Thematic overview of Urban Risk Reduction in Asia

(Submitted from the Asia Regional Task Force on Urban Risk Reduction as input to the Global Assessment Report on DRR)

Introduction

This thematic review report on urban risk reduction in Asia has been prepared in the context of progress review in the implementation of the Hyogo Framework for Action. It will provide thematic analysis as input to the production of the Global Assessment Report on Disaster Risk Reduction (GAR/DRR) to be launched at the second session of the Global Platform on Disaster Risk Reduction in 2009.

The Hyogo Framework for Action specifies that disaster risk is compounded by increasing vulnerabilities related to various elements including unplanned urbanization. As one of the five priorities for action of the Hyogo Framework for Action, key activities are specified to reduce the underlying risk factors (Priority 4) and urban risk reduction is the crucial area of work to implement the Hyogo Framework for Action.

Overall trends and analysis on urban risk reduction in Asia Region

The world is steadily becoming more urban (Boulle et al, 1997[1]), although, urbanization rates vary across the world. The level of urbanization is far higher in countries like USA and UK compared to China, India or Vietnam, but annual 'urbanization rate' is much slower. Many consider urbanization as an irreversible process and thus urban vulnerability becomes a reality (Quarantelli, 2003[2]). In Asian context, the combinations of economic and environmental pressures increasingly keep forcing the rural poor to search alternative living in nearby towns or cities. Supply of developed and safe land is always short of demand in urban areas and often result is mushrooming of informal settlements, slums, and squatters through encroachment on public and private land. Cities' commercial, industrial and residential locations prove to be livelihood center for urban poor, who left with no choice but to settle on dangerous locations subject to natural or man-made hazards.

Urban hazards vary considerably compared to their rural counterparts. They are not only represented by one-off events like earthquake or cyclones but also get exaggerated due to hindrances in accessing basic services or public health services. 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. A majority of Asia's urban growth will be in seven developing countries: Bangladesh, China, India, Indonesia, Pakistan, Philippines and Vietnam[3].

To understand the urban risk and its impacts on local environment, it may be appropriate

[1] Boulle P., Vrolijks L., Palm E. *Vulnerability Reduction for Sustainable Urban Development*, in Journal of Contingencies and Crisis Management', Vol 5, No 3, Sept 1997, pp 179-188.
[2] Quarantelli EL. *Urban Vulnerability to Disasters in Developing Countries: Managing Risks*. In Alcira Kreimer, Margaret Arnold, and Anne Carlin (Eds.), *Building Safer Cities: The future of Disaster Risk.* Washington D.C.: The World Bank. 2003.
[3] ADB Urban Report 2003

to deconstruct the underlying factors making urban risk more critical than in any other built environment. These factors may be summarized as follows (Surjan and Shaw, in press[4]):

Urban population: By 2050, the world population is expected to grow by 3 billion people. 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. Data shows that some 1.5 billion extra people will live in urban areas of various sizes during the period of 1994 to 2025[5]. Urban areas are characterized by high density population, which results to higher exposures. Combination of high vulnerability and exposure causes higher degree of urban risk

Urban setting and urban planning: The tendency of cities to be located and expanded on river banks or coastal areas for economic reasons makes them more vulnerable to disasters. Number of densely populated areas in the world is in river deltas, coastal areas, seismically active zones etc. In fact, population started growing in productive floodplains and coastal zones, fertile volcanic slopes etc. as these offered most lucrative piece on the earth to settle in. The major cities in Asia are either located in the flood plain or in the coastal areas. Recent study shows that nations with largest urban population in the Low Elevation Coastal Zone (LECZ) are China, India and Japan[6].

Urban structures: In most of the countries in Asia, the cities have poor infrastructures, with specific problems in water and electricity supply, sanitation and drainage system. Moreover, the vital infrastructures in many Asian cities have poor quality, which is shown in several recent disasters in the earthquake of 2005 in northern Pakistan, 2008 in Wenchuan earthquake in China.

Compact urban forms: Even in large urban areas, population density varies and determines the severity concentration in specific pockets of the city. Moreover, day-time and night-time density varies significantly. In downtown or in commercial and office areas, day-time population concentration is very high on working days. In case of Mumbai, although average city density is 27,000 people per sq km for the city, some areas have density astronomically high as 114,001 people per sq km.

Urban dependence on rural areas: Urbanization has its origin since industrialization gradually emerged in different parts of the world. The environmental impact of city on its adjoining areas kept growing resulting in larger 'environmental footprint' than ever. The ecological footprint of Tokyo is five times of Japan's land area.

Urban primacy: Many cites including Asian megacities are increasingly becoming the concentration of a particular country's major functions including physical, economic, social, political and cultural assets, which are being exposed to different types of disaster risks. For example, a hazardous event in a mega city like Manila, which is the hub of political, administrative, and economic activities of Philippines, may lead to complete disruption in the country as a whole. This makes Manila more vulnerable compared to other cities. A major earthquake striking in a city like Tokyo could have global impact specially damaging economy.

[4] Surjan A. and Shaw R. (in press): Urban risk and disaster risk reduction. In: *Disaster Management: Global challenges and local solutions,* Shaw R. and Krishnamurthy R. eds., University Press.
[5] Urban Environmental Governance for Sustainable Development in Asia and the Pacific: A Regional Overview, UNESCAP, UN Publication, Bangkok (2005)
[6] id21 insights 71, January 2008

Urban informal settlements: The form and structure of informal settlements can vary from one urban context to another, however they remain 'illegal constructions'. In the urban mega 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.

Urban economic imbalances: As discussed earlier, poor tend to live in an unsafe environment. They live in most vulnerable housing, in absent of or degraded environmental conditions and hazard prone locations with very poor personal assets to help themselves in even minor emergencies. The socio-economic opportunities provided by Asian cities enable people from a wide range of income brackets to interact and live, but also create vulnerabilities resulting from lack of access to urban goods and services.

Urban services: Bigger the city, more complex is the infrastructure service systems it will have. In developed countries, urban services generally consists of complicated network spread across city and are dependent on high energy inputs and require sophisticated technology to fix problems. Dependency on infrastructure in developed world is much higher compared to developing nations. The intricate web of services makes it difficult and expensive to repair but needs attention during disasters. Provision of water supply, sanitation, become more crucial in disaster struck regions.

Urban environment: Urbanization itself, in most cases, is proved detrimental to local and regional environment. Once ecologically fragile areas now have been swallowed by expanding cities resulting in loss of biodiversity, disrupted balance of eco-systems and threat of extinction to many living organisms. In addition to this, ground subsidence, underground excavations, surface and ground water contamination, water table reduction, are some of the counter products of urbanization. In the city of Bangkok, the land subsidence is a crucial issue. In some places, the subsidence rate is almost 25 to 30 cm per year, which is caused due to over exploitation of underground water. The urban eco-system is characterized by interplay of the built, natural and socio-economic environment, which separately and collectively generate much of the risk that cities face today.

Urban management: Urbanization as a result of complex socio-economic process, poses a daunting task of managing cities. Heterogeneous societal structure, opportunist political system, lack of administrative capacities, very poor resource generation capabilities, archaic urban planning and development legislation etc contribute collectively in making city more vulnerable to poor management and disaster risks. Appropriate governance and decision making system is the core of risk reduction in urban areas. Special focus should be given to vital infrastructures like schools, hospitals and key public buildings.

In the above context, urban risks will be there in Asia, and we need to cope with these risks. Cities in developing countries of Asia also face cascading vulnerabilities that go beyond the original risk or hazard. The relevance of low probability and high consequence events should be increasingly recognized.

Climate change is becoming a threat to the urban environment. The uncertainty arises due to the changing climate, needs to be considered in the overall urban risk management framework. Climate change impacts are increasing accelerating these risks, and it is required to focus on the adaptation measures with specific emphasis on community based approaches. In several countries, new approaches to community based risk reduction have been practiced and its importance is realized. In spite of different threats, communities

have their inherent capacities to cope with different types of disasters. Community resilience should be considered as an asset of risk reduction in the urban areas. An eco-community approach for informal settlement in Mumbai has proved to be effective during catastrophic flood in 2005. Similarly, the community based preparedness and neighborhood watching in Manila, Kuala Lumpur, Danang has proved to be useful to raise resident's interest in collective problem solving.

The forces and processes that constitute 'urban activity' have far-reaching and long-term effects not only on its immediate boundaries, but also on the entire region in which it is positioned. The causes of urban growth are varied and complex, but among the main ones are economic and environmental pressures driving people to seek a living in the towns.

Recommendations and conclusions

In conclusion, urban risk reduction in Asia need a balanced mix of policy implementation, regulatory measures and education-awareness programs through community based approaches. A few conclusive statements can be as follow[7]:

1. Urban risk reduction poses a challenge for effective distribution and management of global resources.
2. For effective urban risk reduction, there is a need to strike a balance between natural and built environments and between ecological and economic objectives.
3. There is a need to develop a structure of goals/visions and a methodology to achieve urban risk reduction in order to identify the action that has to be taken.
4. Steps need to be taken that are relevant in the short term in order to gain wider acceptability, but keeping long term goals in mind.
5. Access, sharing and dissemination of information has to be a priority to achieve greater understanding of the issues involved.
6. Collaborative efforts in 'knowledge transfer' at the community-to-community level and city to city level has to be encouraged, particularly between developed and developing cities.
7. There is a need to understand and enact the concept of sustainable development and sustainable living, in all its varied definitions, to achieve urban risk reduction objectives.
8. Development of new technologies that are clean, green, and practical has to be encouraged and exchanged between national and city/local governments to combat environmental problems.

The urban risk issue in Asia is being addressed by various institutions at various levels through regional programmes by regional entities, through national programmes by country governments, and through city-level and local level activities by community level entities. The Asia Region is uniquely positioned to have a synergy of activities of UN, bilateral donors, governments, and specific activities by civil society organizations and academic institutions.

Recognizing that there is a growing need to address the subject area of urban risk reduction with concerted and coordinated efforts among stakeholders, in particular in the Asia region which is developing the pace of urbanization dramatically, the UN/ISDR Hyogo Office together with close partners took an initiative to develop the Asia Regional Task Force on Urban Risk Reduction as a thematic group of the ISDR system in Asia to facilitate and accelerate efforts and actions for urban risk reduction. The Asia Regional Task Force (RTF) on Urban Risk Reduction was established in a meeting in Kobe, Japan in January

[7] Srinivas H., Sharma A. and Shaw R. (in press): Urban Risk Reduction: Way Ahead. n: *Urban Risk: An Asian Perspective*, Shaw R., Srinivas H. and Sharma A., eds., Springer Publication

2008. The RTF is represented by 15[8] member organizations and is expected for further expansion.

The Asia Regional Task Force (RTF) on Urban Risk Reduction aims at developing 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. The goal of the RTF is to enhance decisive actions to reduce risk and increase community resilience in the urban areas in the Asia region, with specific objectives such as acting as an advocacy vehicle to major urban policy bodies, providing a platform for collective information and knowledge development and sharing, and facilitating interactions and cooperation among related organizations and stakeholders. To facilitate concerted efforts among stakeholders to enhance prompt actions towards risk reduction and to increase community resilience in the urban areas in the Asian region, the RTF have recently launched two concrete collaborative activities: (i) developing the guideline for local governments "Words into Action for local governments for HFA implementation" and (ii) "RADIUS plus 10" as the follow up project of the original RADIUS[9] project.

There have been an increased number of programmes and key landmarks and progress made on urban risk reduction in Asia. In order to analyze existing initiatives, nature of risk addressed, demands and gaps in the area of urban risk reduction in Asia, the RTF-URR is in the process of making the inventory of these initiatives. To name a few programmes as key landmarks and progress on urban risk reduction in Asia,

- Asian Urban Disaster Mitigation Program (AUDMP) by Asian Disaster Preparedness Center (ADPC) aims at reducing disaster vulnerability of urban populations, infrastructure, critical facilities and shelter in 10 targeted countries in Asia. Through building upon successful elements of the AUDMP past experience, ADPC subsequently launched the Program for Hydro-Meteorological Disaster Mitigation in Secondary Cities in Asia (PROMISE), as an opportunity to associate with many communities living in Asian cities vulnerable to hydro-meteorological hazards with the aim of reducing the impacts of such events and demonstrate innovative applications for community preparedness and mitigation;
- The World Bank launched a Primer on Reduction Vulnerabilities to Climate Change Impacts and Strengthening Disaster Risk Management in East Asian Cities. This Primer is a tool for city governments in the East Asia Region to better understand how to plan for climate change impacts and impending natural disasters through sound urban planning to reduce vulnerabilities. It gives local governments information to actively engage in training, capacity building, and capital investment programs that are identified as priorities for building sustainable, resilient communities;
- Climate Change and Health in Urban Settings by WHO Kobe Centre (WKC) as part of the WKC's global platform for action on hearty urbanization (2006-2025);

[8] ADPC, ADRC, CITYNET, DRI, EMI, IRP Secretariat, JICA, Kobe University, Kyoto University, UNCRD, UNEP, UN-HABITAT, UN/ISDR, UNU and WHO

[9] The Secretariat of the International Decade for Natural Disaster Reduction (1990-1999, predecessor of the UN/ISDR Secretariat) had conducted the RADIUS (Risk Assessment Tools for Diagnosis of Urban areas against Seismic Disasters) project in 1997-1999.

- Cluster Cities Project (CCP) conducted by Earthquakes and Megacities Initiative (EMI) aims at scaling up and cascade down knowledge and experience in the implementation of urban DRR in the context of megacities, by building a coalition of partners cities and a community of urban disaster risk reduction practitioners;
- CITYNET has several clusters as its priority programme based on requirements from CITYNET member cities and organizations. One of the clusters is Disaster Cluster which includes disaster risk reduction and mainstreaming it in the overall city planning and management. Disaster Cluster's activities include training and capacity-building programme, city-to-city cooperation, technical advisory services and study visits.
- Japan International Cooperation Agency (JICA) is conducting Technical Training Programme targeted at key administrators, technicians and researchers in developing countries and regions to transfer knowledge and technology in disaster reduction/prevention to support their capacity development to address disaster risks including urban risks.
- Production of urban risk profiling and best practices compilation on urban risk reduction at city levels by CITYNET, UNISDR, and Kyoto University.
- United Nations University has developed risk assessment training modules for extreme flood events consisting of rainfall downscaling and forecasting, GIS, flood inundation modelling and loss assessment in urban areas. The first series of training was conducted for "training of trainers" comprising of University faculty and senior professionals of responsible organizations from 5 Asian countries. This is now followed by training programs for senior engineers in each country with the support of the already trained professionals. The program will cover 10 other Asian countries in the next stage.

With the increasingly complex and urbanizing world, sustainable urban development and management present considerable challenges and potentials for reducing urban vulnerabilities and risks. The Asia Regional Task Force on Disaster Risk Reduction will expand its network and partnership, work together to cope with these challenges through the concerted and collaborative efforts among partner organizations, and contribute to creating an enabling environment to reduce urban risk in the Asia region.

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