

INTEGRATING URBAN DEVELOPMENT AND CLIMATE OBJECTIVES: INSIGHTS FROM COIMBATORE

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SUMMARY

Indian cities routinely make decisions on land use, housing, water, transport, economic growth and waste management that have implications for climate change mitigation and adaptation. Aligning these sectoral actions with climate goals involves understanding how infrastructural systems interact and how these choices address both development and climate objectives. City governments, as managers of these various infrastructure systems, can co-ordinate such decision-making. However, so far, this is largely ad hoc. We show how cities can use a ‘multiple objective’ approach to systematically examine, and make explicit, the linkages between local objectives, climate change mitigation and adaptation across their planning portfolio.

INTRODUCTION

Urban governments routinely make decisions on a range of sectors including roads, public transit, housing, land-use, water, economic growth and waste management. In rapidly growing cities, these decisions condition how and where growth will occur and the quality of life available to citizens. While often not explicitly aimed at climate change related outcomes, these decisions influence potential greenhouse gas (GHG) emissions and vulnerability to climate impacts, and thereby are central to long-term climate change mitigation and adaptation policies.

In this policy brief, we focus on the city of Coimbatore and its key urban development decisions which have implications for climate change. For example, location, availability and affordability of housing will determine the vulnerability of residents to heat and water stresses, while economic activity will impact affordability of housing, water and air pollution, and carbon emissions. While these decisions are often made sectorally and directed by state and central government, city governments as managers of multiple infrastructure systems and schemes are uniquely poised to explore the linkages between their different sectoral actions and goals (Bai et al., 2016). But, this can require overcoming siloes to enable long-term thinking, beyond the usual terms of city bureaucrats and elected officials. Aligning sectoral actions with climate goals involves understanding how infrastructural systems interact and how choices address both development and climate objectives. Urban governance, policies, schemes and financing can be designed to incentivize the synergies between development and climate goals.

PROFILE OF COIMBATORE

Coimbatore hosts 3.1 million people, projected to grow to 4.1 million by 2031 (Coimbatore LPA, 2017). It is Tamil Nadu’s second largest urban area, after the capital Chennai, and hub of a large industrial corridor of cement, textile, foundry and auto manufacturing (MSME Development Institute, 2016). It also has a growing IT sector (PWC & CII, 2010). In the spectrum of Indian cities, Coimbatore is relatively affluent with 3.6% of the population classified as “urban poor,” compared to 6.6% at the state level and 13.7% nationally (NSSO, 2011). The city is located near the Nilgiris mountain range, known for its tourism and biodiversity, which also serves as its source of water (Srinivasan et al., 2014) and creates its stable micro-climate, sheltering the city from extreme climate effects (Dholakia et al., 2015). The city is on River Noyyal and has seven lakes within its boundaries (Pragatheesh and Jain, 2013; Quadros et al., 2014; Srinivasan et al., 2014). Coimbatore is governed by the Coimbatore City Municipal Corporation (CCMC), which is headed by a state-appointed Municipal Commissioner and has a democratically elected Mayor. Other local government agencies include the Coimbatore district Local Planning Authority (LPA) and the Coimbatore Smart City Limited, a dedicated special purpose vehicle

(CCMC, 2015). It boasts of a strong civil society, with environmental groups (e.g., Siruthuli) and industrial associations.

URBAN DECISION MAKING AND CLIMATE CHANGE

Actors in Coimbatore are working towards the many objectives laid out in its Masterplan and scheme proposals. From these, we examine three overarching challenges: to plan spatial growth as the population and sprawl increases; to manage local water supply, pollution treatment and drainage; and, to facilitate economic growth. Each of these objectives has implications for immediate development and for future carbon emissions and the vulnerability of infrastructure services.

In Figure 1, we correlate these three challenges with their articulation in various city and state-level plans and initiatives. First, the LPA's masterplan, which is the primary document for planning urban growth, sets forth detailed goals such as transit-oriented development, provision of urban services (especially in the growing urban periphery), and managing land for housing, industrial and commercial uses. Second, to manage water, the State is enhancing the Siruvani and Pillur reservoirs. Within city limits, the Municipal Corporation has plans to move to a 24x7 water supply network, to enhance its sewage management capacity and, under the Smart Cities Mission, to restore the city's lakes to serve as water reservoirs and manage runoff drainage. The latter also includes dedicated urban space around the lakes for bike lanes, public and commercial use, fostering of biodiversity, and the construction of affordable housing. Third, to facilitate economic growth, state agencies dedicate land to industrial and commercial spaces in the city's periphery through the demarcation of Special Economic Zones (SEZs). This is complemented by other economic and sectoral policies including those lobbied by local industrial organizations (e.g., CODISSIA or Coimbatore District Small Industries Association), such as better economic incentives, infrastructure and regional networks.

Responses to each of these challenges have implications for climate change. The compactness and density of urban growth has implications for the city's GHG emissions and climate risk. The location, design and tenure of affordable housing will determine the accessibility of adequate shelter to citizens and their exposure and vulnerability to extreme climate events. How water systems are designed will determine the water security of the city and resilience to cloud bursts and variable rainfall. Decisions on the economic and industrial land use will determine a city's pathway towards a more manufacturing-based or services-based economy which has implications for social welfare, local air pollution, energy demand patterns and GHG emissions.

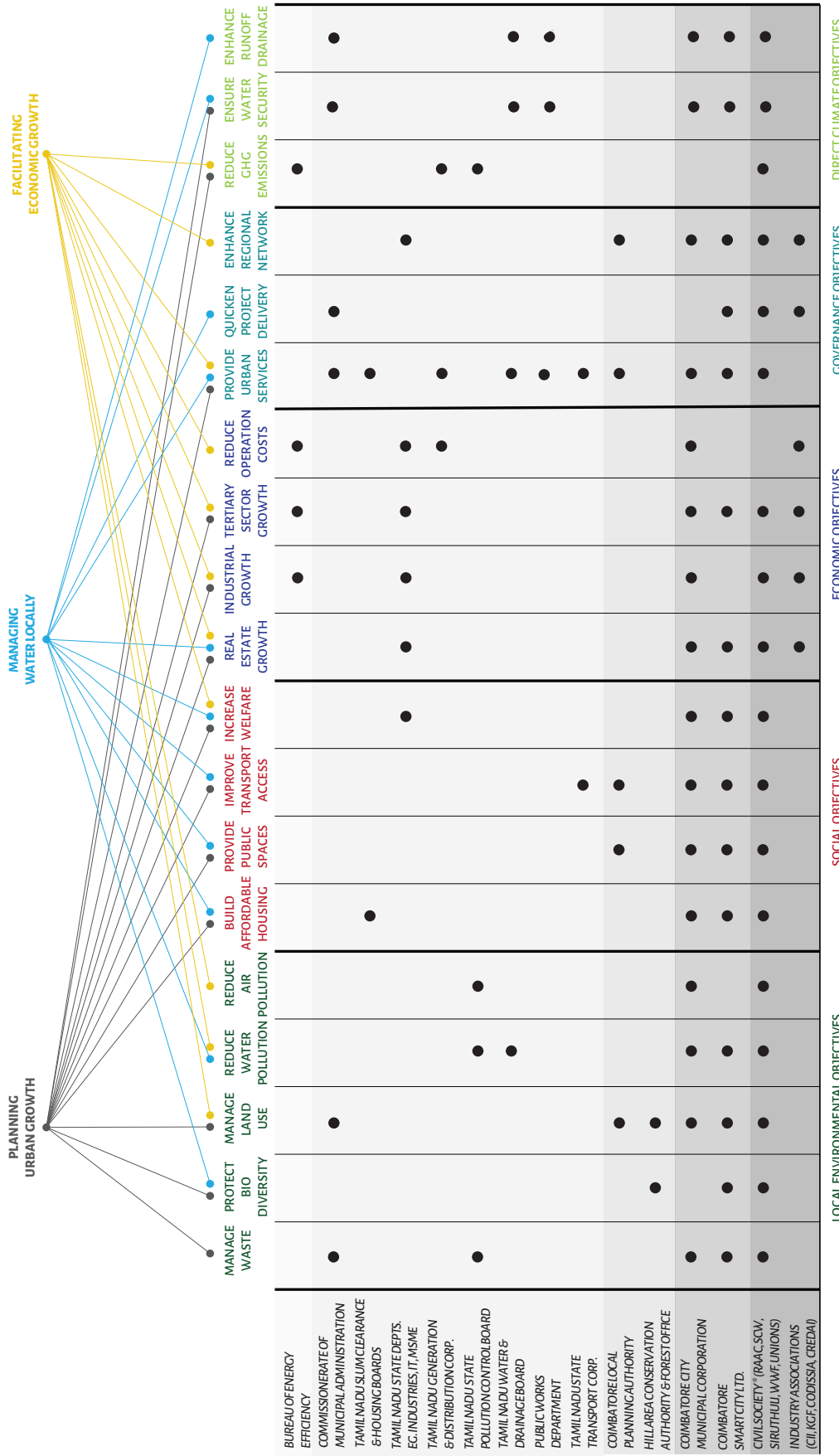
CITY-LEVEL CO-ORDINATION AND ITS CHALLENGES

Along with the interactions of climate change with local infrastructure decisions, the various infrastructure systems also interact (Bai et al., 2016). How and where housing is constructed will influence demand for transport, water and waste management. Where industry is located, and its type, will change patterns of employment, land-use and pollution. As shown in Figure 1, among the 19 distinct objectives laid out by the city across these three challenges, 14 objectives are related to more than one challenge. For example, ensuring water security and improving transport access are implicated by both decisions on urban growth and local water management.

In spite of the considerable overlap, co-ordination amongst schemes and objectives is often stifled due to the siloed directives from line ministries, and little opportunity for strategy and co-ordination at the city level (Chu et al., 2017). The now common 'mission-mode' approaches in solving a city's challenges of planning, housing shortage, lack of sanitation services and economic planning (Ahluwalia, 2017), can have undue consequences for the city's other goals. For example, the development of new SEZs in the periphery by state agencies is not co-ordinated with provision of affordable housing and water supply infrastructure, nor is the location planned to disincentivize sprawl towards protected forest areas and biodiversity hotspots (Rajashekariah, 2011). The planning of public transit routes and modes at the state-level does not happen in co-ordination with housing or economic land-use decisions made locally. Regional master-planning processes, while encouraging co-ordination through principles such as Transit-Oriented Development, lack statutory influence across sectors (Kundu, 2014; Mahadevia, 2011; Transparent Chennai, 2015) and have no mandate to respond to climate change (Kumar and Geneletti, 2015).

Certain schemes have begun to encourage co-ordination, for example, the Smart Cities Mission in which Coimbatore planned a lake redevelopment project to clean the lakes, improve water security, protect biodiversity, create public spaces and cycling tracks, and provide affordable housing in the vicinity. Yet, in spite of the Mission's target of improved implementation and provision of new avenues for cities to devise their own local plans, it is not explicitly aimed at enhancing strategic and planning capacity across the city's schemes and plans. Plans are rarely systematically and strategically deliberated in co-ordination with the city's various actors and in relation to multiple objectives. Instead, they tend to be one-off exercises, and responsible agencies dedicate little time, finance and resources to them (Kundu, 2014; Mahadevia, 2011), with only partial addressal of long-term city concerns.

Figure 1 Mapping Coimbatore's Multiple Objectives



*NOTE: NOT ALL CIVIL SOCIETY GROUPS HAVE ALIGNED OBJECTIVES. AGGREGATED FOR SAKE OF PRESENTATION.

Sources: Coimbatore City's Smart City Proposal (Coimbatore City Municipal Corporation, 2015); Coimbatore Local Planning Authority's Proposed Masterplan (Coimbatore LPA, 2017); City Development plan for the expanded limits of Coimbatore City Municipal Corporation (TNUJIFSL, 2011); Coimbatore's Slum Free City Plan (NITTR, 2013); Industrial and IT sector profiles of the city (MSME Development Institute, 2016; PWC & CII, 2010); Independent reports on the environmental condition of Coimbatore's Lake, River and Wetlands (Pragatheesh and Jain, 2013; Quadros et al., 2014; Srinivasan et al., 2014); urban growth and ecology (Rajashelkarish, 2011; Yagya, 2017) and urban governance (Transparent Chennai, 2015).

MULTI-OBJECTIVE STRATEGY FOR URBAN GOVERNANCE

Coimbatore's case suggests that initiatives to address one challenge often have important implications for others. With regards to climate change, the city is already making decisions on land use, economic growth, housing, transport and waste which have direct implications for vulnerability, future energy usage and emissions. Responding to climate change is not necessarily a question of 'adding on' further tasks for already burdened cities to undertake. Instead, decision making towards objectives of climate adaptation and mitigation can be embedded within the multiple, intersecting initiatives of urban governance (Khosla et al., 2015). Cities can formulate responses to climate change by identifying

linkages between local objectives, climate change and long-term challenges systematically, across the city's portfolio of decisions and projects (Bhardwaj and Khosla, 2017).

To do so, city governments can draw on the goals of existing national, state and city schemes and institutional incentives of state, regional, local and non-state actors, as shown in Figure 1. Financing and schemes by state and national institutions, can also be designed to incentivize cities to align development and climate objectives, even if operating through sectoral line ministries. A multi-objective approach to strategizing can be used by actors to co-ordinate across initiatives, and also orient its activities to achieve local objectives and climate mitigation and adaptation goals strategically.

REFERENCES

- Ahluwalia, I.J., 2017. Urban governance in India. *J. Urban Aff.* 1–20.
- Bai, X. et al., 2016. Defining and advancing a systems approach for sustainable cities. *Curr. Opin. Environ. Sustain.* 23, 69–78.
- Bhardwaj, A., Khosla, R., 2017. Mainstreaming climate action in Indian cities: Case study of Rajkot (Policy Brief). Centre for Policy Research, New Delhi.
- Chu, E. et al., 2017. Climate adaptation as strategic urbanism: assessing opportunities and uncertainties for equity and inclusive development in cities. *Cities* 60, 378–387.
- CCMC, 2015. Smart City Proposal. Coimbatore City Municipal Corporation, Coimbatore.
- Coimbatore LPA, 2017. Master Plan Coimbatore Local Planning Authority 2037 Draft Report. Directorate of Town and Country Planning, Government of Tamil Nadu, Chennai & Coimbatore.
- Dholakia, H.H., Mishra, V., Garg, A., 2015. Predicted Increases in Heat related Mortality under Climate Change in Urban India (IIMA Working Paper No. WP2015- 05–02). Indian Institute of Management Ahmedabad.
- Khosla, R. et al., 2015. Towards Methodologies for Multiple Objective-Based Energy and Climate Policy. *Econ. Polit. Wkly.* 50, 49–59.
- Kumar, P., Geneletti, D., 2015. How are climate change concerns addressed by spatial plans? An evaluation framework, and an application to Indian cities. *Land Use Policy* 42, 210–226.
- Kundu, D., 2014. Urban Development Programmes in India: A Critique of JnNURM. *Soc. Change* 44, 615–632.
- Mahadevia, D., 2011. Branded and renewed? Policies, politics and processes of urban development in the reform era. *Econ. Polit. Wkly.* 56–64.
- MSME Development Institute, 2016. Brief District Industrial Profile Coimbatore (2015-16). Government of India, Chennai.
- NITTR, 2013. Slum Free City Plan of Action - Coimbatore Corporation. Tamil Nadu Slum Clearance Board, Chennai.
- NSSO, 2011. Unit Level Data of Household Consumer Expenditure in India, 68th Round. National Sample Survey Organization, New Delhi.
- Pragatheesh, A., Jain, P., 2013. Environmental Degradation of the Coimbatore Wetlands in the Noyyal River Basin. *EIA Resour. Response Cent. ERC Nilgiri*.
- PWC & CII, 2010. Coimbatore - An IT & ITES Destination of Choice. PricewaterhouseCoopers, Confederation of Indian Industry, Coimbatore.
- Quadros, G. et al., 2014. Lakes of Coimbatore City. *Sálim Ali Centre for Ornithology and Natural History, Coimbatore.*
- Rajashekariah, K., 2011. The Impact of Urbanisation on Biodiversity: Case Studies from India. World Wildlife Foundation, New Delhi.
- Srinivasan, V. et al., 2014. Water Management in the Noyyal River Basin: A Situation Analysis. Ashoka Trust for Research in Ecology and the Environment.
- TNUIFSL, 2011. City Development Plan for Expanded Coimbatore City. Tamil Nadu Urban Infrastructure Financial Services Limited & CCMC, Coimbatore.
- Transparent Chennai, 2015. Urban Governance Case Study Coimbatore. Centre for Urban Policy and Governance, School of Habitat Studies, Tata Institute of Social Sciences, Mumbai.
- Yagya, A., 2017. Sustaining Urban Growth through Ecological Restoration: The Case of Coimbatore (ORF Special Report). Observer Research Foundation.

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