Asian Cities Climate Resilience
POLICY BRIEF 2014

Methodologies for urban climate resilience

A review of ACCCRN approaches in Indian cities

Policy pointers

- **National and state level policy frameworks regarding climate change adaptation should drive and shape city-level climate action.**
- **Institutionalising the resilience-building process at city scale, for example through a dedicated body of representatives, can ensure climate change is not subsumed by other municipal responsibilities.**
- **A broad range of stakeholders should be engaged in processes of understanding local vulnerabilities, and planning and implementing action.**
- **Experiences from ACCCRN processes and other initiatives can inform and drive local understanding and action if disseminated to a targeted audience of city actors.**

India is a country of over 7,000 towns and cities, each of which faces differing climate-related risks and vulnerabilities. However, urban local bodies lack the legal mandate and financial revenues to implement activities to build their resilience to climate change, as well as the necessary technical knowledge and capacity. The Asian Cities Climate Change Resilience Network (ACCCRN) initiative, funded by the Rockefeller Foundation, has sought to address this gap. Through this initiative, seven Indian cities have begun developing approaches to build their resilience, tailored to their specific local contexts, including governance structures, industrial makeup, and demographic conditions, and according to their capabilities. This briefing presents findings drawn from a review carried out by The Energy and Resources Institute (TERI) of approaches applied in these seven cities, to draw lessons for further replication, scaling up and sustained action.

ACCCRN in India

The ACCCRN initiative in India began in three core cities, Surat, Indore and Gorakhpur, extending to a further four replication cities from 2012, Shimla, Guwahati, Mysore and Bhubaneswar. The uniqueness of the ACCCRN approach in India lies in the process of multi-partner engagement at a national scale, with different partners driving initiatives in different cities (Table 1). While the basic principles in each city were drawn from the theoretical urban resilience framework driving the ACCCRN program design, each partner had the liberty to contextualise the methodology and the process of climate resilience planning and implementation to the specific demand and needs of each city.

Each city successfully developed its own climate resilience strategy, and the three core cities have also implemented a number of pilot projects. The approach brought out several examples of methodologies that offer potential for replication and adoption for other cities. Replication and scaling up was inbuilt into the ACCCRN program design so that the learning from project cities would inform policy for long term action to build climate resilience in Indian cities.

The ACCCRN methodology can be divided into the following key components:

- Shared Learning Dialogues (SLDs): SLDs are meetings which facilitate open communication between stakeholder groups including experts, officials, civil

society, and the private sector[1]. These meetings can be used to discuss specific issues or verify information, to understand the linkages between urban growth and development, climate change and vulnerability of people and sectors, and to identify priority actions.

- Vulnerability Assessments: these assessments allow an initial understanding of the city's exposure to climate risks, in terms of impact on people and city systems. In most case this assessment was carried out by ACCCRN partners, with local participation or verification.
- Sector Studies: facilitated by the implementing partner working alongside local partners, the core cities conducted in-depth and detailed sector studies on key sectors such as water and transport, in order to understand the sector-specific adaptation needs and multi-sectoral linkages.
- City Resilience Planning and Strategies: building upon the information collected in the previous steps, this stage involved developing a city resilience strategy providing approaches to building city-level climate resilience, to be adopted and owned by the city.

Key findings

Through a survey of the literature produced by ACCCRN cities and partners, the review of ACCCRN approaches in India analysed the methodology applied in each city. Questionnaire surveys of the ACCCRN partners and city stakeholders then assessed the overall process of engagement, associated constraints and opportunities, and potential for replication. In total, seven ACCCRN partners and 15 city stakeholders were interviewed.

The questionnaire considered three key factors that could affect the potential for replication and scaling up of the climate resilience agenda to other Indian cities: the initial motivation to plan for resilience; the methodology and process applied; and the end outcomes.

Motivation for planning for resilience:

The survey results show that the Indian cities involved in ACCCRN envisioned that climate resilience planning would help them tackle the present challenges faced in their city, such as frequent floods and water logging. The cities could also appreciate the technical and capacity building support extended through the ACCCRN initiative. The initiative brought new knowledge on climate impacts, climate risks and vulnerability to city systems, and enabled the development of strategies for resilience building.

Methodology and process

The review of methodologies applied across the seven cities highlight the importance of skilled human resources for climate projection analysis and its interpretation for city planning needs. The technical nature of the methodology adopted for risk and vulnerability analysis meant that guidance and training was required. The methodology had to be contextualised in consultation with the city stakeholders and local experts to suit the specific need of the city.

Climate projections: All of the cities except Guwahati relied on global climate models for their resilience planning. However, regional climate models provide climate information at a finer resolution, and could be utilised for planning and policy purposes in future, as in Guwahati.

Vulnerability analysis: The vulnerability assessment process differed in each city; however, all the cities felt that this component was time and data intensive. While in the four replication cities this was addressed by using the data that was readily available locally, Gorakhpur made use of participatory approaches to capture local knowledge and expertise for vulnerability assessments.

Sector studies: The three core cities conducted detailed sector studies, but due to time constraints, the four replication cities relied on detailed urban profiling. However, detailed sector studies could be conducted after the risks have been prioritised and the critical sectors identified, in order to identify the most appropriate approaches to resilience-building.

City resilience strategies (CRS): The city resilience strategies emerged out of the SLDs and the risk and vulnerability assessments. The CRS included detailed sector-specific strategies outlined for implementation, and in core cities also identified some pilot adaptation projects. These pilot projects received support from the Rockefeller Foundation for implementation. In the replication stage, a mainstreaming action plan for Gorakhpur and Guwahati was prepared in order to facilitate this implementation process and integrate the CRS into the urban development planning framework. A road map for implementation of the city resilience strategy is a prerequisite for ensuring financial allocations to, and more effective implementation of, the identified strategies.

Data: Access to the relevant data for sector studies and climate projections was found to be challenging in all the project cities. The data was either not available, or not in required format and scale, and incomplete. Household surveys and SLDs provided an alternative approach to data collection.

Participation: While the ACCCRN methodology adopted tried to follow a participatory approach, levels of participation varied between cities. SLDs and city advisory committee consultations were conducted in most cities; however, survey responses from the city stakeholders show that beyond local government agencies, not all stakeholders were adequately engaged in the process. It was suggested that inputs from local experts, academics, NGOs and civil society groups should also feed into the process. While community groups were engaged in initial stages of identifying primary risks and to varying extents in the pilot project implementation, some respondents felt that it might not be feasible to involve communities in the intermediary stages. Highlighting the challenges of more intensive community engagement in resilience planning exercise, some stakeholders felt this would be time consuming, and could lead to deviation from the objective of the exercise, given the size of the populations affected,

Table 1: Key city features and partner organisations

City	Characteristic Features	Population (2011 census)	Key Climate Risks	Key partner organisation	Role of the organisation
Gorakhpur	Medium sized city, functions as the district and divisional administrative headquarters	1.1 million (urban agglomeration)	Flooding and water logging	Gorakhpur Environmental Action Group (GEAG)	Risk and vulnerability assessment; Sector studies; Resilience strategy preparation
Indore	Largest city of the Madhya Pradesh State, headquarters of Indore District Division.	2.1 million (urban agglomeration)	Increased temperatures and water shortages	TARU	Risk and vulnerability analysis; Climate projections; Resilience Strategy preparation
Surat	Second largest city in Gujarat state	4.4 million	Sea level rise and flooding	TARU	Risk and vulnerability analysis; Climate projections; Resilience strategy preparation
Guwahati	Capital city of the state of Assam and the biggest urban centre in north-east India.	0.97 million (urban agglomeration)	Increased temperature, increased frequency of high rainfall events leading to floods	TERI	Risk and vulnerability assessment; Climate projections; Preparation of Resilience strategy and mainstreaming plan.
Mysore	Second largest city in Karnataka state	0.9 million	Increased average annual temperatures, decreased annual mean rainfall	ICLEI	Risk and vulnerability assessment; Preparation of resilience strategy
Shimla	Capital of the northern state of Himachal Pradesh	0.16 million	Increased average temperature, increased precipitation	ICLEI	Risk and vulnerability assessment; Preparation of resilience strategy
Bhubaneswar	Capital city of the Orissa, centre of economic and religious importance	0.8 million	Increased temperature and precipitation	ICLEI	Risk and vulnerability assessment; Preparation of resilience strategy
The Institute of Social and Environmental Transition (ISET) was involved in the climate scenario projections for Gorakhpur and provided climate modelling support to TARU in Indore and Surat. TERI also prepared a mainstreaming action plan for Gorakhpur.					

their expectations, and the long-term nature of climate impacts compared to immediate problems. However, the approach in Gorakhpur has successfully demonstrated the possibilities of participatory processes for vulnerability analysis and for formulating the city resilience strategy.

Outcomes

While the city respondents viewed the resilience strategy as a useful document which they would like adopted by their city, in the absence of any policy or statutory backing they felt it would be a challenge to implement it fully. It was also suggested that for complete implementation of the strategy, further capacity building support from external partners, and the state government's buy-in, was required.

Implementation Support: The study findings highlight the need for an integrated approach for mainstreaming urban climate resilience. This involves building local technical expertise and understanding, developing skilled manpower, and securing financial allocations at the level of the urban local bodies and the State Government specific to climate action. While urban development is a state responsibility as mandated by the Constitution of India, planning and city management are conducted at the city level, and therefore both the state and city levels are important platforms for initiating urban climate action. Cities require policy and regulatory support from the state government, and funding for implementation of plans and projects.

The city respondents also emphasised the need and efficacy of integrating climate resilience planning within urban planning processes. Unless climate change is integrated into the mandate of municipal corporations, it will be regarded as an additional burden. Institutionalising climate action at the city level through a dedicated committee within the Municipality or local body (such as the Surat Climate Change Trust) can help to sustain the agenda.

Financing: There are currently no financing mechanisms specific to urban climate resilience at either the city or state level. External funding is usually limited to the implementation of a few pilot projects, and large scale replication requires national government support.

It was suggested by the city partners that a budget analysis of various public agencies, including the Municipal Corporation, as part of the city resilience strategy, could help in developing a finance mobilization plan for resilience building.

Key lessons and recommendations for scaling up in India

This study sought to understand the potential for replication of ACCCRN methodology and processes in more Indian cities, and the key characteristics of the processes which could be used for resilience planning in varied urban contexts.

While seven cities may not be representative in a country of over 7,000 cities and towns spread across varied geographical and climatic zones, the ACCCRN experience raises key issues that need to be addressed in order to scale-up urban climate resilience planning and practice in Indian cities:

- Replication of resilience exercises in other cities should be based on careful prioritisation and selection of cities, recognising that climate risks will differ across cities. In certain cases, the mandate may come from the state government to select priority cities depending upon their relative need to start planning for climate resilience. In other cases, the process could be driven by the cities themselves when they recognise their own vulnerability.
- A mandate from state governments, linked either to their respective State Action Plans on Climate Change, or their state environment and urban development policies, would support climate change action in the urban areas. Concurrently, a national policy framework would be a crucial enabler for local action. However, these policy frameworks must clearly outline processes of implementation, financing and institutional responsibilities.
- Climate resilience planning methods should allow any city to conduct a quick and easy assessment of their risk and vulnerability to climate impacts, given constraints on time, capacity and policy mandates. Toolkits that facilitate decision-making for planning and implementation could be developed and applied.
- There is a strong need to institutionalise the resilience-building process at the city level in order to sustain action. This institutionalisation could take the form of a committee sitting at municipal corporation level, with ex-officio representatives from relevant city departments and state line departments, or could take the form of a city advisory committee. Without institutionalisation, the agenda for resilience planning may be subsumed within the regular development priorities of a municipal body.
- There is a need for systematic and extensive awareness-raising amongst urban citizens and local officials regarding the implications of climate change on urban areas, and actions that can be taken, through dialogue and dissemination of ACCCRN and other international experiences. Capacity building should be tailored to the needs of various stakeholders through toolkits, guidelines and training programs, including specialised university courses.
- Extensive replication of approaches to building urban climate resilience will only be possible when the governance systems and institutional mechanisms shaping Indian urban development are designed, updated and channelled towards the goal of resilient cities. This requires capacity building of key actors, as well as directive policies and financial support at different stages, to ensure that climate resilience is considered in all aspects of urban development.

Aim of Series:

The findings presented here are drawn from research published in the Asian Cities Climate Resilience working paper series. The series has arisen out of the Asian Cities Climate Change Resilience Network (ACCCRN), an initiative funded by the Rockefeller Foundation – more information can be found at www.acccrn.org

Note

1. Reed, S., Friend, R., Toan, V.C., Thinphanga, P., Sutarto, R. and Singh, D., 2013. 'Shared learning' for building urban climate resilience – experiences from Asian cities, Environment and Urbanization, 25(2): 393-412

Further reading

Sharma D., Singh, R. and Singh, R. 2013. Urban Climate resilience: A review of the methodologies adopted under the ACCCRN initiative in Indian cities, *Asian Cities Climate Resilience Working paper series,* number 5, IIED, London. Available for free download at http://pubs.iied.org/pdfs/10650IIED.pdf

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