be dumped at the same site. The garbage mountain created by the decisions overlooking the location of the poor urban settlements that was also created by the same decision makers overtook the human settlement on 10th July 2000 killing 300 people and destroying nearly 500 houses. Similar garbage

The ASEAN 10+3 Seminar on Urban Disaster Emergency Management held in Beijing, China from 5-10th May 2010 concluded with the recognition of the need "to improve urban disaster risk management and urban disaster emergency management". In this respect the seminar adopted the following concerns with recommendations. These concerns and recommendations are directly relevant and equally applicable to all countries in the Asia Pacific region."

1. Urban disasters will affect more people in Asian countries due to the high density of Asia's urban population and to sub-standard and poorly constructed infrastructure built in areas prone to floods, storms, landslides and earthquakes.
2. Urban risk management and risk reduction is a cross-cutting issue in urban development, requiring an enabling environment for legislation and policy development and implementation at multiple levels. Making cities resilient to disasters requires good understanding, multi-disciplinary knowledge, accumulated expertise and multi-stakeholder cooperation in land use and planning, risk assessment, construction design and materials, implementation of construction standards and codes, and accountability.
3. Earthquakes in Asia today cause the most human suffering and economic losses, due especially to the collapse of substandard schools and hospitals.
4. Each year, losses due to large-scale disasters in Asian countries overwhelm national capacity to respond efficiently and effectively. The social, political and economic consequences of these disasters are far-reaching, taking years of effort to address."

Brief Report, ASEAN 10+3 Seminar on Urban Disaster Emergency Management, 5-10 May 2010

mountains are being built up in many cities in Asia due to the haphazard disposal of waste exposing city dwellers, particularly the urban poor, to high and intensive urban risks.

The high concentration of urban poor in informal settlements in the cities of Asia-Pacific region is a cause for their enhanced vulnerability to multiple health risks such asthe spread of certain deceases to pandemic and epidemic proportions. Additionally, haphazard disposal of industrial and domestic waste, releasing sewage through water bodies, unhygienic disposal of untreated sewage etc. cause health hazards in normal times which are usually exacerbated during floods.

The conventional approach of relying on past events and trends to prepare for the future is no longer valid under current conditions. Thus urban governance has the responsibility to deliver equitable and sustainable risk reduction to all urban citizens. This could be either as part of development or in response to reconstruction from disaster events. Whatever the form of delivery of security to people may be, this paper draws the attention of urban decision makers to the opportunities already available within the respective legal provisions of the governance process of local government to reduce disaster risks by incorporating risk reduction measures into development.

Overview of the present context

The impacts of disasters are becoming increasingly severe in urban areas. Given the present scale and level of urbanization the possibility of major losses to urban economy and hence to the social life of urban communities in the event of future disasters seems to be serious. Moreover, long-term climate change and its possible adverse consequences will have serious impacts on city dwellers.

Many countries in Asia have already expressed their commitment to the implementation of the five priorities spelled out in the Hyogo Framework for Action adopted by the nations at the World Conference on Disaster Reduction held in January 2005. The United Nations International Strategy for Disaster Reduction has already announced that 2010 / 2011 is to be the period for the 'Global Campaign for Urban Disaster Risk Reduction', having recognized the significance and importance of disaster risks associated with the implications of the present scale of urbanization in the world.

A number of approaches have been introduced to address the issue of reducing disaster risks. A key direction in this respect is the approach to integrate disaster risk considerations into development planning. The Regional Consultative Committee (RCC) on Disaster Management that was established by the Asian Disaster Preparedness Center (ADPC) and consists of 26 countries of the Asia Pacific region has focussed its 5th and 6th annual meetings exclusively on mainstreaming disaster risk reduction into development planning, policies and their implementation. Following the commitments at these RCC meetings the ADPC has launched a program titled "Mainstreaming Disaster Risk Reduction into Development" aimed at increasing the awareness and political support for mainstreaming DRR and enhancing the capacity of the national disaster management systems in the RCC countries. The program promotes the development of guidelines on the 'Integration of DRR into National Development Planning Process' in key priority sectors such as agriculture, infrastructure, housing, education, health and financial services. Such guidelines are circulated for awareness and review through a number of training programs, consultations, and seminars.

The Program for Hydro-Meteorological Disaster Mitigation in Secondary Cities in Asia (PROMISE) implemented by the ADPC initiated another vital approach for mainstreaming DRR by incorporating DRR into local governance. The pilot interventions implemented under this program in the Philippines and Sri Lanka have achieved positive results that confirm the appropriateness and the need to involve local government as a key partner, if not the lead agency in tackling DRR in urban centers.

However in many Asian countries, the subject of disaster risk reduction is under the domain of national level institutions or a ministry. It is often observed that the activities and functional responsibilities of such institutions are rarely decentralized yet. In other words the authority of such institutions is yet to be delegated to lower levels of governments. The legal acts enacted in the Asia Pacific region following the Indian Ocean Tsunami of 2004 have provisions to involve partners at all levels of the society in order to reduce the risks of potential disasters. Many countries are presently working on modalities to decentralize and delegate disaster related responsibilities to the local level.

This lack of decentralization may be viewed, at present, as a hindrance to achieving overall disaster resilience or reducing the growing disaster risk in highly vulnerable areas to natural hazard events. It is therefore of paramount importance to advocate ways and means of delegating and decentralizing DRR responsibilities below the national level.

Why is mainstreaming DRR necessary?

The increasing recognition of the fact that "the development process does not necessarily reduce vulnerability to natural hazards; instead it can create new forms of vulnerabilities or exacerbate existing ones" resulted in a paradigm shift in development thinking to find 'win win solutions' for securing sustainable development. One such solution is the proposition to integrate disaster risk reduction strategies and measures within the overall development framework; considering disaster risk as an integral component of the development process.

Following this recognition there had been many efforts to "mainstream" DRR into "development" by the global partners of development since the 1990s. This entailed considering and addressing risks emanating from natural hazards in the development policies, plans, strategies and programs, including the institutional structures of the countries, particularly those that are prone to natural disasters. Thus mainstreaming DRR envisages analyzing how potential natural hazards and disasters could affect the performances of those policies, plans, strategies and programs and also how the same policies, plans and programs impact on vulnerabilities to natural disasters.

The need to mainstream DRR into development was formalized at the World Conference on Disaster Reduction held in January 2005 when the Hyogo Framework for Action 2005-2015 (HFA) was adopted by 168 nations and multilateral institutions. The first strategic goal of the HFA 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".

The factors attributed to high impacts due to disasters need to be assessed at micro-level to understand their nature and consequences. Subsequent measures are essential to be included in development programs for increasing the public safety and to avert or reduce the scale of economic impacts. It is proved that local governments need to have mandates for special DRR actions at local level. This can be done easily and effectively by **integrating DRR responsibilities into their functions.**

Local government institutions

By definition, the local government (LG) is the "administrative offices of an area smaller than a state". This term is used to separate LG from offices of national or state level. The LG is also defined as "the political administration of the smallest sub-divisions of a country's territory and population".

The evolution of LG in many countries has a long history. In the past the village or city LG exercised great power and control including maintaining law and order in addition to the provision of services affecting the daily lives of people. For instance LG in Sri Lanka has a long history extending to the period of Sinhalese kings dating back to the 4th century. "Nagara Saba" was the term for city council and this managed the city level while the village level was managed by "Gam Saba" (Village Council). Both councils were composed of respected leaders or chieftains of the community appointed by the King. However, these local institutions lost power gradually while the national or central government gained more power and control.

In modern nations, LGs vary greatly between countries · even where similar arrangements exist the terminology often varies. Table 1 illustrates LG institutions that exist in selected countries in the Asia and Pacific region and
the terminology used for LGs at different levels of the administrative structure in selected countries. It is important to understand the nature of the LGs in some of these countries in order to examine the possibility of mainstreaming DRR into their present operations and thereby to highlight the potential benefits and comparative advantages of using LGs as a key and effective partner in DRR.

Table 1 Local Government Institutions in Selected Countries of the Asia Pacific Region

LG Level	Bangladesh	Indonesia	Pakistan	Philippines	Sri Lanka	Viet Nam
Community	Union Parishad	Kelurahan / Desa	Union Council	Barangay Council	Pradeshiya Saba	Commune People's Council
Sub-district / District	Upazila Parishad / Zila Parishad	Kecamatan	Tehsil (Taluqa) / Zila Council	NA	NA	District People's Council
Municipality / City	Pourashava / City Corporation	Kabupaten / Kota	City District	Municipal Government / City Government	Urban Council / Municipal Council	City People's Council

LGs in Bangladesh

The present LG system in Bangladesh evolved as part of a more recent move towards greater democracy and encouraging public involvement in policy making. The legal basis that is embodied in the Constitution of Bangladesh states that "Local Authority in every administrative unit of the Republic shall be entrusted to bodies composed of persons elected in accordance with law".

The LG structure of Bangladesh consists of the levels given in Table 2.

Table 2 Local Governments in Bangladesh

Title of LG	Level	Number
Union Parishad	Village	4,484
Upa-Zila Parishad	Sub District	483
Zila Parishad	District	64
Pourashavas	Town / Thana / Urban Center	309
City Corporations	Divisional Cities	6

Municipalities (locally termed as pourashava) are the LG bodies in urban areas of Bangladesh. These municipalities are at different levels, starting from old towns to newly-declared urban centers by the Local Government Ministry of Bangladesh. The City Corporations are the LGs responsible for divisional cities such as Dhaka, Chittagong, Rajshahi, Khulna, Barisal and Sylhet.

The local government of municipalities and city corporations are called councils, with elected councilors (prior to 2008, they were called commissioners) and headed by mayors. The local government of the Union Parishad, Upa-Zila Parishad and Zila Parishads are called councils too, with elected members and headed by chairmen. All these officials are elected for a term of five years.

These LGs are not independent of central government and the overall administrative system of the country.

LGs in Indonesia

Indonesia is a unitary state which is divided into provincial and city / district levels of government. Both these levels have their own government system and legislative body called "Dewan Perwakilan Rakyat Daerah". A "Governor" elected by the local parliament heads the provincial government, the city / district is headed by a "Mayor" for the city, and a "Regent" is for the District. The law stipulates that cities and districts are autonomous; in principle, there are no hierarchical links between provincial and city / district levels.

The structure of the LGs in Indonesia is given below in Table 3.

Table 3 Local Government Structure in Indonesia

Title of LG	Level	Number
Kelurahan / Desa	Villages	69,919
Kecamatan	Sub-District	5,263
Pemerintah Kota / Kabupaten	City / District / Regency	440
Propinsi	Province	33

LGs in Indonesia have a local legislation body that is elected for a term of five years.

LGs in Pakistan

In Pakistan, LGs are not included in the constitution. They are under the supervision of provincial governments that have delegated some of their functions and responsibilities to LGs by promulgating decentralization ordinances. The four-tier system of local governance established on 14 August 2001 in Pakistan is shown in Table 4.

Table 4 Local Governments in Pakistan

Title of LG	Level	Number
Union Council	Community	6,022
Tehsil	Town / City town	307
Zila Councils	District / City District	96

LGs in the Philippines

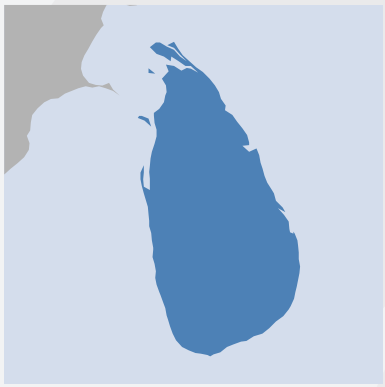
The Philippines is a Republic with a unitary presidential system. Article 10 of the Constitution of the Philippines and the Local Government Code 1991 specify the structure and the functions of the LGs. The LG structure consists of the following outlined in Table 5. Municipalities and cities are at the same level, and together comprise provinces. The exception to this are a few cities with their own charter, and are directly under the President of the Republic.

Table 3 Local Governments in the Philippines

Title of LG	Level	Number
Barangay	Village	42,025
Municipality	Municipality	1,496
City	City	138
Province	Province	80

Efficient service delivery, management of environment, economic development and poverty alleviation are some of the key functions of LGs in the Philippines. Given the scale and frequency of natural disasters occurring in the Philippines, LGs have acquired a greater responsibility over the last few decades in discharging their mandate in order to ensure safe living of the respective communities. In fact the efficiency and effectiveness of the overall disaster management capacity of some of the LGs in the Philippines had been globally highlighted as “good practices” enabling others to learn from their experience. The dynamic and energetic leadership demonstrated by some of the mayors in the Philippines in reducing disaster risks in their respective LGs have received wide recognition across the Asia Pacific region.

LGs in Sri Lanka

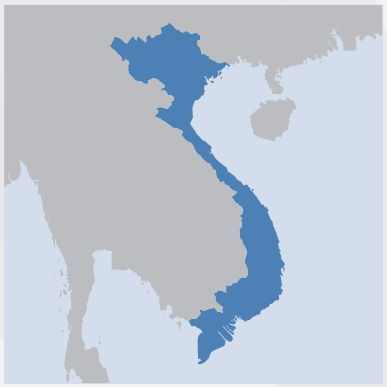


Sri Lanka is a Republic with an Executive President. The government administrative structure consists of three levels namely Central, Provincial and Local. The Constitution has clearly spelled out the functions of the central and provincial administration contained in three lists: national list, provincial list and the concurrent list. The first two are exclusively the domain of central and provincial governments respectively, while the last is shared between both Central and Provincial Governments. Table 6 shows the LG levels in Sri Lanka.

Table 4 Local Governments in Sri Lanka

Title of LG	Level	Number
Pradeshiya Saba	Rural	258
Urban Councils	Urban	37
Municipal Councils	City	18

The LGs in Sri Lanka are administratively supervised by the Provincial Council; the LGs are subordinated to the Provincial Councils. In addition, the minister in charge of LGs at the Central Government also has powers over the LGs including the powers to extend or reduce the term of the LG by 12 months.



LGs in Viet Nam

The LG structure of Viet Nam consists of four levels as given below in Table 7.

Table 7 Local Governments in Viet Nam

Title of LG	Level	Number
Municipalities	Metropolitan cities	**4**
Province / Municipal	Urban	**57**
District / Precinct / City	City	604
Commune / Ward / Township	Rural	10,837

The four municipalities are under the direct control of the central government of Viet Nam. The rest of the LG levels are supervised and managed by the provincial governments, that are in turn under the direct supervision of the central government. Each level of this structure has its respective People's Councils and People's Committees. The entire structure is hierarchically linked to the central government.

The objectives of mainstreaming DRR at local government level

As already discussed, LG institutions are present in all the countries of the Asia Pacific region. Although their powers and responsibilities vary depending on the political regimes and constitutional arrangements, their presence reflects their proximity to the populations and communities. The LGs play a significant role in human life by providing essential facilities to people living in the respective LG areas. No other formal institution is as close to the people with such a range of services that fulfill the daily needs of people and therefore their well-being.

On the other hand, hazards and disasters are events that essentially have a significant spatial dimension. Natural disasters such as floods, storms, cyclones, sea surges, tsunamis etc. are generally confined to spatially identifiable locations such as coastal areas, flood plains and riverine areas. Earthquakes are concentrated in and around seismic zones and geological faults. Landslides frequently occur in hilly terrain and on unstable slopes. The impacts of climate change exacerbates existing vulnerabilities. Disaster impacts therefore could be recognized as localized events to a certain extent, indicating that the respective LG has the comparative advantage of responding immediately to disasters and the rest of the recovery interventions. In the same vein, LGs could be effectively drawn in to hold the responsibility of overall disaster risk management by recognizing it as an essential component in the sustainable urban development process.

Having acknowledged the fact that urbanization trends will continue with one half of the world's population already living in cities, it is the utmost responsibility of the governments, international community and any other responsive agency / institute to take measures to ensure the safety of people living in urban areas against impending hazards and disasters whether they are natural or human-induced. The city LGs could therefore be informed and enlightened on the risks of probable disasters, and the extent or the degree of the vulnerability of their people to such disasters, enabling it to be prepared ahead of a disaster.

Within this backdrop, the objective of mainstreaming DRR into LG is twofold as outlined below;

I. **To empower 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.**
II. **To 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, NGOs, civil society etc.**

These objectives once achieved will bring about a number of positive results, which were hitherto not even considered by the decision makers. Following are the results that could be expected by incorporating DRR into the operations of the LGs:

- 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 LG level with strengthened capacity to manage disasters
- Sustainable urban growth and governance.

Mainstreaming DRR within general LG functions

The functions and responsibilities of the LGs across the Asia Pacific region show several similarities despite the structural variations that exist as described above. The general functions that the present day LGs are legally responsible for delivering under the laws of the respective countries are briefly listed below:

- Emergency services – firefighting, ambulance, search-and-rescue
- Solid waste management
- Health, sanitation and hygiene
- Land use planning
- Shelter and infrastructure development and control
- Information and awareness creation
- Urban services such as drainage, water supply, electricity, gas etc.
- City level transport
- Welfare assistance
- Budget allocation, tax collection and investment promotion.

Within these general functions of the LGs there are certain functions that are relevant and linked to DRR related functions. A brief list of such functions of selected countries in the Asia Pacific region where the PROMISE project is being implemented is given in Table 8 below.

It may be more beneficial and advisable to examine whether DRR functions could be incorporated into these existing DRR related functions of the LGs prior to advocating any expansion to the present scope and the mandate of the LGs. The section below succinctly discusses this possibility.

Table 8 DRR-relevant functions of LGs in PROMISE countries

Sector	Bangladesh	Indonesia	Pakistan	Philippines	Sri Lanka
Education					
Pre-School	👍			👍	
Primary	👍				
Secondary					
Adult	👍				
Social Welfare					
Family	👍	👍	👍	👍	👍
Persons with disabilities		👍	👍	👍	
Public Health					
Primary care	👍	👍		👍	👍
Hospitals	👍	👍			
Health protection	👍	👍	👍	👍	
Control of animals		👍		👍	👍
Housing		👍	👍		👍
Transport					
Roads & bridges	👍	👍	👍	👍	👍
Transportation	👍	👍	👍		
Traffic planning & control		👍	👍		
Environment & Public Sanitation					
Water & sanitation	👍	👍	👍	👍	👍
Garbage collection & disposal	👍	👍	👍	👍	👍
Environmental Protection	👍	👍	👍	👍	👍
Sewerage & drainage		👍	👍	👍	👍
Storm water drainage			👍	👍	👍
Economic promotion					
Agricultural facilities & fisheries	👍			👍	
Industry				👍	
Land Use, Development & Zoning		👍	👍	👍	
Maintenance and Regulation of Markets & Slaughter houses		👍	👍	👍	👍
Tax		👍	👍	👍	👍
Urban Design & Beautification		👍	👍	👍	👍
Development Planning	👍	👍	👍	👍	
Fire Emergency Services		👍			👍
Public Safety					

Emergency services

The emergency services expected at a city level encompass various services such as firefighting, ambulance services, Search & Rescue capacity, establishment of evacuation areas etc. Although emergency services are recognized as a function at LG level, many local bodies pay little attention to building capacity to respond to emergencies within its area of jurisdiction.

Box 1

On February 23rd 2010, a massive fire broke out in the 3rd floor of Carlton Towers in Bangalore, India. The cause of the fire was a short circuit.

NDTV reported that 9 people died and 59 were injured during the fire. Quoting NDTV, "Most of the people who died jumped in panic to escape the smoke that engulfed the top-most floors of the seven-storey office building". According to NDTV, the ladders brought by the firefighters were not long enough to reach the top floors to rescue stranded people. (*http: // www.ndtv.com/news/cities/bangalore_fire_in_building_people_feared_trapped.php*)

The Hindu reports that "the mall had sprinklers, fire hydrants, fire extinguishers and other equipment but no employee had the presence of mind to use them". None of the employees were trained in using the safety equipment. (*http: //www.thehindu.com/2009/10/07/stories/2009100760750400.htm*)

It is often reported that many municipalities and city LGs have acquired modern firefighting facilities in terms of equipment such as fire engines, trucks, fire extinguishers, ambulances, boats etc. but lack the capacity to deal with major scale emergencies in time. In certain instances the equipment is being donated by a donor agency but regrettably neither the authorities nor the technical personnel of the LGs are trained and educated on how to use that equipment in the event of a disaster.

A good example of this is the recent fire incident in Bangalore city (see Box 1). This incident draws our attention to several deficiencies that seemed to have existed in the system at the time of the disaster. These are the following:

- People were not aware of how to respond to such a disaster although the community is the first responder in any disaster event
- The personnel were not trained to handle the equipment although the equipment was installed in the premises
- A highly essential emergency service such as firefighting was not fully equipped (e.g. with ladders of correct size) until they reached the location of the disaster.

Rectifying these deficiencies is within the existing laws and even the financial and human capacity of the LGs. It is essential to correct these deficiencies before waiting for a major event to occur.

There are several options within the present legal provisions for LGs to improve their position and overcome present challenges. A few suggestions are given below:

- Establishment of emergency operations centers
- Establish city level platforms with all stakeholder groups (government, NGOs, private sector, civil

societies) as a forum for obtaining technical assistance and resource sharing / mobilizing
- Set up emergency service units (fire and ambulance services, search-and-rescue, and evacuation) and expand the services depending on the need
- Explore the possibility of making arrangements to get emergency assistance from resourceful LG within neighborhood. More resourceful local bodies can help neighboring LGs to optimize capacity
- Organize periodic simulations and drills with the assistance of responsible agencies
- Develop first responder 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 systems and setting 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 the rescue of trapped people or to help people in need of assistance
- Identify places / areas suitable for evacuation of people during emergencies and provide necessary facilities at designated places for emergency evacuation.

Waste management

Many cities in the Asia Pacific region are suffering from the problem of improper waste disposal, both solid and liquid, and this has a direct link to the spread of water-borne diseases, the increase in health risks etc. Solid waste collection, handling and disposal have become a serious issue, yet neither LG authorities nor citizens have control over the issue.

The crux of the issue is the absence of a proper solid waste disposal system in the LGs that is technically feasible, financially viable and socially acceptable to the public. As a result many fragile ecosystems are being used as dumping sites for all types of waste, significantly exacerbating the problem.

The discharge of domestic and industrial waste water in the cities of Asia and the Pacific is a serious concern that most of the LGs are unable to address. Domestic and industrial waste water is discharged into drains and surface water bodies polluting the environment. In addition to the resulting water pollution due to this haphazard release of waste water, it leads to further health issues such as an increase of vector and waterborne diseases such as dengue, malaria, filariasis, dysentery, hepatitis, typhoid etc. The unplanned expansion of cities makes the possibility of providing safe waste water discharging facilities difficult given the high investments needed to rectify the errors already done.

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

- Avoid using flood retention areas as dumping grounds
- Locate landfills away from flood prone areas
- Plan and implement ways of disposing of hazardous waste separately
- Plan to reduce un-systematic disposal of solid waste and to implement proper waste disposal means
- Explore the potential benefits of converting solid waste into other products such as energy, fertilizer etc. and take advantage of globally promoted programs such as the 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 communities
- Popularize "Reduce, Recycle and Reuse" waste among people
- Involve urban communities and their organizations in designing, planning and implementing, and also maintenance of, efficient and hygienic waste disposal (both solid and liquid) facilities
- Establish regular cleaning and maintenance of surface water drains, waste water network, sewerage network
- Encourage people on use of city sewerage network than onsite disposal in cities, where possible.
- Ensure proper treatment of sewage and waste water, prior to discharging to the sea or water bodies or to the ground.
- Encourage and promote more private and public sector partnerships in urban risk reduction measures than emergency response measures
- Coordinate with other urban centers and cities to implement such interventions where economies of scale and other complementary benefits could be generated
- Strictly enforce existing law against haphazard dumping of waste
- Consider providing economic incentives for win-win solutions.

Health, sanitation and hygiene

The LGs in many countries in Asia and the Pacific region do provide health and sanitation facilities to their citizens. In addition to medical services the LGs have the responsibility to ensure hygienically maintained slaughterhouses, waste water discharging systems, sewage disposal, hygienic food stalls and markets, control of rabies caused by stray dogs and many more functions to safeguard healthy living by ensuring a life free from diseases. Every LG has specially-recruited officials dedicated to undertaking these functions. The annual budgetary provisions are generally made for daily operations to ensure proper health and sanitation facilities.

In that sense neither additional budgetary allocations nor the legal provisions are required to perform the functions assigned to local bodies unless an epidemic or any other uncontrollable situation occurs.

It is therefore clear that the following functions could contribute to reducing disaster risks:

- Establish better monitoring and evaluation systems to ensure routine health and sanitation functions
- Organize immunization programs to reduce the spread of disease
- Organize awareness programs for prevention of epidemic situations for cases such as dengue, malaria and any other vector born diseases before outbreak
- Implement prevention programs for controlling outbreaks of seasonal health hazards
- Provide training to community health workers
- Organize mobile clinics, medical assistance with help of health authorities, NGOs etc. after monsoon seasons
- Set up maintenance units to help clean polluted water sources after flood events
- Lead public-private partnerships and campaigns to promote effective hygienic practices, and making the city free from diseases
- Strictly enforce law on hygienic and civic conditions.
- Ensure that local authority areas are free from stray animals and animals that pose health risks to the human population
- Ensure food safety and water quality

Land use planning and control

The way that urban growth has taken place in developing countries in Asia resulted in informal settlements, inadequate housing, and poor utility services such as water supply, sanitation, and health services. In a large number of cities in the Asia Pacific region there is a clearly visible division i.e. rich and formal settlements with better urban utilities and adequate supply *vs.* informal and poor settlements with limited or no facilities at all. This division between the 'haves' and 'have-nots' is the gap that reflects not only the economic drivers of urban expansion but also the living standards, governance systems and institutional mechanisms that manage both direct and indirect implications of such concentration of people.

However there are a number of ways to change this undesirable situation. One effective option is the implementation of proper land use planning to reverse or correct things that have gone wrong in the past. Although land use planning is not a miraculous technique for solving urban problems in the world today, it can correct certain existing ills to a greater degree if it can be based on avoiding hazard prone areas or exposure to hazards when development initiatives are undertaken.

Land use planning should contain the following key elements to be effective:

- Conduct multi-hazard risk assessment (of hazards, vulnerabilities, capacities, and risks) to build an urban risk profile for use in identifying safer locations for development initiatives
- Map the risk information togother with other information such as evacuation routes, temporary sheltering locations, critical facilities such as hospitals, schools etc.
- Maintain an updated land inventory with details of residential, commercial, industrial buildings, parks, recreational areas, with the 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.
- Develop 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, recreation facilities etc. which can be used during emergencies for evacuation.

Shelter and infrastructure development

Urban population growth is largely concentrated in flood plains, coastal areas etc. as discussed above. The history reveals how human settlements thrived in the fertile flood plains of major rivers in the world. This trend continues despite the risks and disadvantage associated with floods. As much as two-thirds of the world's population lives in such flood-affected areas. The people who choose to live within the flood plain of a river or estuary, lagoon or any coastal ecosystem do so because of the natural richness of the land and livelihood opportunities. For those who migrate to urban centers due to economic drivers, these flood prone areas are the only option available for settling even in conditions of relatively high risk as the rich has already occupied the safe locations of the city.

Another natural event that affects shelter is earthquake. However, earthquakes differ from floods in one particular context; that is that earthquake risk can be reduced by engineering solutions. Earthquakes of the same magnitude kill fewer people in rich countries than they do in poor countries due to application of earthquake resistant elements in design of buildings in earthquake prone areas. For example, the Kashmir earthquake that killed 73,000

people in Pakistan in 2005 was of similar magnitude to the earthquake that hit Los Angeles in 1994 but killed only 60 people. What caused the heavy casualties in Kashmir lies in the fact that the buildings were not built according to higher standards of safety used in buildings in rich countries.

This section is deliberately confined to *shelter* in urban centers as that is under the exclusive domain of LGs who have the authority and power to set and enforce better building standards. If a building fails in the event of a disaster, LGs should be made accountable to some extent for the lapse on their part in granting approvals without enforcing building standards. While we recognize the difficulty in supervising construction, it is the responsibility of LGs to have appropriate practices introduced to ensure quality control in construction. Property developers also need to understand their responsibility and keep to norms of construction without economizing or compromising on quality, and many LGs have certification schemes to identify developers who maintain high quality standards.

In addition to building control by the local authority, responsibility lies on the provision of safe shelter in safe locations to be used in the event of a disaster. These shelters can be existing buildings such as schools; religious halls etc. and local authority should be capable of converting them in to temporary shelters by providing immediate needs such as water, sanitation, power and food.

Furthermore, when communities have families who largely depend on livestock for their livelihoods, LGs should provide shelters for the animals since such people will be more vulnerable to the economic disruption by the possible loss. For example, multi-purpose cyclone shelters were constructed in 15 of 19 risky coastal districts in Bangladesh. There are 2,133 permanent evacuation shelters and perhaps 200 refuge sites (*killas*) for livestock during cyclones and storm surge.

There is a need and, at the same time, a great opportunity, to reduce the risk of injury and death in many settlements in the countries of the Asia Pacific region by adhering to better building standards in shelter and infrastructure development by the LGs. These are summarized below:

- Promote strict application of appropriate building codes that integrate hazard resistant elements in construction
- Periodic review and revision of the 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 (i.e. for construction of drains for diverting water from stagnated areas)
- Promote hazard resilient designs in housing in disaster prone areas
- Ensure periodic maintenance of main roads, specially the access roads to critical structures such as hospitals, power satiations, transformer stations, water reservoirs etc.
- Practice routine maintenance of infrastructure, government buildings, etc.

Road transport

The role of LGs in terms of infrastructure such as roads and bridges is limited to a certain extent, such as for connecting critical service facilities (e.g. reservoirs, power stations, transformer stations, fuel stations) and places of transport importance (e.g. ports, harbors airports etc.). For instance, roads are very often outside the domain of LGs - except for some roads within a few metropolitan LGs. Yet LGs should consider getting involved in road construction functions of the provincial, state or central governments within the LG area in addition to maintenance and development functions of roads under the direct purview of LGs.

More importantly road networks link urban centers with the rest of the economic and social functional areas of the country, the LGs are unable to ignore the impacts of poor quality roads within their operational area. Often it is difficult to maintain such lines of authority when it comes to maintenance of roads and hence LGs should be responsible for provision of emergency access in case of emergencies. In addition facilities such as terminal buildings, central stands for mass transport systems etc. are within the purview of LGs and they need to ensure that they are located away from hazard prone areas and constructed to higher safety standards with accessible roads for any emergency.

Hence it is suggested the LGs consider the following actions for their own advantage:

- Conduct loss estimation surveys for bridges, overhead crossings, terminal buildings etc. within LG areas and ensure higher safety standards
- Make arrangements to locate terminal buildings, central stands etc. for mass transport systems away from high risk areas
- Suggest alternative arrangements for continuity during emergencies to relevant authorities
- Special maintenance programs for roads located in flood prone areas, landslide prone areas etc.

- Make emergency maintenance groups available at all times for speedy action
- Execute emergency response guidelines for staff involved in control and maintenance of roads and mass transit services for quick recovery.

Information and communication

LGs in the 21st century should be more vibrant organization to serve their citizens. The LGs must take advantage of the advancements achieved in the world in terms of communication and information technology. Global connectivity should be taken into the forefront of the functions of the LGs. The following are the areas that the LGs could easily adopt with no or minimal cost:

- Conduct awareness programs for various stakeholder groups to provide hazard related information
- Develop information products (if possible a web portal) to provide useful information to citizens (such as hazard prone areas, policies, regulations, tax systems etc.)
- Assist professionals to develop guidelines to reduce disaster impacts and disseminate such information (using posters, calendars, billboards, hand bills etc)
- Organize disaster safety day events to commemorate past disasters
- Organize annual school competitions to raise awareness.
- Maintain disaster data bases, people data base, inventory of elements at risk and update the data therein
- Maintain inventory of service providers for an emergency, their locations, readiness to mobiles etc. (hospitals private, water bowsers, heavy machinery, food suppliers

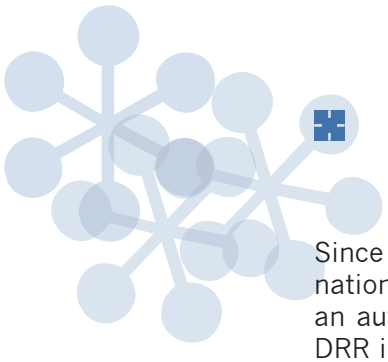
Urban services (drainage, electricity, water supply, gas etc.)

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 LGs in Sri Lanka have been taken over by public sector corporations at the national level. This is the general trend in many countries.

For example, drainage systems are still maintained by the respective LGs. Flooding in many urban areas is the combined impact of increased runoff due to building on green areas, underinvestment in drainage with sufficient capacity to drain the runoff, encroachment on natural drainage channels, and more importantly the poor maintenance of existing drainage systems.

Despite the nature of urban services provided by LGs, there is a possibility of incorporating DRR into the planning and operations of urban services as outlined below:

- Undertake routine maintenance of drainage facilities before the monsoon periods
- Design urban services to be hazard resistant and accommodate the long-term requirements
- Plan alternative arrangements for the continuity of city services during emergencies and be prepared to activate such plans should the necessity arise
- Solicit the assistance of professionals to develop guidelines for locating 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 for making available emergency service facilities 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.



Mainstreaming DRR into LG functions with expanded mandates

Since local government is smaller than the provincial / state and national / central levels of governments and also often is not generally an autonomous body in terms of authority and power, mainstreaming DRR into its functions may require expanding their mandate and scope of functions legally, financially and more importantly in terms of institutional capacity. The following are the key areas that LGs should focus on in order to ensure safe living conditions of their citizens:

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 DRR 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, NGOs, and civil society organizations to undertake DRR activities
- Allocate an annual budget for developing action plans, contingency plans etc. and conduct regular simulations, drills etc.

Introduce new policies to control land use and development in hazard prone areas

Welfare services during emergencies (provide food, nutrition and other non-food items, welfare activities etc.)

- Develop a database of LG-level NGOs, civil society organizations, private sector etc. to obtain assistance and encourage the participation in welfare activities 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 NGOs, community-based organizations and civil society organizations before monsoon seasons to ensure supply of resources and engagement in welfare activities during disaster events
- Identify evacuation centers and improve the 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 in cash but also material and in kind contributions).
- Formulate community level teams, train them for emergency response to mobilize in an emergency

Measures proposed for mainstreaming DRR for urban LGs

Recognizing the need **for mainstreaming DRR at urban local government level** in order to ensure safer living environments and sustainability of development initiatives, the following recommendations can be made that are directly relevant and equally applicable to the countries in the Asia Pacific region:

- To reduce the impact of potential disasters, local governments need to take immediate action to undertake risk assessment covering the area under their respective jurisdictions through hazard mapping and vulnerability assessment, with the support of national technical institutions and experts. This should be the basis for policy and decision-making for sustainable urban development.
- The LG should set three goals:
  - To reduce disaster risk accumulated from previous urban development,
  - To avoid creating new urban disaster risks in the future, and
  - To build the capacity to effectively respond to any type of emergencies.
- Cities in Asia face several challenges in predicting natural hazard events and developing early warning capacity and effective dissemination of the warning in time for effective actions. Valuable methods of disaster risk management such as early warning should be developed in anticipation of the possible rise in the risk in the long term. Ensuring such long term risk management is integrated in the design of development interventions is essential. It is becoming an increasingly complicated issue due to the uncertainty surrounding the predictions of climate change. While the Intergovernmental Panel on Climate Change has developed reliable predictions of global mean temperature for the long term, the reliability of predictions for the near future and / or for smaller geographic extents are much lower. This is one of the biggest challenges faced by the professionals involved in the physical development of urban areas, in particular housing, lifeline facilities and infrastructure.

- Knowledge for building hazard resistant structures such as earthquake resistant buildings, flood proofing etc. exist in Asian countries within both the formal and informal sectors. In certain cases this is connected with cultural practices and indigenous knowledge. Professionals should conduct research and make such practices popular among the general public. Governments also need to review existing legislation and policy to make sure the available methodologies and practices are appropriate, adequate and supported by a suitable monitoring mechanism to ensure compliance. This approach should ensure that new socio-economic development will be safe and resilient to the impact of geo-physical and hydro-meteorological hazards considering the long term effects of climate change.
- Most Asian countries need knowledge and financial resources to make at least critical facilities in urban areas such as schools and hospitals safer, as the first step toward disaster resilience. Governments need to start nationwide evaluation on school safety, to protect the young, as well as nationwide evaluation of hospitals to make sure that medical personnel are available to serve during disasters, when they are most needed.
- Governments need to be more proactive in reducing urban risks due to geo-physical and hydro-meteorological hazards through collaborative efforts and concerted action. The governments need to emphasize the fact that risk reduction should be everybody's business and they should encourage participation of all stakeholders such as NGOs, private sector etc. in reducing urban risks. Risk reduction plans need to include structural interventions and also more emphasis should be placed on non-structural interventions such as public awareness raising, capacity building, early warning, and contingency planning. It is also important to develop the capacity of first responders, who are in most cases the general public.

Given the above recommendations, the following measures are proposed to mainstream DRR into the operations of the LGs in the Asia Pacific region:

- Understand the existing hazard environment, vulnerability, and risk due to natural disasters as per historical records. Expand the extent of assessment to understand the futuristic risk environment.
- Obtain the assistance of professional bodies / mandated national level agencies to conduct hazard, vulnerability, capacity and risk assessments.
- Identify needs in terms of structural interventions, new policies and mandates, legal and institutional arrangements, resources, information dissemination and awareness creation and ensure external assistance when in-house capacity is inadequate.
- Develop long-term action plans for DRR at city level for identification of areas for reducing risk.
- Use any mechanism available for the city to develop a city level forum for DRR to facilitate involvement of all other stakeholders.
- Identify further areas where DRR can be mainstreamed through integration of DRR actions into existing service functions / development programs undertaken by the local government.
- Build alliances to improve the resource base. Identify the external assistance needed which can be provided by others such as central / state governments, NGOs, professional bodies, private sector etc.
- Ensure community participation in all DRR measures.

Assistance by other stakeholders

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 LGs there are number of key stakeholders such as LG ministries / departments, LG Associations, NGOs, professional bodies etc. whose cooperation is of immense importance in strengthening the capacity of LGs. The following are the possible interventions by other stakeholders such as LG Associations, NGOs, Professional bodies etc in supporting the LGs in overall Disaster Management in general and mainstreaming DRR in particular:

- 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 LG 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, and other events to present findings of pilot demonstrations at city level.
- Assist in organizing capacity building programs.

Conclusion

The general notion is that urban development provides prosperity and opportunities to many, but potential for urban disasters are growing with the nature of urban development seen in Asia. Increasingly disasters are being recognized as failures of development or unsustainable development.

The local urban bodies have the necessary mandate for development and hence risk reduction should be considered as an integral part of the mandated role of the LGs. Hence the urban LGs need to have regular practice in assessing the risk environment at micro-level to understand the factors contributing to high impact hazards, their nature and consequences.

When measures for reducing risk are integrated into regular development programs or routine service functions, it will be more cost effective to deliver. Concurrently it will ensure public safety, reduce the scale of economic impacts and contribute to sustainability of development gains. The approach will boost the confidence of the private sector for more investment to flow, which will essentially contribute to sustainable growth of urban areas, public safety and long term urban and general development of the country.

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ADPC resources on mainstreaming DRR into local governance

Urban Governance and Resilience Guides (series)
- Our Hazardous Environment
- Risk Assessment in Cities
- Planning for Disaster Risk Reduction
- Mainstreaming Disaster Risk Management

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*

ADPC resources on mainstreaming DRR

Mainstreaming Disaster Risk Reduction in the Education Sector: Cambodia
- *http://www.adpc.net/v2007/Programs/DMS/PROGRAMS/Mainstreaming%20DRR/Downloads/Cambodia.pdf*

Mainstreaming Disaster Risk Reduction in the Education Sector: Lao PDR
- *http://www.adpc.net/v2007/Programs/DMS/PROGRAMS/Mainstreaming%20DRR/Downloads/Laos%20(1).pdf*

Mainstreaming Disaster Risk Reduction in the Education Sector: Philippines
- *http://www.adpc.net/v2007/IKM/EVENTS%20AND%20NEWS/NEWS%20ROOM/Downloads/2008/Apr/CaseStudyRoadsPhilippines_FINAL.pdf*

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