Chapter 2

Urban Climate Justice in India

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Introduction

Indian cities are especially vulnerable to climate change due to their rapid population growth, high levels of socioeconomic inequality, and the general inability of infrastructure and public services to adapt to projected impacts (Revi 2008; Sharma and Tomar 2010). Although the neoliberal reforms introduced in India since the early 1990s have enabled the broader participation of non-state actors in decision-making, an ideological preference for entrepreneurial approaches to urban governance have largely led to the withdrawal of the state from delivering basic services (Datta 2015). Revenue shortfalls and lack of administrative capacity have further decreased the ability of cities to deal with climate impacts and risks (Cook and Chu 2018; Sharma et al. 2014). These effects are felt most acutely by the urban poor, who are disproportionately exposed (Michael and Vakulabharanam 2016; Satterthwaite et al. 2007).

Since the 1990s, there has been a growing awareness of climate change among government officials. For the next two decades, governmental interventions in Indian cities were confined to climate mitigation and targeted select manufacturing, construction, and energy sectors (Dubash et al. 2018). To be fair, climate adaptation was still a relatively nascent priority for India, and its policy focus was on furthering its geopolitical role in global climate negotiations. As a nation that saw itself as a rapidly industrializing global power, India aggressively pushed for the country's 'right to development' despite its significant exposure to climate change impacts (Gupta 2010). Indian negotiators highlighted how industrialized nations could support India through technology, resource, and capacity transfers that will allow it to 'leap frog'

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from fossil-fuel-intensive to more sustainable forms of development. Widespread awareness of climate adaptation only emerged in the late 2000s, spearheaded by transnational, civil society, and national scientific bodies that documented changing climatic patterns and advocated that subnational governments play a role in addressing climate risks (Khosla and Bhardwaj 2019b; Sharma, Singh, and Singh 2014; Sharma et al. 2014). Since then, and as climate adaptation has moved from the policy to the implementation space, there have been growing concerns that structural inequalities in urban development in India may dilute or even redirect the intended benefits of climate adaptation.

For cities across India, the combination of rapid urbanization and a changing climate has resulted in the disproportionate exposure of poor and marginalized communities to the impacts and associated risks of climate change (Chu and Michael 2019). The effects of climate change are mirrored in existing urban social relations of ethnicity, class, caste, gender, and other forms of power differentials, which are all arguably entrenched in forms of exclusion and inequality. For instance, Indian cities have, over the past several decades, transformed into spaces of wealthy enclaves and unplanned new towns at the periphery of older central cities (Vakulabharanam and Motiram 2012). Informal settlements at the urban periphery have precarious and insecure economies (Anand et al. 2014; Bhan and Jana 2015) where many residents are at risk of eviction due to insecure land tenure arrangements. Here, social structures characterized by marginalization and exclusion prevalent in rural villages are replicated (Shrivastava and Kothari 2012). Changing temperatures and precipitation levels, together with their cascading implications for health and housing, have only exacerbated such social inequalities.

In India, climate change policies – especially those concerning adaptation and resilience-building at the local scale – have often failed to recognize the particular needs of vulnerable sectors and communities. The urban poor, particularly the informal sector, often remain outside the ambit of urban planning mechanisms. Consequently, climate actions in Indian cities have remained exclusionary and have failed to address context-specific determinants of vulnerability and adaptive capacity (Chu and Michael 2019). In this chapter, we argue that theories of urban climate justice must go beyond including historically under-represented communities in decision-making and uncovering the distributive implications of climate, and must recognize intersecting and historically entrenched forms of socioeconomic, cultural, and political inequalities as well as the multiple channels through which climate change can exacerbate them.

Drawing on a longitudinal exploration of urban climate planning since the 1990s, this chapter assesses the structural drivers of climate injustice in Indian cities, with a

focus on emerging adaptation and resilience priorities. We show examples from across the country of how drivers of injustice manifest in the design and documentation of adaptation actions as well as how they intersect to compound experiences of injustice. To further climate justice in Indian cities, we argue for a renewed focus on distributional, procedural, and recognitional justice from the bottom up. This may involve broadening civic dialogue around urban planning and practice to include demands for equity as the first step in reversing current exclusionary trends in urban development planning and climate policymaking. As a result, urban climate justice would be reoriented towards notions of inclusive development, human rights, and socioeconomic transformation.

Indian cities in a changing climate

Indian cities are increasingly facing the impact of climate change – temperature variability, droughts, flooding, cyclones, sea-level rise, and the linked environmental health risks – and are recognizing the need for climate adaptation and resilience-building. Poor communities are exposed to disproportionate risks from inadequate water, housing, sanitation, drainage, and solid waste management facilities. With its growing urban population, India will soon be one of the world's most vulnerable countries to climate change (Revi 2008; Yenneti et al. 2016). By the 2060s, it is expected that there will be approximately 500 million additional people living in an estimated 7,000 to 12,000 urban settlements across the country, most of whom will experience compounding environmental stressors relating to water, sanitation and environmental health, air and water pollution as well as climate change (Khosla and Bhardwaj 2019a; Sharma and Tomar 2010).

Historically, urban development was not a priority as the country relied heavily on the agricultural sector. However, the 74th Constitution Amendment Act (1992) provided formal recognition for urban local bodies and vested them with the power to undertake local sanitation, solid waste management, infrastructure, land provisioning, and development planning (Jayal, Prakash, and Sharma 2006). The Tenth and Eleventh Five Year Plans, designed for the years 2002–2012, both emphasized urban areas as engines of economic growth and advocated market-friendly reforms in urban infrastructure delivery. Under the Jawaharlal Nehru National Urban Renewal Mission (JNNURM), which ran from 2005 to 2014, public finances were directly allocated to cities. JNNURM adopted a governance reform-based funding approach, which meant that funds were supplied in conjunction with mandating reforms to local jurisdictional capacities and systems to enable urban infrastructure development and poverty alleviation across 65 cities (out of a total of 43,788 urban agglomerations and

towns) (Khosla and Bhardwaj 2019a; Sharma and Singh 2016). A separate scheme, the Urban Infrastructure Development Scheme for Small and Medium Sized Towns (UIDSSMT), was launched in 2005 to support municipalities with smaller budgets and more capacity constraints (Sahasranaman 2012).

The central objective of these reforms was to decentralize larger (that is, Tier 1 and 2) cities as articulated under the 74th Constitution Amendment Act (1992) by strengthening public management and governance functions. Together with centrally-sponsored schemes such as Rajiv Awas Yojana, which ran from 2013 to 2014 and earmarked ₹322.3 billion for urban slum upgrading and poverty alleviation, the JNNURM served as an entry point to address questions of inadequate urban services delivery (Kundu 2014). Still, these schemes did not significantly address risk reduction, socioeconomic vulnerabilities, and climate adaptation to lower the overall impacts of increasingly extreme hazards. Also, although these reforms were not explicitly neoliberal (as opposed to those later articulated under the Smart Cities Mission), urban-level initiatives were often stymied by uncooperative state governments who were reluctant to transfer political, financial, or planning authority (Nandi and Gamkhar 2013).

During the same period – and spurred on by the approval of the National Action Plan on Climate Change (NAPCC) in 2008 – ministries at the national, state, and local levels began considering the implications of climate change for development functions. The NAPCC focused more on mitigation actions such as greenhouse gas reduction through reduced deforestation and regulation of industrial emissions and less on adaptation efforts. It also offered no financial provisions for climate action at the local level; hence, local governments continued to rely on intergovernmental disbursements schemes such as JNNURM. This approach was widely considered to be inadequate due to deficient capacities at the local level (Mehta and Mehta 2010).

Although there has never been an overt environmental agenda in urban planning in India, the confluence of ideas and opportunities presented by the policy mechanisms noted above began to spur actions to address climate change in cities. Some cities began to realize that infrastructure and service delivery investments must take into account climate impacts and support the local government's ability to address changing environmental risk profiles. These priorities have garnered increasing political traction in response to the escalating intensity of climate-related hazards. For example, three major cyclones – Helen (2013), Phalin (2013), and Hudhud (2014) – struck the Bay of Bengal coastal region within a short timeframe and Mumbai and Chennai both experienced devastating floods in 2015. Chennai also has a history of experiencing extreme heat (Jeganathan et al. 2016). These

disasters laid bare the lack of preparedness and emergency planning and the fragility of the country's infrastructure.

In response, local governments availed of several intergovernmental schemes to support climate-resilient development, including the National Mission for Sustainable Habitat (2010), which emphasized building design, better urban planning, waste management, early warning systems, and regulatory reforms. Following the change in the central government in 2014, many of the schemes were revised to focus more on smart technologies and economic competitiveness in the context of sustainable development (Beermann et al. 2016; Fisher 2014). For example, the Atal Mission on Rejuvenation and Urban Transformation (AMRUT) was established in 2015 to channel ₹500 billion towards upgrading the urban water, transportation, and greenery sectors and the Swachh Bharat Abhiyan or Clean India Mission (2014–2019) promoted public health and sanitation across urban and rural areas. The flagship Smart Cities Mission, launched in 2016, budgeted nearly ₹980 billion (including matching funds from state governments) to support technological innovation in infrastructure and services provision. As of early 2021, 100 cities have been selected to receive funding primarily through area-based initiatives such as greenfield, transit, and service improvement projects.

Critiques of these schemes, particularly those enacted since 2014, have focused on their 'development first' approach, which has led to the side-lining of other priorities, particularly climate risk management and vulnerability reduction for the urban poor. The Smart Cities Mission has been explicitly critiqued for its neoliberal biases – for example, promoting special purpose vehicles to securitize debts for mega-infrastructure investors and developers and contracting out implementation efforts to private consulting and engineering firms. Further, though more than 5,000 projects were proposed, there remains some level of uncertainty regarding actual disbursements, expenses incurred over time, and the proportion of budgetary allocations that were actually spent on implementing smart projects. In other cases, large urban development projects were favoured, as they enabled the creation of world-class elite cities. This political shift corresponded with a global surge in resilience thinking (Bohland, Davoudi, and Lawrence 2019), which promoted the idea that local governments should be resistant to a wide array of political, economic, and environmental shocks (Borie et al. 2019).

However, in India and across the Global South, resilience thinking has been criticized for its focus on technocratic solutions and a tendency to overlook historically entrenched socioeconomic inequalities. At the same time, a reliance on public–private partnerships and speculative land investments has increased economic inequality and social exclusion (Bahadur and Thornton 2015; Chu 2020).

For example, a green housing project in the outskirts of Bengaluru named Towards Zero Carbon Development (T-Zed) promotes low carbon living by effectively combining green forms of consumption with urban development (Bulkeley and Castán Broto 2014). However, this project has little impact on ongoing inequalities within the city, especially when more than 35 per cent of the population lives in poor informal settlements that are highly vulnerable to climate impacts (Kumar, Geneletti, and Nagendra 2016). Instead, the project channels resources towards creating a gated community for a growing market of high-earning, green-minded middle-class residents.

The myriad policy advancements in India over the past 30 years mostly support the greater involvement of the private sector in urban development and a withdrawal of the state from delivering basic services (Goldman 2011; Vakulabharanam and Motiram 2012). This has led to land speculation and acquisition of land for special economic zones, dispossession of the working class through slum evictions, prioritization of private sector interests, and the emergence of new parastatal bodies, special purpose vehicles, and quasi-autonomous bodies to govern cities (Chattopadhyay 2017). Climate action also follows this logic, leading to a surge in middle-class environmentalism that largely ignores the structural causes of climate vulnerabilities and risks (Chu and Michael 2019). The experience of climate injustice, therefore, stems from the interaction between historically entrenched socioeconomic inequalities and development constraints that can be attributed to recent neoliberal governance reforms, superimposed on a reality of increasingly severe climate change impacts.

Emerging focus on climate adaptation and resilience

Awareness of climate adaptation as something separate from disaster risk reduction was introduced in India by multilateral aid and philanthropic actors in the late 2000s. India had a robust regulatory framework for addressing disaster impacts, which drew from its experiences managing extreme events such as Cyclone Phailin in 1999 and the Kutch earthquake in 2001 (Jha, Basu, and Basu 2016; Pal, Ghosh, and Ghosh 2017). This framework was eventually codified through national and state disaster management agencies. Prioritization of climate adaptation policies targeting long-term climate stressors such as heat, precipitation, and sea-level rise took longer. Low awareness was compounded by the uneven implementation of the 74th Constitution Amendment Act (1992), which led to the unclear division of planning and governance responsibilities across urban, state, and national authorities. Local institutional complexities further stymied climate adaptation efforts as policy responsibilities were disaggregated across urban bureaucratic functions (through

the municipal corporation) and land use management and planning functions (through the urban development authority).

For many cities, climate adaptation priorities were also driven by external capacities, resources, and policy support. Significant effort was needed to localize climate models to arrive at projections of heat, precipitation, and sea-level change, especially since such technical capacities did not typically exist within local governments. International organizations such as the German Agency for International Cooperation (GIZ), United Nations Development Programme (UNDP), World Bank, the Rockefeller Foundation, ICLEI-Local Governments for Sustainability, and, to a lesser extent, the US Agency for International Development (USAID), helped introduce climate adaptation ideas and language in local planning and policymaking in India. There were also several bilateral partnerships between donors and local governments – for example, Kolkata's partnership with UK Aid, which was formalized in 2013. These initiatives initially focused on understanding how changing rainfall, temperature, flooding, and sea-level rise would affect infrastructure and urban communities. As awareness was low, they focused on assessing which productive sectors were most exposed to climate impacts as well as which sections of society were most vulnerable to climate risks.

Early programmes, such as those helmed by the Rockefeller Foundation's Asian Cities Climate Change Resilience Network (ACCCRN) – with their pilot efforts in Indore, Surat, and Gorakhpur – prioritized the integration of climate science into planning, management, and governance mechanisms through relatively representative processes. A focus on procedural representation was prioritized given the high levels of uncertainty and lack of understanding of the degree to which economic and social sectors were exposed to different heat, precipitation, and flooding impacts. Creating participatory arenas aided in co-generating locally relevant information on socioeconomic vulnerabilities in hotspots of concentrated risk such as flood plains, riverine settlements, and informal communities. Representative processes were generally commended for successfully uncovering the key vulnerabilities and risks facing cities, while structured participatory methodologies such as 'shared learning dialogues' facilitated discussions on common problems among previously disparate urban leaders and bureaucrats (Sharma and Singh 2016). As such, early advances in cross-sectoral communication and problem-solving within cities were identified as key innovations.

However, researchers have retrospectively critiqued these early advances by asserting that historically marginalized and vulnerable communities continued to be excluded from formal planning processes, which subsequently led to negative outcomes for them (Anguelovski et al. 2016; Shi et al. 2016). For example, although

plans from Kota, Rajasthan, identified slum populations as especially vulnerable, the subsequent decision-making and planning processes did not meaningfully engage representatives from this group (Wilk et al. 2018). Rockefeller-led efforts prioritized identifying empathetic city leaders to help improve awareness of climate impacts, assess urban vulnerability, and identify projects that could both highlight the benefits of proactive adaptation actions and potential ways to integrate them with ongoing development priorities (Brown 2018). Given the relative lack of awareness, a conscious coupling (or mainstreaming) of climate adaptation with on-the-ground basic services, housing, health, and economic development priorities made political sense. Although this approach took time and effort, it allowed adaptation priorities to gain a foothold in cities and helped channel financial resources and coordinate project designs.

Between 2008 and 2014, the Rockefeller Foundation and ICLEI-Local Governments for Sustainability attempted to scale up adaptation action to other cities using a less resource-intensive approach. This meant less handholding, a condensed assessment process, and a more structured approach to drafting local resilience strategies. By 2014, several additional cities produced resilience strategies, including Kochi, Visakhapatnam, Bhubaneswar, Shimla, Mysore, Nainital, Patna, and Gangtok, but the degree to which the recommendations were implemented by the local administration is unclear. The scaled-up phase was less successful, as cities had less incentive to participate and the condensed time frame made climate adaptation resemble an externally driven development project rather than a genuine internal programme with local buy-in, resource support, and leadership. Several cities, such as Kochi and Visakhapatnam, showed some evidence that climate priorities had been integrated into city disaster management plans and city development plans with provisions to engage civil society organizations in first response and security actions during disaster events. But other externally led initiatives suffered as long-term institutionalization of climate priorities in urban planning, development, and governance was met with resistance.

By 2014, political and ideological changes in the national government led to widespread changes in how climate change priorities were articulated at the policy level. The mantra of urban resilience rather than climate adaptation or climate risk management gained a foothold through various government schemes that consolidated economic progress, human security, and, to a lesser extent, environmental sustainability under one large banner. A new wave of intervention targeted the creation of smart and resilient cities – exemplified by the Smart Cities Mission (2015) – but simultaneously placed renewed financial constraints on local governments through the enactment of the Good and Services Tax (GST),

which replaced previous intergovernmental disbursement mechanisms such as the JNNURM. Under the new tax regime, local governments were no longer guaranteed revenue as state governments were not obliged to disburse it to them (in fact, many did not). Domestic policy changes also mirrored changes in global institutional priorities, with the Rockefeller Foundation launching the 100 Resilient Cities (100RC) initiative around the same time.

Evidence from the field

Early urban climate adaptation plans across India helped identify policy champions and relevant resources to further the nascent agenda, although these efforts were later found to generally exclude perspectives from historically disadvantaged groups. For example, even in a relatively rich city like Mumbai, research has shown that differences in wealth and capacity account for high levels of household vulnerability (Romero-Lankao, Gnatz, and Sperling 2016). Early plans were critiqued for providing a surface-level acknowledgement of the different socioeconomic vulnerabilities faced by the urban poor while failing to address structural drivers of inequality and unequal exposure to risks. These drivers of vulnerability can be attributed to the neoliberal political reforms introduced since the early 1990s, which have led to the broad privatization of urban services, unequal distribution of economic opportunities, and increasing concentration of political authority among elites (Joshi 2014).

In Table 2.1, we explore recent climate adaptation and resilient development plans across 19 Indian cities, ranging from small to large and inland to coastal municipalities. Our intention is not to offer a comprehensive or exhaustive survey of climate adaptation and resilience actions; instead, Table 2.1 provides a snapshot of experiences and approaches to either strategically or comprehensively operationalize climate priorities within existing land use, infrastructure, risk management, or wider planning processes. We include standalone adaptation and resilience plans, sector-specific policies (such as those targeting urban heat impacts), and more general disaster management and sustainability strategies that prioritize climate adaptation. Our goal is to offer a quick view of select efforts on the ground, drawing on the authors' own research and policy engagements in various cities, while also highlighting the different actors, interests, and resource pathways involved in the process. We build upon ongoing comparative efforts (see Khosla and Bhardwaj 2019b; Singh et al. 2021) by offering insights on how to identify climate injustices on the ground and shed light on approaches that can enable more just and equitable adaptation actions going forward.

Table 2.1 Analysis of key social equity or justice dimensions in recent urban climate change plans in India

City	Plan	Consideration of Justice	Key Approaches to Promoting Equity/Justice
Ahmedabad, Gujarat	Heat Action Plan (2017)	High	The plan identified populations that are vulnerable to extreme heat during the summer months. The municipality was charged with creating a list of high-risk areas for extreme heat and organizing preventative training and outreach efforts for local communities. Actions included expanding cooling centres and shaded areas for outdoor workers, slum communities, and migrants.
Bhubaneswar, Odisha	City Disaster Management Plan* (2014)	Low	The plan acknowledged that several urban sectors and communities are more vulnerable to disaster impacts (heat waves, floods, earthquakes, fires, epidemics, and so on). It integrated community-level actions, including local risk and vulnerability assessments and training programmes in schools.

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City	Plan	Consideration of Justice	Key Approaches to Promoting Equity/Justice
Chennai, Tamil Nadu	Chennai City Resilience Strategy (2019)	High	The plan exhibited an understanding of the compounding and structural nature of vulnerabilities. Resilience-building was linked with social security stability and justice. The plan recognized that protecting vulnerable communities was a key pillar for building the city's resilience. However, it emphasized upgrading informal settlements, which has led to questions of unaffordability.
Delhi, NCT	Climate Change Agenda for Delhi 2009–2012 (2009)	Low	The plan focused on technical and engineering solutions such as solar energy, air pollution mitigation, building and construction standards, energy efficiency, water resources use and distribution, and urban greening. It had minimal engagement with questions of socioeconomic inequality and vulnerability.
Gorakhpur, Uttar Pradesh	Towards a Resilient Gorakhpur (2010)	Medium	The plan recognized the lower adaptive capacities of urban poor communities. Interventions focused on social advocacy in diverse communities as well as knowledge and awareness campaigns.

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City	Plan	Consideration of Justice	Key Approaches to Promoting Equity/Justice
Guwahati, Assam	Climate Proofing Guwahati: City Resilience Strategy and Mainstreaming Plan (2013)	Low	The plan highlighted the lack of planning and housing provisions in slum areas leading to higher vulnerability (especially to floods). It noted that poor or sub-standard infrastructure services increase the vulnerability of the population to disasters and climate-related extreme events.
Indore, Madhya Pradesh	City Resilience Strategy for Changing Climate Scenarios (2012)	Medium	The plan recognized that migrants and informal settlements are particularly vulnerable to climate impacts. Strategies focused on housing, sewage, drainage, water access, and other services for the urban poor.
Jorhat, Assam	Climate-Ready City: Strategy for Building Resilience to Urban Climate Change (2017)	Low	The plan recognized the climate vulnerabilities of underserved low-income communities, especially in terms of health, housing, and access to medical services. It also identified some community-based adaptation strategies.
Kochi, Kerala	Development Plan for Kochi City Region 2031* (2020)	Low	The plan took a mitigation approach to climate change. Even though the document referred to inclusive development and delivery of basic urban services, the link with climate-induced disasters was not fully articulated.

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City	Plan	Consideration of Justice	Key Approaches to Promoting Equity/Justice
Kolkata, West Bengal	Roadmap for Low Carbon and Climate Resilient Kolkata (2016)	Low	The strategy highlighted climate change's intersections with public health, air pollution, urban heat, water, green spaces, solid waste management, and transportation priorities. It indicated differential vulnerabilities across the city.
Panaji, Goa	Revised City Development Plan for Panaji* (2015)	Low	The plan focused on ecological impacts and key risks to infrastructure and identified low-income areas that are vulnerable to floods and water inundation. The plan included sections on urban poor and low-income communities. Some adaptation options focused on 'social infrastructure' but there is no specific mention of social equity.
Pune, Maharashtra	Pune Resilience Strategy (2019)	Medium	The plan acknowledged the need for equitable and inclusive growth, particularly for migrant labourers and low-income groups. It included provisions to support access to affordable housing and civic participation in planning. It focused on social cohesion and inclusivity (in the context of stability, security, and justice) rather than directly mentioning inequality, but spoke of informal economic opportunities and poverty reduction.

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City	Plan	Consideration of Justice	Key Approaches to Promoting Equity/Justice
Rajkot, Gujarat	Heat Wave Action Plan (2018)	Low	The plan was based on an assessment of vulnerable areas and communities. Strategies included knowledge dissemination in slum communities.
Saharsa, Bihar	City Resilience Strategy: Sahara City (2017)	Low	The plan recognized the disproportionate vulnerability of informal and migrant settlements. Adaptation strategies focused on information and awareness-building among community members, as well as strategies to improve housing, infrastructure, and service provision.
Shimla, Himachal Pradesh	Climate Resilient Strategy: Shimla City (2013)	Low	The plan acknowledged the vulnerability of certain populations and sectors, including informal settlements, street vendors, women, and tourists, but it failed to mention inclusive planning processes.
Surat, Gujarat	Surat Resilience Strategy (2017)	Medium	The plan recognized the differential vulnerability of the poor to flooding, heat, and public health risks. It focused on affordable housing, mobility, social cohesion, and health service provision for the poor. It included strategies for inclusive decision-making, primarily stakeholder workshops.

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City	Plan	Consideration of Justice	Key Approaches to Promoting Equity/Justice
Thiruvananthapuram, Kerala	City Disaster Management Plan* (2015)	Low	The plan identified some socioeconomic vulnerabilities and the need for community-level strategies (such as community centres) in response to disaster impacts.
Visakhapatnam, Andhra Pradesh	City Disaster Management Plan* (2013)	Low	The plan focused on disaster response and relief mechanisms, although it did identify vulnerable urban areas and communities along the coast and in low-lying areas. It advocated for long-term resilience, with some focus on the well-being of vulnerable localities, children, and public health concerns. It highlighted the role of non-governmental organizations (NGOs) as volunteers and first responders, particularly during extreme heat events.

Source: Authors' synthesis.
Note: * denotes analysis focused on the climate change sections of a larger plan.

A high-level overview shows that some cities, such as Pune and Chennai, have produced city-wide resilience strategies with funding support from the 100RC programme. The programme provided member cities with funding for instituting a salaried Chief Resilience Officer position within a high-level municipal department as well as resources to support comprehensive planning efforts. Kolkata similarly benefited from UK development aid for drafting a combined mitigation and resilience strategy. Other cities, such as Jorhat and Saharsa, built upon the legacy of civil society support – in this case, the Gorakhpur Environmental Action Group (GEAG) – to enable community-based approaches to resilience planning. Still other cities such as Bhubaneswar, Visakhapatnam, and Thiruvananthapuram elected to integrate emerging climate adaptation priorities into ongoing city disaster management plans, which had been mandated by their respective state governments

given their high exposure to natural disasters. Finally, cities such as Ahmedabad and Rajkot focused on one climate impact – urban heat – and devised specific strategies to respond to it.

Most of the plans highlighted in Table 2.1 were drafted between 2009 and 2019 and apply external expertise to translate scientific models into urban social and economic scenarios. The climate projections drew upon data from national scientific agencies such as the Indian Meteorological Department and the National Disaster Management Authority and research organizations such as The Energy and Resources Institute. The areas of planning focus varied according to local contextual needs, ranging from disaster risk management, urban heat, and flooding to general urban economic transitions in the context of climate change. For example, some cities noted the role of technology and infrastructure in response to climate impacts, such as in the Roadmap for Low Carbon and Climate Resilient Kolkata (2016). Many plans recognized the differential forms of vulnerability experienced by low-income, informal, and migrant communities, such as the higher levels of exposure to heat, flooding, and disaster impacts. For example, Ahmedabad's Heat Action Plan (2017) noted the need for more cooling centres and shaded areas catering to outdoor workers and slum and migrant communities. Indore's City Resilience Strategy for Changing Climate Scenarios (2012), Guwahati's City Resilience Strategy and Mainstreaming Plan (2013), and Panaji's City Development Plan (2015) all acknowledged that informal communities are more vulnerable to flooding, inundation, and subsequent health risks. Visakhapatnam's City Disaster Management Plan (2013) and Shimla's Climate Resilience Strategy (2013) further showed how women, children, and the elderly are additionally vulnerable.

Beyond differential vulnerability, several cities explicitly targeted procedural equity concerns by recognizing the need to include community voices in decision-making. Some plans drew on inclusive and participatory planning processes, engaging with community leaders and civil society organizations to design and evaluate plans and policies. For example, the Surat Resilience Strategy (2017) and Towards a Resilient Gorakhpur (2010) detailed participatory efforts that, to various extents, included local government officials, community leaders, and NGOs in the planning process. Research has shown that these efforts are key to ensuring the legitimacy of decision-making processes, although questions remain around whether such arrangements are truly representative of diverse interests and include the voices of disadvantaged groups (Chu 2016b, 2020). A second strategy for including community voices is harnessing community-based adaptation strategies. For instance, Bhubaneswar's City Disaster Management Plan (2014) and Jorhat's Strategy for Building Resilience to Urban Climate Change (2017) advocated for community disaster response teams, local water provisioning systems, as well as

community-led mobilization to support resource and capacity distribution in the event of disasters. These strategies drew on the recommendations articulated by numerous state-level disaster management authorities to develop volunteer and civil defence groups to respond to natural disasters.

The examples highlighted in Table 2.1 indicate uneven progress in tackling social equity and justice priorities in ongoing urban climate actions. In addition to not having shared criteria for assessing equity and justice, many cities, in fact, rely on NGOs and external funders to sustain baseline participatory processes. Among the 19 cities highlighted in Table 2.1, we see two broad approaches to climate equity and justice: recognizing differential vulnerability and including community-based adaptation and response strategies. It is important to acknowledge the reality that climate risks are unequally distributed among communities and that exposure to impacts depends on the quality of shelter, employment security, and access to crucial water, education, transport, and energy services. However, as we argue in this chapter, this view of equity only considers immediate, near-term access to goods and capacities but does not fully address the underlying drivers of poverty, vulnerability, and marginality. Furthermore, many plans do not articulate efforts to include previously unrepresented voices in the design and evaluation of strategies. Cities often rely on preexisting strong social networks while ignoring others or rely on locally dominant public–private or civil society partnerships at the expense of minority interests.

Towards urban climate justice

Insights from Indian cities suggest that emerging climate efforts, especially those that do not rely on NGOs or external funder support, rarely go beyond surface-level participatory practices to redress structural factors and processes that make the urban poor vulnerable to climate change. Plans tend to focus on instruments, strategies, and actions required to rectify immediate distributive inequalities rather than diagnose the structural factors contributing to social, economic, and political marginality. This section situates evidence from Indian cities within broader urban climate justice scholarship and highlights potential strategies to enable justice and equity going forward. More specifically, we note that to promote more radical and progressive visions of climate justice, planning processes in Indian cities must better consider four dimensions of climate justice: (1) addressing the differential distribution of climate impacts among the urban poor, (2) tackling the root causes of climate vulnerability, (3) delineating shared responsibilities for inclusive decision-making, and (4) pursuing intersectional forms of climate justice. We briefly elaborate on these four dimensions below.

First, a pivot towards justice requires us to recognize that urban poor communities are differentially exposed to the impacts and risks of climate change. Our chapter has shown that climate impacts exert additional stressors on already vulnerable urban communities and compound experiences of socio-political domination, infrastructure exclusion, and economic exploitation. Climate hazards can cause loss of land and livelihoods, putting pressure on the city's existing infrastructure (Michael, Deshpande and Ziervogel 2019; Revi 2008). Furthermore, climate impacts are often unequally distributed due to inadequate poverty alleviation programmes, social exclusion, lack of investment in public services and infrastructure, and gaps in skill, capacity, and knowledge development. For instance, a vast majority of India's informal workers reside in precarious locations across cities and their peripheries. The vulnerability of informal workers is compounded by insecure housing tenure rights and lack of employment opportunities and access to basic services (Anand et al. 2014; Bhan and Jana 2015). Social divisions and hierarchies based on caste and gender further accentuate experiences of poverty. Thus, urban climate actions must first seek to redress differential forms of exposure and vulnerability on the ground.

Second, there is a need to tackle the root causes of climate vulnerability and the legacy of unequal development in cities. As we have highlighted earlier, there is evidence that climate vulnerability and marginality have been exacerbated by governance reforms enacted in India in the past few decades. Reforms since the mid-2010s have promoted entrepreneurial and extractive approaches to urban development, as evidenced by numerous intergovernmental schemes that privilege public–private partnerships and the financialization of infrastructure and services (Datta 2015; Desai and Sanyal 2012). Local governments are therefore incentivized to generate revenue through financially speculative – and often exploitative – means, thereby side-lining priorities such as public welfare, social support, and poverty alleviation. In India, even without considering climate change, forms of urban marginalization are the outcomes of historic development pathways that have yielded highly unequal processes and patterns of allocating resources and access to spaces within the city (Shrivastava and Kothari 2012; Vakulabharanam 2010). This has further resulted in benefits for a particular socioeconomic class and uneven power relations across society (Chattopadhyay 2017). Efforts to realize climate justice on the ground must therefore tackle these longstanding trends in development inequality, exclusion, and dispossession.

Third, there is a need to delineate shared responsibilities with respect to inclusive climate change decision-making and action in cities. In this chapter, we have noted that there has been a gradual veering towards more technical interventions that draw on top-down schemes, external funds, and public–private implementation

mechanisms (Chu 2016a; Khosla and Bhardwaj 2019b). Examples of this include the emerging role of transnational organizations, parastatal agencies, and top-down initiatives driven by central directives or external development projects, often focused on environmental actions that benefit the elite or upper-middle class. Therefore, adaptation and resilience actions are constrained by a lack of autonomy, limited resources, low awareness, low bureaucratic stability, the siloed nature of climate actions, and a disconnect between technical climate knowledge and embodied experiences of environmental risks. Despite these complexities, however, some cities have managed to carve out more participatory arenas that have helped translate external climate knowledge into local development priorities. A shared language has emerged around the need to address climate impacts and risks, and new forms of civil society networks have been established to support more inclusive local decision-making. For instance, several examples highlighted in Table 2.1 involve strategies to enact far-reaching adaptation programmes by uncovering co-benefits between climate adaptation, mitigation, and livelihoods protection or by including local, community-based action. Still, as highlighted already, most of these actions are yet to tackle the structural drivers of development inequality that gave rise to unequal exposure to climate impacts and risks in the first place.

Finally, there is a need to pursue intersectional considerations of climate justice that span social groups. An intersectional approach to climate justice seeks to articulate forms of structural inequality based on gender, class, caste, race/ethnicity, and citizenship status (Chu and Cannon 2021; Matin, Forrester, and Ensor 2018; Rao et al. 2019; Wilson and Chu 2020). For example, the informal economy in Indian cities is largely constituted by excluded masses that subsidize and feed the formal economy by providing various cheap inputs in the form of labour or commodities. There is evidence that the needs of women, migrants, and informal communities are often not taken into account in existing climate adaptation and resilience plans (Chu and Michael 2019; Michael, Deshpande, and Ziervogel 2019). The growing importance of unpaid female labour further solidifies traditional gender norms. It exists to support the survival of male migrants in hostile urban conditions – care activities and the provision of basic needs like cooking, cleaning, and fetching water is allocated to women (Rao 2017). From a climate justice point of view, groups that are intersectionally marginalized, such as women in the informal economy, are likely to have fewer opportunities to influence policymaking, so decisions made by governments are unlikely to benefit them. As such, a pivot towards intersectionality in climate justice will help illuminate the differential experiences of vulnerability of different social groups due to their position in power structures and context-specific, dynamic social categories (Cannon and Chu 2021).

Conclusion

Indian cities are emblematic sites of environmental and developmental inequality, featuring spatial concentrations of poverty and informality. There is emerging literature on climate mitigation and adaptation at the sub-national level in India, but most of it concerns how sub-national entities are responding to global and national goals in terms of parameters such as carbon emissions, financing, and infrastructure provision (Dubash et al. 2018). There has not been a strong focus on lived experiences, developmental dilemmas, and embodied forms of inequality within cities (Khosla and Bhardwaj 2019b). Thus, Indian cities need to rethink their approach to climate action through the lens of justice. By surveying the historical trajectory of how Indian cities have addressed key climate risks and vulnerabilities, this chapter has demonstrated how the maldistribution of climate impacts must be understood in light of development deficits linked to the country's neoliberal economic transformation over the past three decades. As highly unequal spaces, cities house burgeoning informal settlements with concentrated socioeconomic and environmental vulnerabilities, where socio-cultural divisions around gender, class, caste, and religion are exacerbated (Sultana 2014). Projected climate impacts such as flooding, sea-level rise, droughts, and health crises exert additional stressors on an already unequal development context.

Emerging theories on climate injustice in Indian cities must consider the structural disenfranchisement experienced by the poor. Urban climate justice should place equal emphasis on distributive, procedural, and recognition equity to tackle the drivers of climate inequality (Chu and Michael 2019). We, therefore, call on climate change scholars and activists to envision more radical approaches to tackling the differential drivers of climate vulnerability and the root causes of development inequality, while also pursuing more inclusive decision-making processes and devising intersectional strategies to effect climate justice on the ground. Despite these aspirations, enacting such a radical reorientation in climate action in Indian cities will be challenging. Evidence shows that local plans are increasingly socially exclusive; climate actions still reflect logics tied to financial bankability, and multilateral actors are continuing to rely on speculative forms of infrastructure and service provision. In response, just and equitable forms of climate action in Indian cities must go beyond addressing the maldistribution of climate-induced losses and benefits to furthering the recognition of minority voices and redressing the highly unequal distribution of human capabilities and developmental rights.

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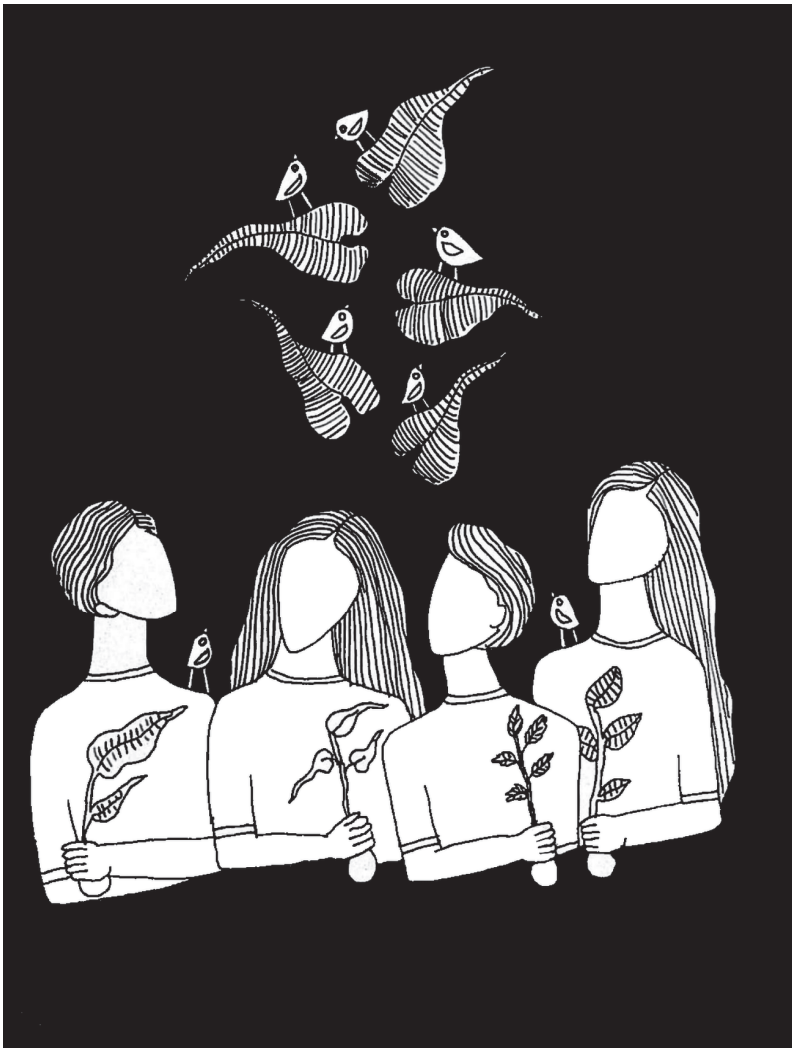

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