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Cities and Urban Vulnerability

in the context of Urban Environmental Management[1]

Concept Paper

The criticality of urban environments is highlighted by the fact that most of today's global environmental problems can find their precedence and causes, directly or indirectly, in urban areas and urban lifestyles - which have become the preferred choice of settlement for a majority of humanity. Urban centers 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 world is steadily becoming urban. The UN report on World Urbanization Prospects projects that more than 50 percent of the world's population will be dwelling in cities and almost all the growth of the world's population between 2000 and 2030 is expected to be absorbed by the urban areas of less developed regions. According to UN projections, the urban population in Asia is expected to become nearly double and the percentage of people living in urban areas in India will be 41.4 against the current figure of 28 percent.

> The world's cities take up just two percent of the Earth's surface, yet account for roughly 78 percent of the carbon emissions from human activities, 76 percent of industrial wood use, and 60 percent of the water tapped for use by people.

Along with the benefits of urbanization and agglomeration come environment and social ills, including lack of access to drinking water and sanitation, pollution and carbon emissions etc. It is, in fact, a two way street - while cities and urban areas are directly or indirectly causing global environmental problems, climate change has impacts that are being felt at the micro and urban levels.

Clearly, there are cyclical links between urban areas, lifestyles and consumption patters on one hand, and global environmental problems on the other. The outlook is even grimmer if we consider the accumulated effects and synergy between environmental deterioration and poverty

Urban areas provide a number of socio-economic opportunities for jobs and income generation, but are also simultaneously becoming increasingly risky places to live, especially for low-income residents of cities in developing countries. Exposure to environmental risk and hazard is a result of physical processes creating these hazards (for example building construction, urban planning, infrastructure provision or transportation), and human processes that lead to vulnerabilities (for example, lifestyle choices and consumption

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patterns). These issues have cumulatively creating different impacts in different areas of a city or cities, depending on its socio-spatial structure..

Urban areas are not disaster prone by nature; rather the socio-economic structural processes that accelerate rapid urbanization, population movement and population concentrations substantially increase disaster vulnerability, particularly of low-income urban dwellers. Migrants, for example, settle in areas either originally unsafe (susceptible to floods, land slides, etc), or create the potential of man-made disaster (environmental degradation, slum fires, health hazards). Urban vulnerabilities are not limited to just low-income residents – a flood or a typhoon does not distinguish between residents, affecting everyone in its path. Even 'natural' disasters always have social, cultural, institutional and technical aspects involved, which ultimately determine if a natural hazard becomes a disaster.

Therefore, while urban vulnerabilities are created *directly* by global change such as sea level raise and flooding (more than 80% of cities are on river basins or close to a coast, or both), a number of *indirect* causes, such as household and hazardous/toxic wastes, pollution etc. are responsible as well, resulting in potentially higher impacts owing to concentrations of infrastructure, government, population and economic activity

In the context of climate change, for example, risks from natural events result from a combination of the nature of the hazard itself, and the intrinsic vulnerability of the affected society and territory. The Intergovernmental Panel on Climate Change (IPPC) Working Group II (IPCC, 2002) has defined vulnerability as the extent to which a natural or social system is susceptible to sustaining damage from climate change. Vulnerability therefore implies not only exposure to hazard factors but also the capacity to recover from their effect. Vulnerability in an urban context should not be conceived as a fixed feature of a specific society or territory, but as a process, whose intensity can be reduced through adequate policies.

Thus a changing urban environment, brought about by both man-made factors and natural factors creates vulnerabilities in cities that need to be prevented (control the source), protected (build to withstand) and controlled (land use planning and zoning). The reduction of urban vulnerability can be an incremental process that follows the PDCA cycle, calling for:

- evaluation of the relevance of integrating vulnerability mitigation/reduction within a city's local governments;
- identifying and prioritizing the different options for integrating vulnerability mitigation/reduction
- formulating activities for the selected option(s);
- evaluating possibilities for financing these activities; and
- defining an implementation strategy.

Since urban vulnerability to disasters is after all a function of human behaviour/lifestyles, UNEP's projects in this area can potentially focus on (a) explaining what constitutes an urban vulnerability, (b) building a clear nexus between urban vulnerability and environmental degradation, (c) identifying vulnerabilities using assessment tools, and (d) understanding the potential of multi-hazards in an urban context.

The primary target for such projects will of course be local governments, as well as specific local departments responsible for risk management, or for provision of urban infrastructure and services. Secondary stakeholders can include NGOs and community groups working on vulnerability and risk issues, as well as business groups that are looking into the issue of business continuity aspects with respect to disasters.

Some of the strategies and tools that are part of a vulnerability analysis that can be integral part of the projects include -

- Urban hazard mapping for Mitigation
- Risk analysis and assessment for cities
- Long term strategic urban planning/zoning
- Business continuity planning

In conclusion, the intrinsic link between environmental degradation and urban vulnerability calls for a broader understanding of the urban watershed as a whole, which includes the bio-physical, socio-economic, land-use, and infrastructure systems that feed it, in order to identify urban areas with potential and real risks. These can become an integral part of the project, building the necessary process and skills/capacities to use the tools and reduce urban vulnerability in the long run.

Integrating these priorities into those of urban environmental management is also an important aspect of urban vulnerability reduction. Any project on urban vulnerability, will have to take due cognizance of larger capacities to mitigate the effects of natural disasters. Guidelines and strategies for the implementation of existing knowledge on the matter need to be developed, including encouraging scientific efforts to reduce the loss of human life and urban property damage.

Vulnerability initiatives will also need to be integrated and linked to forecasting, prevention and mitigation of natural disasters. Projects focusing on technical assistance and technology transfer, demonstration projects, and education and training for specific locations or types of risk, will go a long way to address specific needs and situations of local governments in cities of developing countries.