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SUMMARY

# Achieving Urban Resilience Calls for Business Unusual

Fast-growing cities must keep up with the needs of an increasing population, such as for basic services like clean water and sanitation facilities. Photo credit: ADB.

*Cities in Asia and the Pacific need to scale up investments in resilient infrastructure amid increasing climate and disaster risks.*

**Published:** 17 August 2021

## Overview

By 2030, 55% of the population in Asia and the Pacific will live in cities, including in areas that are most at risk of climate change impacts. The region is home to six of the world's 10 most climate vulnerable cities. This poses a major challenge to urban planners and developers to make their cities more safe, resilient, and sustainable.

A webinar organized by the Asian Development Bank (ADB) in February 2021 discussed opportunities to accelerate resilience-building in urban infrastructure development through the sharing of new approaches, supported by examples, particularly those that are ready to be mainstreamed. These include initiatives and pilot projects supported by the ADB.

Manoj Sharma, chief of the Urban Sector Group at ADB, opened the discussions and underscored the

need to make urban infrastructure resilient to meet not just the demands of rapid urbanization but also address the growing threat of climate change and disaster risks as well as the “new normal” brought about by the coronavirus disease (COVID-19) pandemic. ADB estimates that developing countries in Asia and the Pacific need to invest $1.7 trillion per year (2016–2030) for infrastructure to maintain growth, eradicate poverty, and respond to climate change, and the majority of these can be expected to be invested in cities. This presents a huge challenge, but it is also a huge opportunity to mainstream resilience in infrastructure planning and implementation.

# Planning for Resilience

Alex Nash, an urban development specialist at ADB, spoke about the importance of climate and disaster risk information in urban infrastructure planning. There are increasing amounts of geospatial data available as well as various climate change scenario models to support resilience planning and design.

Risk-informed planning, however, is more about the “journey” (planning process) than the “destination” (the plan). That is, a good plan is one that adapts to new information and is “resilient” to the information being imperfect. This is crucial in the context of climate uncertainty and the multi-dimensional nature of associated risks that need to be tackled.

Resilience in urban infrastructure planning is derived not from building an infallible asset but from creating some slack and redundancy and having backup plans, such as flood adaptation measures like rescue boats and power generators. It involves multifunctional rather than specialized solutions. Examples include nature-based solutions, such as using wetlands and reedbeds wastewater treatment systems, permeable surfaces, and bioswales to reduce runoff.

Social capital is the most important component of resilience planning, but it is often forgotten. In times of disaster, people rely on one another. A high level of social capital is needed to make infrastructure work properly. Stormwater drains should be free of litter, for example. On the other hand, good infrastructure increases social capital by making cities safe and livable.

# Looking to Nature for Solutions

Kerrie Burge of Monash University discussed the role that nature-based solutions play in making urban infrastructure not only resilient but also inclusive and sustainable. She talked about how disadvantaged urban communities are not reached by conventional city-built infrastructure, including water supply, sanitation, and drainage facilities.

Burge manages the Revitalizing Informal Settlements and their Environments (RISE) project in Indonesia, which works with informal settlers as co-designers and co-implementors of the project. Communities bring indispensable local knowledge that help inform nature-based solutions in ways that fit the context and make these solutions more effective, cost-efficient, and sustainable. This approach also creates a genuine sense of ownership of community infrastructure.

RISE integrates “gray” (conventional) and nature-based solutions to address urban infrastructure challenges, such as water and sanitation management. At its demonstration site in the Batua neighborhood of Makassar city, the project is piloting the use of water-sensitive technologies: wetlands, biofiltration gardens, stormwater harvesting, and local sanitation systems based on smart septic tanks that are integrated into buildings and landscapes. The pilot, supported by the ADB-administered Urban Climate Change Resilience Trust Fund (UCCRTF), shows how non-networked nature-based solutions can be an effective alternative to the traditional large-scale trunk infrastructure in delivering basic WASH (water, sanitation, and hygiene) services to poor and vulnerable communities.

A parallel research led by Monash University through funding from the London-based nonprofit Wellcome Trust is collecting the first rigorous scientific evidence, through a randomized control trial, of the sustainability and cost–benefits of a localized, water-sensitive approach to upgrading informal settlements for health and environment. An investment grant to be financed by UCCRTF is being prepared to replicate this in six informal settlements in Makassar.

# Economics of Resilience-Building

Matt Savage, director of Oxford Consulting Partners, talked about measuring the benefits of investing in climate-resilient infrastructure. He cited the UCCRTF’s work in examining the economics of urban resilience, which aims to build a sound business case drawn from country and local-level studies. It uses a model that can estimate the economic benefits (e.g., potential avoided losses) of UCCRTF investments in target cities against a range of future climate change and development scenarios.

Citing a project in Bangladesh, he noted that benefits are likely to exceed the costs. The resilience assessment of UCCRTF investments in the cities of Bagerhat and Patuakhali after Cyclone Amphan hit Bangladesh in May 2020 showed positive results in terms of reduced damage from the super cyclone as well as economic development from improved urban planning and infrastructure.

However, the economics of resilience-building is an inexact science, and it is especially challenging in the context of climate uncertainty, which is unfolding in parallel with other urban risk drivers, notably rapid population growth and growing vulnerabilities.

# Key Takeaways

1. **Infrastructure resilience requires high levels of social capital** (public awareness, capacity, preparedness). As climate and disaster risk is multidimensional, aim for multifunctionality of urban infrastructure with a variety of backup elements for resilience and strengthening of social capital.

2. **Proof of concept is needed to increase government buy-in.** Pilots of nature-based solutions are helpful in achieving scale, preferably where initiatives are embedded within a larger program involving a network of partners (e.g., interdisciplinary practitioners, university-based researchers) and actively supported by communities as co-designers and implementors and championed by local government officials.

3. **Nature-based solutions should not be associated with "cheap" solutions as compared with traditional investments.** The costs should be cast within a broader accounting and narrative of its real benefits, direct and indirect, including community empowerment.

4. **Resilience-building cannot be set apart from its institutional context**, particularly the importance of enabling policies and institutional environment.

5. **There is a need to move away from a sole reliance on economics toward a more holistic assessment approach** that, for example, captures vital institutional and structural considerations. Multicriteria analysis is an alternative though this approach still faces challenges in integrating cross-cutting and context-driven considerations (e.g., politics and governance), uncertainty, and metrics.

6. **Information needed for resilient infrastructure planning usually contains high uncertainty** about climate change impacts and various urban development drivers. It is important to account for the level of uncertainty in properly applying economics to infrastructure resilience. This requires testing assumptions and reviewing appropriateness of conventional economic appraisal frameworks, e.g., rate-of-return measures and setting of discount rates.

# Resources


Asian Development Bank (ADB). Regional: Promoting Urban Climate Change Resilience in Selected Asian Cities - Knowledge Management and Resilience Measurement for Urban Climate Change Resilience (Subproject 2).

ADB. Regional: Revitalization of Informal Settlements and their Environments using a Water-Sensitive Approach.

ADB. 2021. Business Unusual for for Resilient Urban Infrastructure. *Virtual Dialogues on Resilient Infrastructure series (Season 2: Dialogue 1).* 25 February.

ADB. 2017. *Meeting Asia's Infrastructure Needs.* Manila.



Manoj Sharma
Chief of Urban Sector Group, Sustainable Development and Climate Change Department, Asian Development Bank


Manoj Sharma is leading ADB's efforts on "Making Cities More Livable," following a

cross-sector and cross-thematic approach of providing integrated solutions. Manoj has 28 years of experience working with ADB and the Government of India. He also leads the strategic development of the urban, water, and industrial sectors at ADB and countries in Asia.

Alexander Nash
Urban Development Specialist, Southeast Asia Department, Asian Development Bank

Alex Nash is a chartered chemical engineer specializing in water and wastewater engineering, urban development, water resource and environmental management, project preparation, PPPs and economic regulation. He has worked in the water sector since 2003 on projects in Australia, Europe, Africa, the Middle East and Asia.

Kerrie Burge
RISE Project Manager, Monash University

Kerri Burge is project manager for the co-design and build component of Revitalizing Informal Settlements and Their Environments (RISE) in Indonesia and plays a key role in the delivery of the co-design and design development in Fiji. She is a water sensitive urban design practitioner, specializing in the Water Sensitive Cities approach to development.

Matthew Savage
Director, Oxford Consulting Partners

Matthew Savage is a leading expert on the economics of resilience. He has undertaken economic appraisal on more than £2 billion of climate programming under the International Climate Fund of the United Kingdom and developed guidance on value for money in resilience programming for the UK government. He is currently leading the economics work on the Urban Climate Change Resilience Trust Fund (UCCRTF) at the Asian Development Bank.