

MAINSTREAMING CLIMATE ACTIONS IN INDIAN CITIES: CASE STUDY OF RAJKOT

SEPTEMBER 2017

Ankit Bhardwaj
Radhika Khosla
Centre for Policy Research

SUMMARY

Indian cities are crucial to the response to climate change. As the bulk of their infrastructure is yet to be built, their current decisions can lock-in, or lock-out, inclusive and climate resilient forms. We examine the case study of Rajkot to highlight how cities can use existing governance arrangements to promote climate efforts, and the ways in which their efforts can be scaled: 1) use locally specific urban objectives as an entry point for climate action; 2) focus on implementing state and national level schemes which include climate components; and 3) creatively adapt urban development directives to accommodate climate actions. We propose a multiple objectives framework which Indian cities can use to structure their climate actions.

INTRODUCTION

Cities, as concentrations of infrastructure and human activity, are central to the global response to climate change. City municipal governments play an active role in governing provision of urban services, and because of their proximity with local social, environmental and economic challenges, can work to integrate development and climate objectives. The interventions and innovations in cities are especially important in urbanizing, developing countries, such as India, which will see an increase of the order of 404 million urban people by 2050, the largest globally (UN DESA, 2014). More so, the majority of urban form which will service future Indian city dwellers has not yet been constructed — by some estimates two-thirds of the buildings that will exist in 2030 are yet to be built, (Kumar et al., 2010) — giving current policies the potential to lock-in inclusive and climate resilient consumption patterns.

Yet, we know little about whether and how Indian cities are responding to climate change, and ways in which their efforts can be scaled. This Brief examines these issues through a case study of Rajkot, a medium sized city in the western state of Gujarat. Drawing from Rajkot's case, we highlight how cities can use existing governance arrangements to scale discrete climate actions. We propose a 'multiple objectives' framework to examine how city governments navigate different priorities across sectors. Cities can use the framework to find linkages between their multiple goals and simultaneously address local development and climate change.

RAJKOT CITY SNAPSHOT

Rajkot has 1.3 million residents within the corporation limits, making it Gujarat's fourth largest urban area (after Ahmedabad, Surat, and Vadodara). It is a second-tier medium sized city, with a high population growth rate of 2.85% between 2001 and 2011 (Government of India, 2011). It is a manufacturing hub, hosting 5000 enterprises, but it does not overlap with the Delhi-Mumbai industrial corridor. In recent years, the city has become an early promoter of tackling climate change.

Like other million-plus Indian cities, Rajkot is governed by a municipal corporation. The Rajkot Municipal Corporation (RMC) oversees provision of basic urban services (water, housing, transport, etc.) as per various national and state level laws and schemes. The implementation of schemes, often stemming from different central ministries, makes cities a unique site where different national/state policies can potentially interact and converge as per local requirements. As discussed in this Brief, cities can find synergies between objectives of national/state level schemes and local development priorities, to structure, finance and implement their response to climate change.

MAINSTREAMING CLIMATE ACTIONS

Rajkot is emerging as an unexpected climate player amongst Indian cities. It is the only Indian city whose mayor is part of the 'Global Covenant of Mayors for Climate & Energy', a city-led board aimed at mitigation and adaptation action. Further, in 2016, Rajkot was awarded India's 'National Earth Hour Capital', for city-wide energy saving efforts. How has a medium-sized city with regional manufacturing prowess emerged as a climate policy innovator? And how scalable is its example of creatively mainstreaming climate change into local urban priorities?

A MULTIPLE OBJECTIVES APPROACH

We adopt a 'multiple objectives' framework to examine Rajkot's climate actions (laid out in Figure 1). The framework provides a structure to assess the multiple and simultaneous city priorities, and subsequently identify the synergies and trade-offs across them (Khosla et al., 2015). As per the framework, Figure 1 collates Rajkot's development objectives, which can be economic, environmental, social or governance-based. These are derived from stated objectives in Rajkot's schemes and plans, and from engagement with non-state actors such as civil society groups, universities and international development institutions. Figure 1 also collates the different urban schemes that the RMC is tasked with (e.g., Affordable Housing for All, Solar City Scheme, etc.) and includes visioning plans from the Smart Cities Mission and the Rajkot Urban Development Authority masterplan.

The list of schemes and projects in Figure 1 is limited to those that the city is currently linking to climate change. The primary

objective of a scheme or project is represented by a filled circle. Additional objectives, beyond stated primary objectives, achieved from the scheme or plan are represented by hollow circles. The triangles in the figure mark opportunities for the city to achieve further objectives within a particular scheme/plan. The framework in Figure 1 helps visualize the range of objectives that climate actions are aligned with in Rajkot. It brings forth three approaches that Rajkot uses, and potentially other Indian cities can use, to mainstream climate action.

RAJKOT'S CLIMATE AND DEVELOPMENT APPROACHES

1. Using locally specific urban objectives as an entry point for climate action

First, Rajkot broadly takes on climate actions when urban development is the primary objective, and climate actions are an additional objective or co-benefit. The political feasibility of climate actions is higher when they are linked with more familiar, and often more immediate, urban priorities. For example, cities are tasked with the management of streetlights, and the RMC, on identifying the high costs of powering 54,000 bulbs, decided to replace conventional street bulbs with LEDs (cf. Row 1, Fig. 1). The project will achieve financial savings of 4 crore INR (626,060 USD) and carbon savings of 7 MT CO₂ per year, as per municipal corporation estimates. To mobilize the upfront capital required, the RMC will host an open-tender for a seven-year build-operate-transfer contract. Further, the city is also piloting energy savings projects in the water and waste sectors under the Urban Low Emission Development Strategies (LEDS) programme (cf. Row 2, Fig. 1) in collaboration with the partner organization International Council for Local Environmental Initiatives South Asia (ICLEI SA). Rajkot is

Figure 1: Multiple objectives framework for Rajkot's climate actions

SCHEMES AND PROJECTS	RAJKOT'S MULTIPLE OBJECTIVES											
	ENVIRONMENTAL			SOCIAL				ECONOMIC		GOVERNANCE		
	PROVIDE CLEAN ENERGY	ADDRESS CLIMATE CHANGE	REDUCE ENERGY DEMAND	PROVIDE ENERGY ACCESS	BUILD AFFORDABLE HOUSING	ENHANCE SAFETY	IMPROVE TRANSPORT ACCESS	PROVIDE WATER ACCESS	INCREASE FINANCIAL SAVINGS	INCREASE REVENUE	ENHANCE IMPLEMENT-ABILITY	
1. LED STREET LIGHTS PROJECT		○	●			○			●		○	
2. URBAN-LEDS STRATEGIES	○	●	●	○				○	○			
3. SMART CITY PROPOSAL	●	△	●		●	●	●	●		●	●	
4. SOLAR-CITY SCHEME	●	●	●	●					○	△		
5. AFFORDABLE HOUSING SCHEME	△	○	○	○	●	○	△	○		○		
6. JNNURM (BRT) & LOW CARBON MOBILITY PLAN	△	●	○			○	●			○		

● Primary objectives of the scheme or project ○ Additional objective addressed by the Municipal Corporation △ Potential opportunities for further action in the city

Sources: Smart City Proposal: National Guidelines (MoUD, 2015) and Rajkot's Proposal (RMC, 2017); Affordable Housing Scheme: National (MoHUPA, 2016) and State (UDUH, 2013) Guidelines; LED Street Lights Scheme: Sources from the Municipal Corporation; JNNURM & Low Carbon Mobility Plan: Reporting for JNNURM by RMC (2010) and Low Carbon Mobility Plan (Munshi et al., 2014); Urban LEDS: Report by ICLEI SA (2016); Solar City Scheme: National level guidelines (MNRE, 2008) and Rajkot's Solar City Masterplan (RMC & ICLEI SA, 2009).

increasingly finding schemes which save energy and finances, and mitigate carbon, as the city is able to accrue their benefits locally.

2. Focus on implementing national and state level schemes which include climate components

Second, the city prioritizes the implementation of central and state government schemes and policies which have explicit climate objectives. RMC's proposal for the 2015 Smart Cities Mission (cf. Row 3, Fig. 1) highlights climate-friendly features such as solar installations, green buildings and non-motorised transport, drawing from a larger set of national guidelines (MoUD, 2015; RMC, 2017). Under the Ministry of New & Renewable Energy's 2011 Solar City Scheme (cf. Row 4, Fig. 1), the city installed solar photovoltaics on government building roofs and added provisions to the city's building bye-laws to mandate installation of solar water heaters in all new buildings (MNRE, 2008). The Solar City Master Plan, with support from non-state actors and the Gujarat Energy Development Agency, encourages city departments to identify ways to reduce energy demand by 10% to incentivize clean and renewable energy (RMC & ICLEI SA, 2009).

3. Creatively adapt urban development directives to accommodate climate actions

Third, Rajkot's city engineers push further on climate actions by creatively adapting urban development schemes to implement extra climate features. For example, the RMC controls the housing design and construction process for the national and state affordable housing schemes (cf. Row 5, Fig. 1), *Pradhan Mantri Awas Yojana* (MoHUPA, 2016) and *Mukhya Mantri Gruh Yojana* (UDUH, 2013). Though the schemes' guidelines include no climate objectives, RMC's housing team, with support from local architects and international experts, included passive cooling, lighting and ventilation, and rainwater harvesting features in the building design guidelines. In 2016, the RMC was awarded a Housing and Development Corporation Award for 'Cost-Effective Rural/Urban Housing'. In another example, the Bus Rapid Transit System (BRTS) funded under the Jawaharlal Nehru National Urban Mission is being enhanced with non-motorised transport facilities to BRTS stops to improve last-mile connectivity (cf. Row 6, Fig. 1). This intervention was informed by a Low-carbon Mobility Plan jointly produced by the RMC, the United Nations Environment Programme and CEPT University in nearby Ahmedabad (Munshi et al., 2014).

Rajkot's experience indicates that enabling climate action in Indian cities is a collaborative exercise, requiring a conducive policy framework at national and state levels, with creativity and leadership by the municipal corporation, and sustained technical support and capacity from non-state actors. Part of Rajkot's conducive policy environment is a function of the Bombay Provincial Municipal Corporation Act of 1949 and

the 74th Amendment (1992) to the Constitution (1950), which created a relatively decentralized city governance system enabling the city to innovate in raising and allocating funds as per its priorities, and build complementary capacity to handle financing, tendering and contracting. Municipal corporations can thereby design and implement actions to achieve locally specific climate-related goals.

The essence of Rajkot's multiple objective approach to climate change is based on identifying the linkages between national and state schemes and corresponding local development objectives, with support from non-state partner organizations. Moving forward, two questions are salient: how can Rajkot scale up its efforts to mainstream climate change in its urban development? And how can other cities draw insight from Rajkot's experience?

WAY FORWARD: SCALING UP CITY EFFORTS

Rajkot's case indicates that Indian cities can start responding to climate change by finding linkages between national/state schemes, local development and climate goals. A multiple objectives framework, as demonstrated in Figure 1, offers a way for cities to find these linkages systematically, versus on a project by project basis. Cities can use the framework to make explicit, *ex ante*, their different development objectives and identify schemes, technologies, plans and projects which can potentially achieve both development and climate concerns. It is important for the city priorities to be locally identified, for instance, air pollution is not a pressing concern in Rajkot per se, yet for other Indian cities it is an important issue through which climate action can be motivated. Using a multi-objective lens to address local city actions provides a useful starting point, also reflected in the Ministry of Urban Development's recent "Liveability Standards," which evaluate city performance across multiple goals (MoUD, 2017). However, to fully take on the scale of addressing climate change in Indian cities, a step increase in current efforts is required.

Working through Rajkot's multiple objectives in Figure 1 shows that while the city can creatively achieve climate outcomes, the response is bounded by sectoral mandates. City officers tend to work, albeit resourcefully, within their particular sectors of purview. There is little incentive or opportunity to strategically plan for actions that cut across sectors, for example, thinking through the interactions of public transport and housing policies with transit oriented development planning. As seen in Figure 1, the Smart City Mission was the only scheme that provided an opportunity to strategize across sectors, and yet there is still further potential for the scheme to draw linkages to climate actions. Overall, city governments have few opportunities to strategically deliberate on and continually revisit local objectives, ultimately limiting a city's response.

In order to enable strategic planning, a basis for better coordination between city departments is needed. Cities can use the multiple objectives framework to view their priorities across sectors and schemes simultaneously, and thereby structure deliberations on current and long-term goals. The framework helps identify linkages between sectors and their coincident objectives, making that a basis to converge schemes and convene actors. Equally, it helps identify city-specific challenges which are not being tackled. For example, the triangles in Figure 1 indicate potential opportunities to push additional action within schemes. To take one case, there is scope for the Municipal Corporation to further ensure that affordable housing is sufficiently well integrated with the city by frequent transport services. Importantly, the framework can also be used to identify trade-offs between a city's different

priorities. For example, there is a potential trade-off in Rajkot's dry region between providing water access and security on one hand, and improved transit access with more paved roads but reduced groundwater sequestration.

Indian cities are at the cusp of an urbanisation process where choices made in the present will have lasting impacts, not least on climate change. While cities like Rajkot demonstrate the ability to adopt low-carbon initiatives when development and climate objectives align, a more integrated and strategic multiple objectives based approach can help cities push beyond their conventional piecemeal actions. Given the magnitude of change Indian cities will face in the coming years, achieving this task will be the true test of the sustainability of their development process.

REFERENCES

- Government of India, 2011. Populations Census 2011. Census Organization of India, New Delhi.
- ICLEI SA, 2016. Low Emissions Development Strategies (LEDS) for Rajkot City. ICLEI South Asia, Urban LEDS, UN Habitat, Rajkot.
- Khosla et al., 2015. Towards Methodologies for Multiple Objective-Based Energy and Climate Policy. *Economic & Political Weekly* 1, 49–59.
- Kumar et al., 2010. Developing an Energy Conservation Building Code Implementation Strategy in India. USAID India, New Delhi.
- MNRE, 2008. MNRE Programme on “Development of Solar Cities” Guidelines for preparing master plan as per the prescribed format of MNRE. Ministry of New and Renewable Energy, New Delhi.
- MoHUPA, 2016. Pradhan Mantri Awas Yojana: Housing for All (Urban). Scheme Guidelines. Ministry of Housing & Urban Poverty Alleviation, New Delhi.
- MoUD, 2017. Liveability Standards in Cities. Ministry of Urban Development, New Delhi.
- MoUD, 2015. Smart Cities: Mission Statement & Guidelines. Ministry of Urban Development, New Delhi.
- Munshi et al., 2014. Low-carbon Comprehensive Mobility plan: Rajkot. CEPT University, UNEP DTU Partnership, Ahmedabad.
- RMC, 2017. The Smart City Challenge: Stage 2. Smart City Proposal. Smart City Code: GJ-05-RAJ. Rajkot Municipal Corporation, Rajkot.
- RMC, 2010. JNNURM. Rajkot Municipal Corporation, Rajkot.
- RMC & ICLEI SA, 2009. Development of Rajkot Solar City. Ministry of New and Renewable Energy, Rajkot.
- RUDA, 2015. Comprehensive Development Plan 2031 (Second Revised). Part II: Planning Proposals and Recommendations. Rajkot Urban Development Authority, Rajkot.
- The Bombay Provincial Municipal Corporations Act, 1949.
- The Constitution of India, 1950.
- The Constitution (Seventy-Fourth Amendment) Act, 1992.
- UDUH, 2013. Mukhya Mantri GRUH Yojana: Scheme for State Assistance for Construction of Houses for Slum Rehabilitation and People of Economically Weaker Sections (EWS). Urban Development & Urban Housing Department, Government of Gujarat, Gandhinagar.
- UN DESA, 2014. World Urbanization Prospects: The 2014 Revision, Highlights. United Nations, Department of Economic and Social Affairs, Population Division, New York.

ACKNOWLEDGEMENTS

This Policy Brief is produced by the Centre for Policy Research (CPR) as part of the study: Integrating energy and climate objectives in Indian cities under the Capacity Building Project for Low Carbon and Climate Resilient City Development in India (CapaCITIES) project. The CapaCITIES project is funded by the Global Programme Climate Change and Environment (GPCCE) of the Swiss Agency for Development and Cooperation (SDC). We are also grateful for additional financial support from the Oak Foundation and MacArthur Foundation for CPR's work on the multiple objectives framework. All responsibility for analysis and views expressed rests with the authors.