# Urban Resilience and Disaster Vulnerability in the Asia-Pacific Region

**Aim of this Concept Note:** This concept note lays down the background and need for the establishment of the Regional Task Force on Urban Risk. The note also suggests a few focus areas and activities, the Task Force should undertake.
**Targeted Readers:** This note is targeted to the participants of the 23rd January 2008 meeting in Kobe, which will essentially include potential core members of the task force.

## Background

**Focus on Urbanization:** Urbanization[1] is a complex dynamic process playing out over multiple scales of space and time. It is both a social phenomenon and physical transformation of landscapes that is now clearly at the forefront of defining current and future trends of development. This phenomenon is now being accelerated by the rapid globalization and expansion of local economies, especially in Asia. Thus, vulnerability caused due to urbanization is also increasing, which is reflected in different major disaster in recent times in urban areas.
Virtually all of the world's future population growth is predicted to take place in cities and their urban landscapes – the UN estimates a global increase from the 2.9 billion urban residents from 1990s to a staggering 5.0 billion by 2030. By 2030, 1 in 4 persons will live in a city of 500,000 people; and 1 in 10 persons will live in a city of 10 million population. Most of this growth will occur in the developing countries of Asia, mainly in small and medium sized cities and also in the mega-cities.
As engines of economic growth, cities offer opportunities for sustainability, but at the same time they also present many challenges, such as poverty, pollution and disease. Therefore, without focusing on the urban areas, it is difficult to reduce the impacts of poverty and disasters. Urbanization effects should be considered in relation to the insufficient adaptation of the infrastructure to the phenomenon of rapid economic activities.
Urban landscapes represent probably the most complex mosaic of land cover and multiple land uses of any landscape and as such provide important large-scale probing experiments of the effects of global change on ecosystems (e.g. global warming and increased nitrogen deposition). Urbanization and urban landscapes have recently been identified by the Millennium Ecosystem Assessment as focus areas where significant knowledge gaps exist. Due to its high stake on built environment, the urban areas are prone to both geological hazards like earthquake and landslides, as well as hydro-meteorological disasters like typhoons (cyclone) and flooding.

**Focus on Asia:** The pace of urbanization in the developing world is led by Asia. Urbanization is increasingly located in the developing countries: in 1970s, 50% of urban residents lived in developing countries, whereas it is increased to 66% in 1990s, and is projected to be 80% by 2020. Data shows that some 1.5 billion extra people will live in urban areas of various sizes during the period of 1994 to 2025. A majority of Asia's urban growth will be in six developing countries: Bangladesh, China, India, Indonesia, Pakistan, Philippines and Vietnam[2].
Population density in the Asian cities is high, and getting higher in a significant speed. The high density is creating additional vulnerability, by developing informal settlements. In the urban mega

[1] Urban Resilience Research Program (2007): A Resilience Alliance Initiative for transitioning urban systems towards sustainable future
[2] ADB Urban Report 2003

cities in Asia, like Manila, Mumbai and Jakarta, almost 25 to 30% of the population lives in these informal settlements, and are exposed to different types of disasters like flood and typhoons. Population density, combined with recent effects of climate change is creating new risk in the urban areas of Asia.

Past disaster statistics indicate that Asia had 40-45% of the total natural hazards in the world[3]. The effect of these disasters is extremely intense in Asia: 57% of the world's disaster casualty is from Asia, live in Asia, while 88% of the affected people live in Asia. The Asian urban areas are having steady growth, and will be future hubs of the social, economic and trading activities of the world.

**Focus on Resilience:** The idea of "resilience" suggests a proactive stance towards risk. The local effects of the global environmental change and economic, political and cultural globalization are adding greater uncertainty to development planning in general, and more specifically to the prediction and management of natural hazard and human vulnerability. In 1970s, people were focusing on urbanization and in 1980s on human development and sustainable development. From 1990s onward, the focus has been changed to more sustainable cities as the concept of urbanization. Resilient cities have two specific implications. First, the concept of sustainable cities focuses on the balanced approach of urban ecosystem, where there should be the equilibrium of natural and built environment. The other aspects of resilience should be reflected on the dynamic changes of risk. While risk is changing over time, it is important that the resilience should also evolve over time to reduce the impacts of disasters.

An example of threshold-breaching event, which threatened to disrupt the stability of an urban system, comes from Metro Manila. Here, a small earthquake put one small section of the track of the city's 15 km light rail system out of alignment. This minor failure caused the system to be closed for a number of days and reduced its overall capacity for several months, putting more traffic on the road network. The other example is from the Loma Preta earthquake in the USA, where collapse of Oakland expressway and closure of the San Francisco Bay Bridge did not lead to disruption of the Bay area's transport system due to high degree of redundancy in the metropolitan transport network. These examples highlight one way through which systems can be designed to have resiliency to unanticipated change such as natural disaster shocks[4].

Recent natural disasters (e.g. Hurricane Katrina, Indian Ocean Tsunami, Pakistan Earthquake) have highlighted the need for urban systems to cope with unexpected shocks. While there is an emerging research focus on sustainable cities (urban landscapes), there remains a poor scientific technical understanding of the processes and factors that make some cities vulnerable to shocks and others resilient. This may be due in part to the fragmented nature of urban science and policy. It is required to develop the cities as complex adaptive social-ecological systems, developing ways of assessing urban vulnerability and identifying principles and opportunities for building resilience in urban systems. Building resilience is particularly important in areas such as coastlines, cities, agricultural land and industrial zones which are often the most impacted by humans. It is the same area that people value highly, both economically and aesthetically, and upon which society often depends.

**Focus on Urban Futures:** While a great deal of attention has been on the increase of mega-cities, a more important, but less discussed aspect of urbanization had been the phenomenal growth of smaller cities with population less than 0.5 million, especially in the developing countries, as well as the growth of medium sized cities of population between 1-1.5 million, together with the associated growth of urban-rural linkages through flows of goods, services, people, capital, and information, both in the developing and developed countries. Thus the global future population distribution is likely to be a continuum of urban space of varying densities linking mega-cities and rural populations with population distributed according to human activities, resource availability

[3] Asian Disaster Reduction Center (ADRC) Data Book, 2005

[4] The vulnerability of cities: Mark Pelling

and cultural preferences. What shape would this urban space take? What makes urban spaces sustainable? What are the changes urbanization is making on natural environment? How do they increase natural disaster risks and what are the mitigation options? The task force will include links to the community of urban planners, architects and engineers who are engaged in shaping the future of urban growth to ensure that disaster risk reduction is incorporated in urban development planning as well as future urban development trends are incorporated in disaster risk reduction strategies.

## Focus of the Task Force

There are several activities currently being conducted by different agencies and institutions on urban risk. The task force will *NOT* implement any specific project by its own, but will facilitate knowledge and information exchange, and will act as a platform of information sharing. Specific projects will be conducted by the participating organizations and institutions, and will be reported to the Task Force for its wider dissemination.

The Task Force will work in line with the ISDR priority of actions for the region. There would be two major emphasis areas of the task force operation:

- HFA Reporting Framework on Urban Risk (to be prepared for the next Global Platform Meeting)
- Mapping of Urban Risk and Resilience in the Asia-Pacific Region (as agreed by the Ministerial Meeting in Delhi in November 2007)

Under these two immediate needs and targets, the Task Force activities[5] can be divided into three parts:

- **Networking and knowledge sharing:** This part will focus on sharing information and knowledge to a wider audience and stakeholders utilizing existing networks and partnerships, and presenting and/or attending different relevant conferences, workshops and forum.
  - **Outputs:** Presentations and participation in the major global and/or regional forum, and establishing links to different on-going and/or proposed activities.

- **Developing knowledge products:** This part will focus on innovative and/or customized on-demand knowledge products for specific users and target organizations. One idea can be developing urban resilience portfolio for the major cities in region, which will include risk and vulnerability index, support system and framework of mitigation actions. These knowledge products will be updated, revised and adapted to local conditions with practical case studies and disseminated through regular training and capacity building programs.
  - **Outputs:** Knowledge repository, training and capacity building programs.

- **Initiate and/or provide link to specific country programs:** This part will focus on specific country activities to be implemented by Task Force member and/or non-member organizations and institutions. Task Force may initiate specific country or city programs based on the needs, priorities and resources. It can also provide vital links of knowledge generation and sharing to the existing programs.
  - **Outputs:** Country specific actions and dissemination.

It is proposed that while Task Force Members oversee all three activities, one or two specific organizations and/or institutions should be responsible for each of the three abovementioned parts.

[5] These are tentative and proposed activities, which will be discussed during the 23rd January meeting in Kobe.