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15 – URBAN RESILIENCE

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ISSUE PAPER ON URBAN RESILIENCE

KEY WORDS

Resilience, hazards, vulnerability, risk, resource efficiency, urban resilience, climate change, ecosystems, natural resources, disaster risk reduction, shocks, stresses, finance, urban planning, governance

PURPOSE OF THE PAPER

This issue paper aims to contribute to the goals of the New Urban Agenda by improving understanding of the drivers of urban resilience, enable a city system to withstand and recover quickly from multiple and varied shocks and stresses, and improve its performance over time. In the context of Area 5, resilience provides an overarching framework to address the risks and realize the opportunities associated with the rising incidence and costs of urban disasters, the current and anticipated impacts of climate change, and the protection of critical ecosystem services and natural resources.

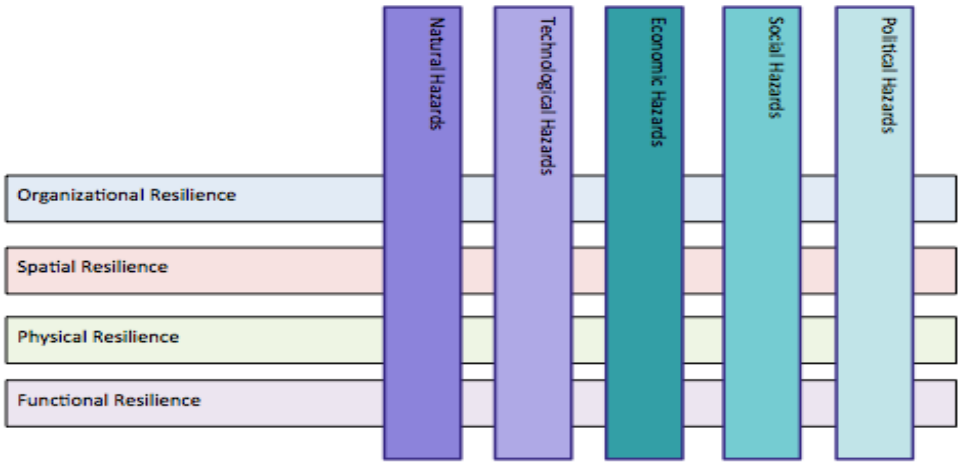
Because resilience thinking encourages a holistic view of an urban system—one that seeks to understand the interconnected nature of a city's spatial plan, physical assets, functions, and socio-economic dimensions—it is the recommendation of the authors that resilience also inform discussions across other thematic areas and issue papers, particularly urban economy and spatial development (see issue papers under Area 3).

MAIN CONCEPTS

The concept of resilience is both aspirational and operational. In recent years, resilience has emerged as a central theme of urban development serving as the basis for a wide range of strategic interventions and investments among the world's leading development institutions, and, increasingly, within the humanitarian community. Resilience concentrates on how individuals, communities and business not only cope in the face of multiple shocks and stresses, but also realize opportunities for transformational development.

In this way, resilience is a quality of sustainable urban development, as much as a driver of development itself. Resilience at city level recognises the urban area as a dynamic and complex system that must continually adapt to various challenges in an integrated and holistic manner. The "urban system" can be understood across functional (e.g. municipal revenue generation), organizational (e.g. governance and leadership), physical (e.g. infrastructure), and spatial (e.g. urban plans and designs) scales (see figure1).

Figure 1: Urban Systems Model Approach



Source: UN-Habitat

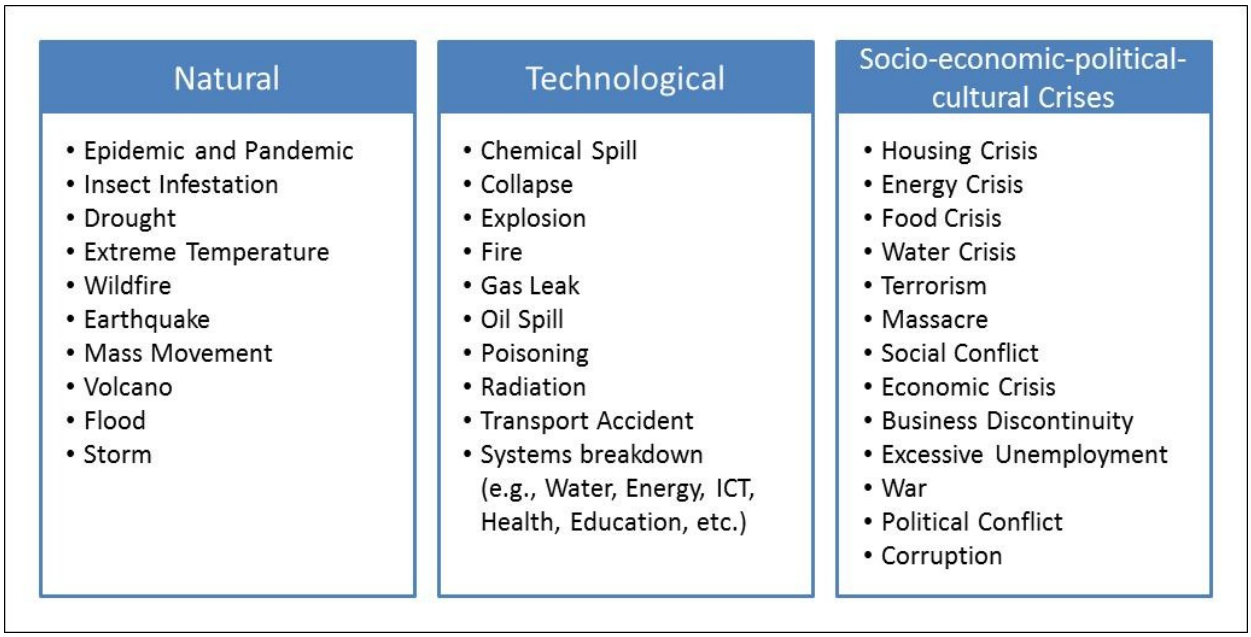
Each part of the system has an inherent reliance on the other. In both developed and developing countries, cities are vulnerable to the disruption or breakdown of individual or multiple parts of the urban system, be it economic downturns, social upheaval, epidemics, or a failure of governance to prepare for and manage weaknesses in the system. Resilience strategies call for an understanding of this inherent relationship, with the view that cities cannot be resilient in isolation.

For example, city level actions that build resilience to a particular threat such as flooding by moving residential developments to safer areas should use the opportunity to address other stresses (e.g. inequality). Development strategies that only focus on one sector or challenge, well-intentioned though they may be, could miss opportunities to positively transform a city, and possibly trigger new threats as a result. A residential development that is protected from floods, but does not provide affordable housing, or leaves people disconnected from livelihoods, may inflame social tensions and contribute to a cycle of poverty and risk generation. During the 2011 Thailand floods, for example, 73 percent of low-income households in Bangkok were affected compared to only 21 percent of the total city population (UNISDR, 2013).

Building Resilience

As more people and assets are concentrated in cities, there is an increasingly complex array of shocks and stresses that can influence, negatively or positively, on resilience (see figure 2). Broadly speaking, the factors that influence a city's resilience include the range and severity of hazards; the risk to lives and property; the vulnerability and exposure of human, social, and environmental systems, and; the degree of preparedness of both physical and governance systems to any shock or stress.

Figure 2: Classification of Urban Hazards (Shocks and Stresses)



Source: World Bank, 2014, Adapted from UN-Habitat's City Resilience Profiling Tool (CRPT), which is based on the classification of hazards by EM-DAT and PreventionWeb.

The concept of resilience has evolved steadily over the years. The study of ecology, and analyses of how shocks and disturbances affect ecosystems, has informed the application of resilience thinking in the other systems. Likewise, the field of disaster risk reduction effectively expanded focus from preparing for a disaster event to a wider perspective that considers how development decisions can affect exposure and vulnerability to multiple hazards over time and how, importantly, measures can be taken to reduce losses and build resilience.

Renewed attention to resilience, particularly urban resilience, has brought a number of significant advances. It encourages attention to a wider range of shocks and stresses and seeks to understand how these affect urban systems. It also seeks to leverage knowledge of risk, exposure and vulnerability in order to identify opportunities for transformational development.

Shocks and stresses stemming from environmental conditions affect city resilience through several recognizable pathways. Ecosystem degradation, or loss of ecosystem services in the wider territory, can have direct effects on urban resilience – consider, for example, the connection between ecosystem degradation in watersheds or wetlands and urban flooding or water quality. Pollution introduces other stresses that undermine the resilience of urban systems, particularly where health is affected.

Resource scarcity presents yet another source of stress. Though, with the exception of water, the most direct impacts of resource scarcity may not be felt immediately within the city limits, unsustainable patterns of

production and consumption are a source of accumulating stress in cities. Many of the possible interventions that relieve environmental stresses and build resilience through ecosystem management, resource efficiency, and related measures are explored in more details in Issue Paper 16.

Acute shocks combined with endogenous stresses such as joblessness, particularly among youth populations, can both impede and reverse development. The impacts of disasters often exacerbate existing socio-economic and environmental weaknesses in the urban system. The combination of shocks and recurrent or protracted stresses can push vulnerable populations into poverty keep them there (World Development Report, 2014).

Building resilience requires not only an understanding of the risk and immediate impacts of a shock on the affected area, but also the cascading consequences that can have deep and long-lasting impacts across communities, financial systems, and geographic borders. Consider, for instance, the far-reaching, long-term impacts of the Great East Japan earthquake and the tsunami of 2011 on global supply chains and the nuclear energy industry.

Resilience in the New Urban Agenda

The three pillars of the New Urban Agenda--urban planning, urban legislation and municipal finance—provide a helpful framework for understanding resilience in an urban context.

Without good urban planning, poor and counterproductive investments may replace otherwise profitable and sustainable ones. Without good governance and legislation, the investment landscape is more uncertain and good plans are harder to see through and enforce. Without finance, even the best-laid plans will never come to fruition and could ignore the longer-term impacts from climate change on more immediate investment decisions, causing a vicious cycle of risk generation.

In terms of planning, resilience strategies can support a positive model of urbanization that is compact, connected, integrated and inclusive, by promoting risk-informed decisions that are tested against multiple stresses and have the greatest impact to the majority of the people. In Santa Fe, Argentina the municipal government used the threat of perennial flooding to create an integrated ‘resilience action plan’ that re-directed development to safer zones, and used the opportunity to make other improvements, such as connecting communities to transport networks.

Many cities around the world are employing resilience strategies to redress social, economic and environmental imbalances that are legacies of past conflict, or a result of current conditions. Johannesburg’s ‘Corridors of Freedom’ project is using the lines drawn under apartheid to make significant improvements to the city’s urban plan and transport networks.

Current urban development patterns and the accumulation of risk in urban areas in fragile states are a particular concern. The pace of urban growth in these areas as a result of rural-urban in-migration and conflict is exacerbating vulnerabilities and bringing more pressure to bear on urban basic services, social cohesion, and the capacity of public institutions to respond to people’s needs. Because migrants often settle

in slums that are especially vulnerable to natural and human-made shocks, including climate change, there is a threat of further instability and displacement in these areas (see Issue Paper 2).

Resilience thinking is also helping urban planners, local governments and businesses think about the inter-connected nature of urban planning on social, economic and environmental levels. For example, resilience helps make the linkages between how urbanization that results in sprawl not only disconnects residential areas from sources of livelihoods, but can also perpetuate a reliance on high-emission, fossil fuel-generated energy and transport systems. Likewise, poorly planned cities also exacerbate pressure on natural resources and ecosystems that act as climate change mitigation instruments and physical buffers to climactic events, and contribute to land degradation (see Issue Papers 16 & 17). Awareness of the inter-connected nature of risk and opportunities for transformation help municipal leaders and investors make more informed and sustainable policy and investment decisions. The opportunity that exists to connect all of these elements for the benefit of the city is particularly compelling given the fact that 60 per cent of the area expected to be urbanized by 2030 remains to be built (see Issue Paper 18).

A resilient approach to development can also improve governance challenges by highlighting the link between the breakdown of regulatory functions in urban areas, particularly across the developing world, and the creation of vulnerabilities to natural and other hazards. Corruption or lack of interest in building code enforcement and broader compliance strategies can be associated with some of the worst disasters in modern times. Before the 1999 earthquake in Turkey that killed 17,000 people, 65% of apartment blocks in Istanbul and other cities had been built in violation of local housing codes. By contrast, the 8.2-magnitude earthquake off the coast of Chile in April in 2014, and the subsequent aftershocks, highlighted the benefits of investing in preparedness and risk mitigation associated with seismic hazards. The enforcement of strict building codes is credited with the very low numbers of deaths, as buildings and infrastructure held, while the evacuation of over 900,000 people from the coast, following a tsunami warning, illustrate the benefits of investing in public awareness and early warning systems.

Resilience is also playing a more important role in finance decisions that ultimately affect the form and function of the city. For example, where the International Finance Corporation (IFC) of the World Bank has previously factored climate change risks into its investment decisions, it is now aiming to screen certain large-scale infrastructure projects through a much broader resilience lens. A separate initiative led by the World Bank and the Medellin Collaboration on Urban Resilience is aiming to understand how this broader approach to resilience is not only influencing investment decisions, but also driving innovations in urban finance.

FIGURES AND KEY FACTS

- Poor households tend to be less resilient than wealthier ones. In a study of the January 2010 Haiti earthquake wealthy households were found to be the ones able to recover more quickly while poor households were more heavily dependent on temporary jobs and were prone to reduced consumption or pulling children out of school (Overseas Development Institute, 2013).

- A recent risk analysis of 616 major metropolitan areas, comprising 1.7 billion people, or nearly 25% of the world's total population and approximately half of the global GDP found that flood risk threatens more people than any other natural hazard. River flooding poses a threat to over 379 million urban

residents, with earthquake and strong winds potentially affecting 283 million and 157 million respectively (Hausmann, 2013).

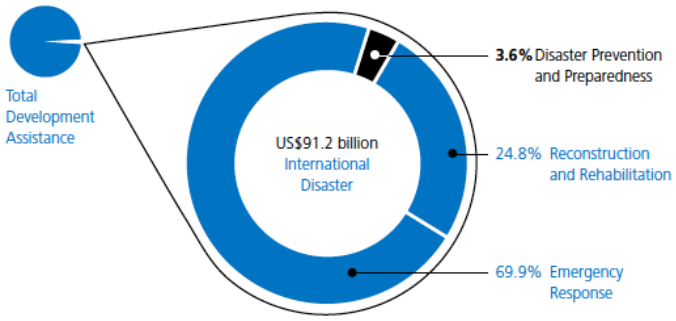
- Thirteen of the most populated cities in the world are coastal trading hubs that are vital in global supply chains. Many of these are exposed to flooding and storms. The estimated exposure of economic assets is expected to increase between 2005 and 2070 from USD416 billion to USD 3,513 billion in Miami, USD8 billion to USD544 billion in Dhaka and USD 84 billion to USD 3,557 billion in Guangzhou (Global Assessment Report, 2013).

- A sizable gap between investments in disaster resilience and conventional crisis response spending (see figure 3). According to some estimates for every $100 spent in development aid, just 40 cents has been invested in reducing the impact of disasters. At the same time, disaster losses in developing nations amount to $862 billion (a considerably under-estimate) – equivalent in value to one-third of all international development aid.

- By 2020, nearly 1.5 billion people in the developing world will live in slums (UN-Habitat). Because these are often built in highly exposed areas, such as coastal zones and floodplains, and the infrastructure is generally of low quality, the vulnerability of these populations to the effects of climate change is increased by an order of magnitude (World Bank sponsored report, Turn Down the Heat: Climate Extremes, Regional Impacts, and the Case for Resilience).

- Some 15% of the world population lives in fragile and conflict-affected countries. This same population comprises one-third of people living in extreme poverty.1 By 2050, it is expected that more than half (56%) of those living in fragile states will reside in cities.

Figure 3: Share of ODA on disaster response vs. resilience (USD$)



Source: GFDRR Managing Disaster Risks for a Resilient Future: A Strategy for the Global Facility for Disaster Reduction and Recovery 2013-2015

[1] World Bank inputs to the post-2015 HFA, 2014

ISSUE SUMMARY

Significant progress has been made in knowledge, policy, partner engagement and operations for supporting resilience with a number of mechanisms in place to facilitate further action.

Understanding of the interconnected nature of risk and how it affects urban systems has advanced considerably in recent years and several efforts ae underway to harmonize metrics and indicators for urban resilience and ensure that they are both useful to local governments and aligned to national and international processes.

A number of tools and methodologies are already available to help cities evaluate their vulnerability and 'test' their resilience to a variety of shocks and stresses. These, together with examples of good practice, are increasingly available online (see section on established platforms). Improving the tools and knowledge base, as well as mechanisms for sharing experience between cities remains a priority for many partners.

Risk information, including data on vulnerability and exposure to shocks and stressors is essential for building resilience. Disaster loss data, risk assessments and climate change projections, for instance, are fundamental tools for guiding plans and investments and identifying opportunities for transformative action. Though recognized as a global priority, these are not yet universally available in all cities.

In this context, knowledge and tools for building resilience to disasters are the most advanced. Greater investments in understanding the causes and consequences of other shocks and stressors, such as those related to environment and conflict, are urgently needed.

At the global scale, governments continue to actively discuss resilience in the context of international agreements including the UNFCCC, the Sustainable Development Goals and Financing for Development. Dialogues led to new commitments in building resilience to disasters when the Sendai Framework for Disaster Risk Reduction was agreed by 185 countries in March 2015. The agreement set out seven global targets aimed at reducing the loss of lives, livelihood and economic assets (among others) and includes targets focused on local action. Critically, the Sendai Framework emphasizes efforts to prevent the creation of disaster risk and introduces four priorities for action that include specific measures for building resilience in urban areas.

Many national policies address resilience to disaster risk and are increasingly integrated with climate change policies, further attention to harmonizing these with related policies that consider resilience in the context of other stressors remains a gap. This is the case at the local level as well, though efforts are underway by city governments and partners to address this need.

Building resilience demands a whole-of-society approach, especially in cities, where the key sectors of local government must be fully engaged and coordinated. Private sector, the scientific and technical community and community actors (including women, youth and persons living with disabilities among others) are increasingly involved in building urban resilience. Efforts to pro-actively engage expertise in issues of economics, environment, health and related areas will help to ensure that resilience building efforts are holistic.

The pillars of the New Urban Agenda provide guidance on how to operationalize a resilience agenda by providing a positive role for urbanization, one that connects the physical, social, environmental and economic elements of a city.

KEY DRIVERS FOR ACTION

- Leveraging city planning instruments to reduce existing risk and prevent creation of new risks and at the same time prepare for climate and disaster risk, including through:
  - Strengthening technical and scientific capacity to capitalize on and consolidate existing knowledge;
  - Building the knowledge of government officials at all levels, civil society, communities and volunteers, as well as the private sector, through sharing experiences, lessons learned, good practices and training and education;
  - Developing mechanisms to allow for the monitoring, assessment, and reporting on the progress towards building urban resilience
- Developing or improving existing policies (including National Urban Policies) that promote compact, socially inclusive, better integrated and connected cities, which foster sustainable urban development, including through:
  - Clearly defining roles and responsibilities and mechanisms to improve coordination among all relevant actors, emphasizing the need to empowering local authorities and local communities with appropriate resources, incentives and decision-making responsibilities;
  - Developing instruments and mechanisms that enable enforcement of policies and regulatory frameworks
- Developing mechanisms/instruments to promote coherence across systems, sectors and organizations related to their policies, plans, programs, processes and investments in urban resilience, including through;
  - Screening investments plans and programs for coherence and inclusion of urban resilience criteria
  - Encouraging the coordination between global and regional financial institutions with a view to assessing and anticipating the potential economic and social benefits and impacts of resilient urban design;
  - Promoting long-term investments in innovation and technology development for resilient urban design;
  - Promoting cooperation between financial, private sector, scientific and government entities (at all levels) to develop new products and services aimed at facilitating the implementation of resilient urban designs;
  - Reviewing cities' consumption and production patterns and the impact of these patterns to its long-term survival, incorporating knowledge on the city's present and future resource needs in planning.

PLATFORMS AND PROJECTS

Many mechanisms are in place and initiatives underway to support urban resilience. Some examples include:

1. The Medellin Collaboration on Urban Resilience (MCUR): http://goo.gl/3cvQGb
2. The Cities Alliance: http://www.citiesalliance.org/
3. UNEP Global Initiative for Resource Efficient Cities (GI-REC): http://goo.gl/ZteUom.
4. http://www.unep.org/ccac/Initiatives/CCACHealth/tabid/133348/Default.aspxWorld Humanitarian Summit Urban discussions: https://www.worldhumanitariansummit.org/whs_urban
5. World Disaster Reduction Campaign "Making cities resilient: My city is getting ready": http://www.unisdr.org/campaign/resilientcities/
6. UN-HABITAT I´m a city changer: http://imacitychanger.unhabitat.org/
7. UNISDR Global Platform for Disaster Risk Reduction: http://www.unisdr.org/we/coordinate/global-platform
8. Partnership for Environment and Disaster Risk Reduction (PEDRR): http://pedrr.org/about-us/
9. Global Facility for Disaster Reduction and Recovery GFDRR: https://www.gfdrr.org/
10. IFRC 1 Billion Coalition for Resilience: http://www.ifrc.org/one-billion-coalition/
11. ICLEI Annual Global Forum on Urban Resilience and Adaptation: http://resilient-cities.iclei.org/
12. UNEP/UN-Habitat Greener Cities Partnership: http://unhabitat.org/unep-and-un-habitat-greener-cities-partnership/
13. City Resilience Profiling Programme: http://unhabitat.org/city-resilience-profiling-programme/

The Habitat III Issue Papers have been prepared by the United Nations Task Team on Habitat III, a task force of UN agencies and programmes working together towards the elaboration of the New Urban Agenda. The Issue Papers were finalized during the UN Task Team writeshop held in New York from 26 to 29 May 2015.

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