

## ON KNOWLEDGE: 6

### Urban climate resilience: getting it right

#### Cities: poor planning drives climate change

**This briefing looks at the challenge of addressing the environmental consequences of rapid urban growth. Cities are vital economic hubs, but they are also leading sources of greenhouse gas emissions. Poorly managed population growth, particularly in emerging cities, results in costly and inefficient infrastructure and services, and high energy consumption. Climate change will exacerbate these trends and risks. This pattern can be broken by planning for climate resilience through compact, connected and coordinated urban development and other structured approaches to assessing and responding to climate-related risks. Capacity building may be essential to ensure effective implementation of plans and tools.**

#### About the series

The ACT on knowledge series focuses on key emerging issues related to climate change and how they affect South Asia. Each leaflet synthesises existing knowledge on a topic and aims to stimulate discussion. Suggestions for further reading are provided at the end. Please see the full list of topics at [www.actiononclimate.today](http://www.actiononclimate.today)

With increasing urbanisation, cities are growing rapidly. Half the global population is currently living in or around cities. By 2050, this will increase to two-thirds, as 1.4 million people a week continue to move into urban areas.<sup>1</sup> India's urban areas, which grew at more than 30% between 2001 and 2011, are expected to accommodate 590 million people by 2030.<sup>2</sup>

Most growth (90%) is taking place in the developing world where it is often poorly planned and managed. It is much faster than the increase in necessary infrastructure and services (e.g. housing, roads and sanitation), a phenomenon which creates multiple constraints for sustainable human and economic development. Cities consume around 70% of global energy and generate a comparable amount of greenhouse gas (GHG) emissions in both the short and long term, contributing to climate change. Further, these poorly planned cities are vulnerable to extreme climate events and climate change-related phenomena. If current growth patterns continue unchanged, the world's largest 468 cities will account for 60% of global GDP and about 45% of energy-related GHG emissions by 2030.<sup>1</sup> Cities can be divided into global megacities, mature cities and emerging cities. This latter group provides the greatest opportunity for bringing about a significant reduction in projected GHG emissions while maintaining strong growth.

Emerging cities, like Pune and Hyderabad, India and Rawalpindi, Pakistan, are rapidly growing, mid-sized cities that are expected to produce over 25% of global income growth – coupled with one-third of new GHG emissions – over the coming two decades.



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<sup>1</sup> Global Commission on the Economy and Climate (2014).

<sup>2</sup> ICLEI South-Asia (2015).

### Box 1: India's emerging cities

Typically, emerging cities are located in developing countries that are experiencing rapid economic growth. In India, they are referred to as Tier II (1–4 million people) or Tier III (0.5–1 million) cities. India's urban areas currently house about 377 million people and will have to accommodate close to 200 million more by 2030 as the country's economic emphasis shifts from agriculture to manufacturing and services. Much of India's growth is currently taking place on the fringes of cities. It is unplanned and without sufficient infrastructure and services. In 2010, urban pollution caused more than 620,000 premature deaths (a more than sixfold increase in a decade). Environmental degradation is costing India about US\$80 billion annually – 5.7% of GDP. While these are enormous challenges, India's emerging cities are critical to the country's economy, being expected to contribute up to 75% of national GDP by 2020.<sup>3</sup>

## Planning for urban climate resilience

Planning for climate resilience can significantly reduce the social and environmental effects of urban growth. Building urban resilience includes measures of mitigation (reducing GHG emissions), adaptation (to climate change already under way) and reducing the risk of climate-related disasters. Resilience can best be understood through a dynamic approach, which recognises the complexity of rapidly growing urban areas and the uncertainty associated with climate change. It is achieved by actions that build on each other over time and are guided by three questions: How do the city's urban systems work? How will climate change impact these systems directly or indirectly? Who is most vulnerable to these impacts?<sup>4</sup>

## Policy approaches

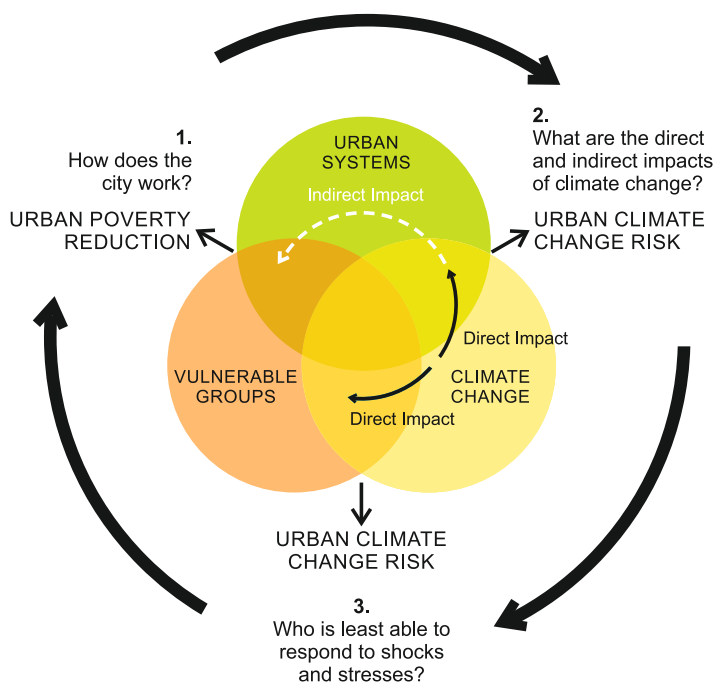
There are a number of approaches to decrease the emissions and boost the climate resilience of growing cities. One, the 3C Model, is built on three pillars – compact urban growth, connected infrastructure and coordinated governance.<sup>4</sup>

### Compact growth: improving resource productivity (the efficiency of urban infrastructure and services)

This pillar focuses on cost-effective investments in more efficient vehicles, transport systems, buildings and small-scale renewable resources. Investments have a short payback period and can be made in the building sector (improving insulation design, lighting technologies and appliances), the transport sector (more efficient vehicles, cleaner fuels and public transport initiatives) and waste management (better recycling, landfill gas capture and better composting).

### Connected infrastructure: managing urban growth at a national level

Well-planned urban development and increased productivity are key drivers of both growth and climate goals that require the collaboration of national and regional governments and local leaders. Approaches include the development of national urbanisation strategies, a special national financing vehicle to support cities becoming more compact, connected and coordinated, and redirecting existing infrastructure funding towards more climate-resilient urban infrastructure development.<sup>5</sup>



**Figure 1: Maintaining essential urban functions**

Source: Da Silva et al. (2012)

<sup>3</sup> ICLEI South Asia (2015).

<sup>4</sup> Global Commission on the Economy and Climate (2014).

<sup>5</sup> <http://www.theigc.org/blog/are-smart-cities-enough-for-india/>.

## Coordinated governance: stronger policies and institutions

Productive and climate-resilient cities require fundamental changes in policies and in the institutions that govern and service them. Changes need to include:

- Reforms to strategic planning and regulations across all levels of government
- Fuel subsidy reform and disincentives to fossil-fuelled vehicle use
- Placing a higher price on land than on buildings
- New means of generating funds for smarter urban infrastructure and technology
- More effective and accountable institutions in cities.

## Implementing policies

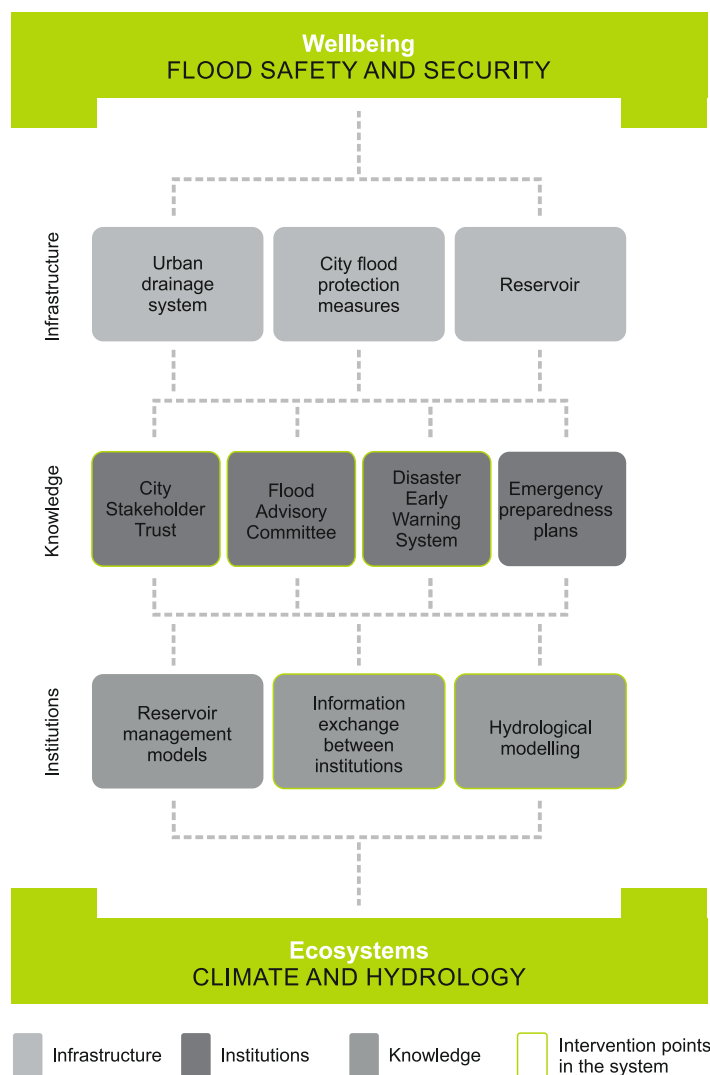
While policies and tools are important for achieving urban resilience, what is equally critical is having the incentives and means to implement them.<sup>5</sup> Institutional weaknesses can be major barriers to realising policy objectives, particularly in emerging city contexts, where they are compounded by continued demographic growth. In India, important bottlenecks are lack of capacity for city management, the absence of integrated and comprehensive spatial and physical plans and the financial weaknesses of urban local bodies.<sup>6</sup> Generally, there is a significant mismatch between the responsibilities of city and local governments (including for basic public services) and their finances and capabilities<sup>5</sup>. Mechanisms which would enhance accountability and broad-based commitment to resilience objectives (e.g. participation of city residents in planning processes) are often lacking.

Efforts to build urban resilience will be influenced, therefore, by wider indicators of institutional function and governance. Interventions must be tailored with this aspect in mind. For instance, implementation of the ICLEI-Asian Cities Climate Change Resilience Network (ICLEI-ACCCRN) process in the city of Shimla (see below), prioritised cross-organisational ownership of the process as the key to achieving outcomes.<sup>7</sup>

## India – identifying opportunities for improvement

Many Indian cities are particularly vulnerable to climate events such as floods. Population influxes into these cities mean that about 70% of the construction is still to take place, providing opportunities to address urban development and climate resilience in tandem.

The ICLEI-ACCCRN<sup>8</sup> process, an alternative to the 3C Model, systematically seeks to engage stakeholders, conduct impact and vulnerability assessments, and design, implement and monitor individual city resilience strategies (CRSs). This model has facilitated adoption of different focuses in some fast-growing Indian cities while building climate resilience into their urban planning.



**Figure 2: Urban systems analysis of Surat flood management**

Source: Da Silva et al. (2012)

<sup>5</sup> <http://www.theigc.org/blog/are-smart-cities-enough-for-india/>.

<sup>6</sup> ICLEI South Asia (2015).

<sup>7</sup> ICLEI Case Studies (2015).

<sup>8</sup> Sharma et al. (2013).

**Surat.** Surat is presently under threat from flooding, but may face water shortages in the future. Its CRS was developed in collaboration with municipal councils, industry groups, academics and experts. City stakeholders took full ownership of the CRS process and initiated several pilot projects, which led to the formation of the Urban Health and Climate Resilience Centre, the Surat Climate Change Trust and an Early Warning System for flood events (Figure 2).

**Shimla.** The Shimla Municipal Corporation developed a process to identify future climate vulnerability hotspots to target for priority action, and is implementing actions identified in the CRS. An important learning from this

process was that participants from across the municipal council (e.g. corporations) need to be brought on board and climate decisions embedded into processes as quickly as possible.<sup>9</sup>

**Ahmedabad.** Led by a coalition of academic, health and environmental groups, this city focused on heat-related health risks to its urban population and devised an early warning system and Heat Action Plan, the first of its kind in South Asia. The plan builds awareness about the risks of extreme heat, trains health workers to prevent or deal with heat-related illness and coordinates an interagency emergency response for heatwaves.<sup>10</sup>

## KEY MESSAGES

- Cities are central to both economic growth and climate change responses, but to date their growth has been poorly managed, with urban sprawl resulting from a lack of planning and insufficient funds generating a raft of negative social, environmental and economic consequences
- A climate-resilient city requires good planning, a more efficient use of resources and urban development that is compact, connected and coordinated across national, regional and city levels
- To ensure effective implementation of plans and use of tools in practice, institutional capacity and coordination may need to be strengthened. The resources and functions of administrations at different levels need to be matched
- India has adopted a number of initiatives to design and implement individual city resilience strategies, including South Asia's first Heat Action Plan.

## Sources and further reading

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<sup>9</sup> ICLEI Case Studies, June 2015.

<sup>10</sup> CDKN, May 20, 2014.

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