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Recognising climate co-benefits[1]: case of Rajkot city

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EXECUTIVE SUMMARY

Given the rapid urbanisation trend, cities, especially those in the global South which are highly vulnerable, need to take measures to adapt to the impacts of climate change. A global challenge like climate change has to be dealt with at multiple levels, especially at the local level.

The current policy brief aims to highlight the approaches employed by an Indian city in terms of climate action against water scarcity. This can serve as a blueprint for other cities to pursue climate action across multiple sectors including water.

Acknowledging climate co-benefits[2] associated with existing developmental measures can help cities take a step towards addressing a complex challenge like climate change.

SCOPE OR CONTEXT OF THE PROBLEM

Cities need to pursue climate action to cope with and reduce the impacts of climate change. Considering the complex and inter-connected governance and developmental challenges[3] that Indian cities face, and the lack of an urban climate policy (Deshpande, 2020), cities need to take it up on themselves to pursue climate measures.

Water scarcity, a consequence of geomorphological factors, urbanisation patterns and development mal-practices, is a challenge common to most Indian cities. Existing water challenges, such as depleting ground water levels and inadequate water supply, will be further exacerbated by changing climatic patterns like

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[2] Local developmental priorities and sectoral policies simultaneously address climate concerns.
[3] Some of the governance challenges include inadequate technical, institutional and financial capacity (Deshpande, 2020).

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temperature and precipitation[4]. Additionally, the Greenhouse gas (GHG) emission contribution of the energy intensive sector (see Klein et al, 2005 and Roshani et al., 2012) will increase with reduced water availability[5]. At this rate, cities will soon be unable to meet their current and future water needs.

Increasing water scarcity will seriously threaten urban resilience, and so cities need to pursue both climate adaptation[6] and mitigation[7] measures to deal with current and future risks. The city of Rajkot, located in the semi-arid region of Gujarat has been able to improve its water security over the years by implementing water adaptation and mitigation measures. Among the range of urban water adaptation (see Hurlimann and Wilson, 2018), the measures implemented by Rajkot include augmenting existing water supply systems, introducing pricing incentives, efficient use of water, improving water quality, water reuse and conservation. The mitigation measures implemented by the city include water conservation/ demand reduction (less energy required to source, treat and distribute water), energy efficient water supply, and solar water heating systems, among others (see Major et al., 2011). It must be noted that existing developmental measures have overlapping climate co-benefits (e.g. reduced energy consumption, improved water supply). Also, climate measures are highly contextual and dependent on the needs of a city.

Provision of water supply, including planning and executing policy measures, to the city is the responsibility of the urban local body in Rajkot. The local government, assisted by domain experts, was instrumental in recognising climate co-benefits associated with existing and future development objectives and adjusting domestic policies and schemes to address local needs. This enabled the government to incorporate climate measures into the municipal agenda. The following section highlights how the city's approach towards furthering climate action.

LEARNINGS FROM THE LOCAL LEVEL

Acknowledged synergies between development and climate objectives

For Indian cities, climate change is essentially a developmental issue, and so climate action cannot be understood in isolation. In the absence of an urban climate policy guiding local action, cities can pursue action by recognising climate co-benefits associated with existing developmental measures. For instance, the local government in Rajkot implemented several measures (e.g. augmented local water sources,

[4] For instance, existing water supply systems in cities are projected to be pressurised by changes in temperature and precipitation patterns (Hurlimann and Wilson, 2018). Also, variation in precipitation patterns can increase the existing gap between water supply and demand (Major et al., 2011).

[5] Muller (2007) argues that providing urban water supply will become more expensive with declining water availability. Cities will need to source water from outside the city limits, which will require more energy to transport and for treatment.

[6] Adaptation measures focus on reducing the damage (Fleig, Schmidt and Tosun, 2017) and vulnerability caused (Field et al., 2012), and also improving the capacity (Pouliotte, Smit, and Westerhoff, 2009) and resilience of systems to adjust to climate change (IPCC, 2014).

[7] Climate mitigation measures focus on reducing GHG emissions (IPCC, 2007; Berry et al., 2015; Hatfield-Dodds et al., 2017).

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conserved water supply, and promoted energy efficiency and alternative energy) to improve the city's water supply and reduce the associated energy consumptions. Majority of these measures involved a climate adaptation[8] (e.g. reduced vulnerability and improved capacity due to better water supply) and/or mitigation[9] (e.g. decline in GHG emissions) co-benefit. Deshpande (2020) argues that development goals have overlapping climate benefits. By acknowledging these synergies the city was able to pursue climate action alongside existing local priorities[10], often without any extra investment. Linking climate action with urban developmental priorities makes it politically feasible (Bhardwaj and Khosla, 2017).

Improved technical capacity

City governments, particularly the bureaucrats, need adequate understanding and relevant information to design and execute water measures. Similarly, acknowledging climate co-benefits of existing measures requires an understanding of the adaptation and mitigation potential of each measure. Often, local governments' in Indian cities lack the technical capacity to pursue climate action (see Deshpande, 2020). The Rajkot municipal government invited consultants[11] who provided technical assistance in understanding and identifying synergies between development and climate goals. Additionally, the city bureaucrats identified domestic (sub-national and national) programmes and schemes to fund local measures[12]. Furthermore, through these engagements with non-state actors working on climate issues, the city government participated in several climate workshops and seminars, which their visibility in domestic and international climate circles.

[8] For instance, replacing old pipelines (asbestos cement) with more durable pipelines (ductile iron) has an adaptation impact of reduction in non-revenue water loss (reduced leakages, operation and maintenance cost and more difficult to directly pump water) resulting in availability of freshwater for longer durations, and reduced water contamination and improved health. Similarly, regularising illegal water connections will result in sufficient water and improved pressure levels.
Installation of water meters will help reduce wastage resulting in improved availability, access to information on actual water requirement and supply efficiency, and more effective water collection charges.
Improving the water holding capacity of existing water reservoirs will groundwater levels and water availability.
Additionally, rainwater harvesting systems will ensure improved water tables, and a higher degree of self-sufficiency (in the absence of municipal supply).

[9] Using solar energy to treat bulk water will reduce the energy consumption and GHG emission contribution.
Similarly, upgrading water pumping machinery with energy efficient machinery will improve energy security and reduce GHG emissions.

[10] Given the overlapping benefits, the local government incorporated climate objectives into the existing municipal agenda.

[11] The local government in Rajkot worked closely with an international non-governmental organisation, the International Council for Local Environmental Initiatives (ICLEI), to identify the adaptation and mitigation impact of existing and future developmental measures.

[12] For instance, rooftop solar photovoltaic for residential buildings could be further promoted by the 2015 Gujarat Solar Policy (CapaCITIES, 2018).

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Adjusted domestic policies to pursue local action

As mentioned previously, climate change can be addressed by overcoming existing developmental deficits. The local government, particularly city bureaucrats, in Rajkot tweaked existing central[13] and sub-national[14] government (urban development) policies and schemes to address local water needs. Additionally, the urban local body used the climate lens to convince the domestic government to support climate related measures (e.g. using alternative energy source in the water sector). Relying on such domestic policies and schemes enabled the local government overcome its financial inadequacies (see Deshpande, 2020).

POLICY RECOMMENDATIONS

1. Effective climate action at the city level requires **involvement of relevant stakeholders**. The local government, including city bureaucrats and political executives, plays a crucial role in identifying climate co-benefits and mainstreaming climate objectives into the municipal agenda. Additionally, the role of non-state actors, particularly technical consultants, is important not only in terms of accessing new information (see Deshpande 2020, 2021), but also in assisting the urban local body recognise synergies between climate and developmental objectives. Local governments can also access climate networks through these actors that will improve their technical capacity to further climate measures.

2. City governments need to **acknowledge the adaptation and mitigation potential of existing and future water measures**. At a local level this approach will help mainstream climate goals into municipal agendas. Additionally, by showing a commitment to pursue climate action, local efforts of improving water security can be leveraged by appealing to domestic governments (under other schemes and programmes), and also donor agencies.

3. Local governments need to **customise domestic policies and schemes to address their local water needs**. India has several infrastructure (e.g. Smart Cities Mission, Atal Mission for Rejuvenation and Urban Transformation) and climate (e.g. Gujarat Solar Policy) related policies and programmes that can be utilised by cities to overcome their development deficits and also pursue climate action.

4. **Data collation and management** is an important step that city governments need to actively take up. Effective management of municipal data for each sector will enable assessment of vulnerabilities, formulate GHG emission inventory and identify potential solutions. Mobilising

[13] Provisions to augment the city water reservoirs to improve the local water supply were made by adjusting the centrally sponsored Smart Cities Mission (2015) scheme which predominantly focuses on improving public transport.

[14] Gujarat government's Swarnim Jayanti Mukhya Mantri Shaheri Vikas Yojana (SJMMSVY) (2009-10) has been adopted by the local government to improve the city's water supply (e.g. strengthen the water distribution system and improve water holding capacity of existing reservoirs etc.)

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support from domestic and international donor agencies will be easier if cities have consolidated their local challenges and needs.

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