Localising environmental governance in India: Mapping urban institutional structures

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1 Introduction[1]

Urban regions across the world are emerging as critical actors in dealing with climate change (Revi et al., 2014 ; Stone Jr., 2012; The International Bank for Reconstruction and Development/The World Bank, 2010; Betsill and Bulkeley, 2006). This has emerged partly as a result of growing frustration with international negotiation processes and perceived inaction at the level of national governments, as well as due to the realisation that the impacts of climate change are going to be increasingly localised and possibly amplified in urban regions (Stone Jr., 2012). As India prepares for a large-scale urban transition and the urban population projected to increase from 377 million in 2011 (Census of India, 2011) to approximately 600 million by 2031, current and future urban populations are increasingly vulnerable to climate change. However, cities and urban regions are also sites of potential opportunity for innovative solutions in dealing with these risks. Focusing on two Indian cities, Bangalore and Chennai, this chapter looks at how these cities and their governments are dealing with the challenge of urban environmental governance, more broadly, and climate governance specifically.

Environmental governance in India has historically been underpinned by concerns around reconciling developmental priorities and economic growth with sustainable development pathways (Nair, 2015). Climate change has been largely regarded as a diplomatic rather than developmental or environmental challenge, focusing on preparing for international

climate negotiations and climate policy being almost synonymous with India's foreign policy on climate change. (Dubash and Joseph, 2015). "Developing and buttressing legal and conceptual devices to ensure allocations that are in India's interests– understood as ensuring that mitigation efforts did not limit India's options for energy policy and hence for growth – has become the first priority" (Dubash and Joseph, 2015: 10). However, over the last decade, there has been a gradual change in perceptions around climate change within national and state governments in India, as well as among various non-state actors including the private sector and civil society groups (ibid). Since 2007 especially, responding to international pressure for action, there has been a more focused domestic policy movement around climate mitigation and adaptation, including the creation of institutional structures and frameworks at national and state levels to plan and implement climate change action plans.

While growing interest in climate policy and its resulting initiatives are a welcome change, the larger challenge in the Indian context is perhaps the creation of an institutional architecture to enable the adoption and implementation of the adaptation and mitigation strategies that are being developed at the national scale. Although a process of creating this framework and the institutionalisation of climate policy began between 2007-09, the focus of these initiatives was at the level of the national and state governments. Urban governments have been largely absent in the Indian environmental governance framework, and climate change is no exception. As cities emerge as both locations of climate risk as well as drivers of sustainability (Betsill and Bulkeley, 2006), the absence of Indian urban governments is a serious concern.

Focusing on Bangalore, and Chennai, this research is particularly interested in understanding how a variety of urban stakeholders (state and non-state) participate in and influence climate governance, across scales and sectors in India. Using institutional mapping in both cities—and drawing on primary and secondary research, including interviews with a range of stakeholders and a review of planning documents, government reports and grey literature—this chapter argues that while there are a range of efforts across multiple scales and sectors underway to tackle climate and other environmental challenges, these are often piecemeal and not coordinated. Moreover, there is little engagement from state and local (city) governments in climate governance issues, and a lot of these efforts are an outcome of private or non-state actors and international agencies supporting environmental policy and processes in India.[2] There is no systematic approach at the urban or regional scale to specifically address questions of adaptation or mitigation—most environmental policy is broadly framed and addresses questions of sustainable development rather than focusing specifically on climate change. In the absence of an adequate institutional governance framework, this raises questions about the long-term sustainability of climate action in the Indian context.

The rest of this chapter is organised as follows: the next section builds on earlier and ongoing work on environmental and climate governance, both in India and elsewhere, and

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[2] A companion paper to this chapter focuses explicitly on the state and city planning process for climate change in Bangalore and Chennai (Sami, Forthcoming).

provides a broader context for climate policy and governance in India. That is followed by a mapping of the current institutional structure for climate governance, and a discussion of the climate governance framework at the city-scale, looking at state and non-state actors and their role in implementing policy at the local level. The conclusion discusses the implications of India's climate governance framework at the urban scale, looking especially at what this means for the country's rapidly growing cities and urban regions.

2   Climate policy and governance in the Indian context

The cornerstone of India's climate policy has been the idea of co-benefits ("or complementarities across development and climate policy"), emphasising the integration of climate policy into the broader domestic development agenda. India's position on environmental issues has and continues to be largely underpinned by concerns around reconciling developmental priorities and economic growth with sustainable development pathways (Dubash and Joseph, 2015: 9; Nair, 2015). One outcome of this emphasis on co-benefits is the assumption (especially at the sub-national level) that adaptation strategies are more desirable than mitigation or low carbon approaches, since they would be more easily amenable to serving the dual goals of development as well as sustainability, and would perhaps be supported more by the Ministry of Environment, Forests, and Climate Change (MoEFCC) (Dubash and Jogesh, 2014). This is true of most environmental planning in India, which emphasises good sustainable development practices that serve both economic growth as well as sustainability goals.

This means that mitigation solutions and other climate action strategies need to be woven into the larger economic development and growth narrative for the country rather than focusing on specific carbon reduction outcomes or other targeted goals (Parikh et al., 2014). As the report of the Expert Group on Low Carbon Strategies concludes "in such a 'development first' framing, mitigation of GHG emissions is seen as a co-benefit of a sustainable development policy, rather than as the principal objective. Consequently, rather than develop policies specifically for mitigating GHG emissions, the approach prioritizes those development strategies that yield greater decarbonisation – the development imperatives being equal" (Parikh et al., 2014, pp. 101). The various national and state Climate Action Plans also build on this notion of co-benefits and mainstreaming of climate policy. This focus on co-benefits whilst favouring adaptation over mitigation is also evident in the state climate action plans that both Karnataka and Tamil Nadu have developed (Sami, Forthcoming; Dubash and Jogesh, 2014).

This necessitates the creation of an increasingly complex governance framework around climate change involving integration across multiple existing departments and government agencies (Dubash and Joseph, 2015). Such a task needs a much more systematic approach to institution building than the current ad-hoc method offers, with roles and responsibilities being integrated across agencies. It also calls for a deeper understanding of the current challenges of developing such a framework at the national level and subnational (state or regional and city) levels. A further challenge is the already messy and complicated urban and regional governance structure in India, characterised by its fragmentation across state, city, and parastatal agencies (Weinstein et al., 2013).

Much of the academic and policy writing around environmental governance in the Indian context (and, to a certain extent, the global South) has focused on questions of conflict over resource allocation through governance institutions and the delivery of environmental services (Paavola, 2007; Lemos and Agrawal, 2006; Davidson and Frickel, 2004; Adger et al., 2003). While there has been some work that has looked at the challenges of climate governance for both adaptation and mitigation in the Indian context (Dubash, 2012; Williams and Mawdsley, 2006), this has either largely addressed issues at the national scale or the impacts on specific populations (Byravan and Rajan, 2008; Byravan and Rajan, 2006). It is only recently that emerging research has begun to focus on climate governance across scales, with an emphasis on the coming together of national and state (regional) scales (Dubash and Joseph, 2015; Dubash and Jogesh, 2014).

However, there remains a significant gap in understanding of the role that Indian cities and urban governments, as well as other non-state actors, can play in this process. Yet, it is not enough, though, to only focus on one particular scale at the subnational level. Environmental governance issues are not contained by jurisdictional boundaries, often blurring the distinction between different levels, nor do they only affect particular populations. Moreover, governments, their agencies, and officials are far from the only stakeholders—there is a growing involvement of non-state actors including community groups and NGOs, activists, academics, and international agencies and networks. A more flexible approach to understanding environmental governance therefore becomes important. In this context, it would perhaps be useful to consider multi-level governance frameworks that emphasise the relations between and across different levels of government as well as a range of state and non-state stakeholders (Corfee-Morlot et al., 2011; Gustavsson et al., 2009; Betsill and Bulkeley, 2006; Bulkeley and Betsill, 2005). This would be especially helpful in the Indian example where governance structures are fragmented, and responsibilities divided between agencies at the state and city scales. It would allow a focus on how competences and authorities are shared between different levels of government. It would also acknowledge that local authorities are not functioning in isolation, but are increasingly participating in governing coalitions that include a range of domestic and international actors (Bulkeley and Betsill, 2005). Finally, it recognises the role that these networks and actors play in setting the policy agenda and implementation (Gustavsson et al., 2009; Betsill and Bulkeley, 2006; Bulkeley and Betsill, 2005). Using this framework to understand environmental governance in India, it becomes apparent that there are several challenges with the participation of local governments in these processes.

While the growing involvement of national level agencies and state governments in climate policy has been a welcome change, city governments and other urban local bodies have been notably absent from this process. Taking a multilevel governance perspective allows us to examine how the local level alongside networks and governing coalitions between state and non-state actors across different levels of government can influence the implementation and interpretation of environmental sustainability (Bulkeley and Betsill, 2005). Historically, Indian municipal governments have had very little decision-making power and have acted largely as implementation agencies (Weinstein et al., 2013; Pinto, 2000). There has been little change in this, despite several legislative and policy attempts to decentralize urban government (Weinstein et al., 2013; Government of India, 1992). In

the case of environmental issues, this is further compounded by the lack of technical capacity within regional and local government agencies to deal with environmental questions as well as the absence of a clear mandate to officials on how to tackle these issues and which local agencies are responsible. Similarly, fragmentation of governance across scales and sectors, alongside a limited ability to take decisions given the concentration of power in regional governments, makes effective local action difficult. Other challenges include the lack of personnel in local or regional governments, a gap in technical capacity to understand and engage with the issues, and an absence of financial resources or the ability/authority to raise them. Few government officials at the local level consider this to be part of their core responsibilities, since climate change was added on to pre-existing functions.

These challenges have also limited various attempts by local stakeholders, international networks and donor agencies to engage with urban governments in India around climate policy. There are a range of domestic and international non-state actors that are actively trying to work on several environmental issues in Indian cities. These actors are actively trying to engage beyond the local level with governments as well as other non-state actors, across national, regional, and local jurisdictions, blurring urban, peri-urban, and rural boundaries. However, without the participation of urban local bodies, these efforts do not go very far, and effective implementation remains a struggle.

Challenges also remain in terms of different ministries and government agencies at the national level setting up parallel processes and systems, making coordination across different policies and departments very complex. In addition, building on the need to align developmental and environmental priorities, some policies and institutions at national and regional scales have been designed to cut across scales and sectors, while others remained entrenched in specific sectors or departments. However, this, combined with fragmented local governance structures, has posed a particular problem for effective multi-scalar governance. Finally, the setting up of climate institutions has been ad-hoc, and institutions have rarely been stable or long lasting (Dubash and Joseph, 2015). As a result, implementation of climate policy has been piecemeal and incomplete, driven largely by and dependent on motivated individuals.

The next section broadly maps the institutional framework across national, state, and city scales. This is important to not only understand the institutional architecture for environmental and climate governance at the subnational level in India, but also to identify challenges and opportunities to mobilise for effective climate governance within the current framework.

3   Mapping the institutional framework for environmental governance in India

While there is growing institutionalisation of climate policy at the national level, this architecture quickly breaks down at the subnational scale (regional/state and local/urban). This process has not translated into increased capacity or new staff being hired into any of these newly created structures. Technical skills have remained a concern, as has the lack of

broader based engagement beyond the government (Sami, Forthcoming; Dubash and Joseph, 2015). The national Ministry of the Environment, Forests, and Climate Change (MoEFCC) does not have a strong presence at the subnational level, and regional environment ministries often function independently of the national ministry, leading to a lack of coordination around policy creation and implementation. This is further compounded at the local level, given the lack of power vested in urban governments, a lack of capacity, and the absence of a clear mandate and responsibility to tackle environmental issues.

Local governments have limited ability to raise funds on their own and rely largely on higher levels of government for financial resources, and there has been little funding allocated in the national or state budgets for climate action and related policies. There has been growing national level interest and action around climate change both internationally and domestically since 2007. However, for climate action to be truly effective, this needs to be reflected at the sub-national scale as well—at the state and city levels. This, as we shall see, is more challenging, and one of the key reasons is the lack of a clear institutional architecture around environmental governance issues more broadly and climate governance in particular. The analysis in this section draws on institutional mapping and stakeholder analysis (Aligica, 2006; Smith, 2002) to understand the relative abilities of different climate governance institutions in India to undertake climate action.

3.1   National and state (regional) level institutions and climate change

At the national level, the Ministry of Environment, Forests, and Climate Change (MoEFCC) is "the nodal agency in the administrative structure of the Central Government for the planning, promotion, co-ordination and overseeing the implementation of India's environmental and forestry policies and programmes" (Ministry of Environment and Forests, 2017). The Ministry is divided by sector or area, the responsibility for each of which is assigned to a particular bureaucrat. There are approximately 25 Joint Secretaries or Advisors under the Environment Sector, looking after a range of environmental issues at the national scale. MoEFCC has set up ten regional offices across the country to provide additional environmental management support and advice at the state level (Ministry of Environment and Forests, 2014). These are distinct from the state environmental departments.

At the state level, each state has an environment department, headed by a minister from the state government. These set their own mandate based on the state's priorities. Whilst largely independent, they get some support from the national ministry. Institutionally, state and national environment departments are distinct entities. The institutional structure is distinct from state to state and does not extend to the city level or municipal scale.

Despite the strong presence of the institutional arrangement for environmental governance described above, state level institutions tasked with climate change are not always aligned to this structure. Since 2010, institutional nodes were established at the state (regional) level, to implement and take State Action Plans on Climate Change (or SAPCC, mirroring the NAPCC process) forward (Dubash and Jogesh, 2014). These were meant to be

complementary to national climate policy institutions. The state nodal institutions taking on board such responsibilities were not necessarily new agencies or organizations, neither were they always assigned to the pre-exiting organizational structure of each state's environment department; in several states climate change was added to the list of responsibilities of already existing institutions, while others created new institutions (ibid). The Karnataka state government, for example, appointed an autonomous institution under the Department of Forest, Ecology, and Environment – the Environmental Management and Policy Research Institute (EMPRI) as the nodal agency, whereas the Tamil Nadu state government created a new Climate Change Action Cell to formulate and take forward their Plan. The creation of these nodal agencies unfortunately has not resulted in the creation of institutional capacity at the state level to tackle climate change, since there has been little investment in building capacity, hiring technically skilled staff or decentralising decision-making to these agencies.

These nodal agencies were tasked with the preparation of State Action Plans on Climate Change (SAPCCs). Given the lack of technical knowledge and financial resources, most state governments turned to international donor agencies and/or consultants to help with plan preparation (Sami, Forthcoming). State nodal agencies, and consequently their plans, have had a weak engagement with climate science. They have also been characterised by a weak framework through which adaptation and/or mitigation strategies can be incorporated into mainstream policy (Dubash and Joseph, 2015). The process of plan formulation itself has been a closed one, mostly conducted by international consultants and with minimal participation from local and regional stakeholders. Despite the engagement with national level government agencies and several non-state actors (chiefly climate change experts or consultants), state climate institutions do not demonstrate a pattern of multilevel governance. These institutions very much limit themselves to governing specific aspects of environmental issues within their own administrative boundaries.

The remaining sections of the chapter focus on the institutional architecture of climate governance in two case studies at regional and local levels, both of them in southern India: the state of Karnataka and its capital city, Bangalore, and the state of Tamil Nadu and its capital Chennai. Both states share several similar problematics: they are among the most urbanised states in the country, rapidly growing and economically powerful, with a growing service sector economy built around domestic and global networks. In terms of environmental issues, Karnataka's biggest challenge is water, particularly drought and growing depletion of groundwater. Tamil Nadu also has to tackle a range of coastal management issues, with a growing risk of extreme weather events such as hurricanes. Both states also face growing urban environmental challenges, including unsustainable land use patterns, urban heat island effect, pollution and waste management issues (Sami, Forthcoming). Each state, however, has created its own institutional architecture to respond to these challenges.

3.1.1 Karnataka and Bangalore

In the state of Karnataka, the Department of Forest, Ecology, and the Environment is responsible for the protection and enhancement of natural resources. It also coordinates and implements environmental acts and rules made by both the national and state governments. The state department has six sub-regional offices to help with the execution of its responsibilities and monitoring compliance. The emphasis within the state department is largely on forestry, conservation, and pollution control. Climate change does not explicitly feature in its mandate. There also seems to be little connection between the state department, its offices, and the regional offices of the MoEFCC (one of which is located in Bangalore). The discussion in the previous section points to an obvious disconnect between the institutional framework at the national and the state levels.

EMPRI officials, the state level nodal agency to engage with the SAPCC creation process, had a state-wide mandate for climate change planning, specifically for the SAPCC process. Their plan development experience was different than most of the other states, since they actually attempted to engage with a range of stakeholders both within government (at the state and city level) and outside. EMPRI's plan drew extensively on academic and scientific knowledge from leading academic institutions in Bangalore. Officials also conducted a range of interviews with other government departments, most of these at the state level, and reached out to a number of local city agencies in Bangalore (Sami, Forthcoming; Dubash and Jogesh, 2014). As an institution, EMPRI is largely research and training focused: they have no authority to raise funds or to implement the plan. They also do not fit neatly into the institutional structure outlined in Figure 1 EMPRI takes direction from the state department, and is dependent predominantly on them for funding. They act in an advisory capacity, and have no enforcement authority. EMPRI expressed frustration with the lack of funding available to implement any of their proposed activities as part of the SAPCC, since they lacked the ability to be able to raise funds themselves. EMPRI officials said that since they already had some funding to test their climate-focused pilot projects, the state was not eligible for more financial support from the national government, and were being encouraged to look for funding from other (private sector or international institutional) sources. As a research institution, it was harder for them to raise funds for project implementation, which would be easier for governments to undertake.

There is very little in Karnataka's SAPCC that focuses explicitly on urban climate governance. According to EMPRI officials interviewed in the context of this research, there was little interest among city officials to engage with climate change related issues. At EMPRI itself officials come from the Forest Service and are trained in conservation or forestry for the most part. There was little interest or technical capacity to deal with urban environmental issues broadly, or climate change in particular. EMPRI officials emphasised the lack of capacity as a concern when dealing with urban climate issues (Dubash and Jogesh, 2014). Explaining that their areas of specialisation had little urban focus (e.g. agriculture, animal husbandry, horticulture, or forestry) they expressed their inability to understand the kinds of climate challenges that urban regions face, particularly because of a lack of training/skill sets. There are four to five adaptation-related pilot projects being tested, but most of them focus on adaptation strategies in agriculture, horticulture, and animal husbandry. Officials at EMPRI were unaware of any specific climate change-related issues being undertaken by city agencies in Bangalore.

In Bangalore, at the city scale, there is no single agency that has a mandate to deal with urban environmental issues, including climate change. Although there is acknowledgement of climate change as an issue at higher levels of the state bureaucracy, this had not yet translated into specific, directed policy action on either adaptation or mitigation. Governance in the city, arguably fragmented, is characterised by a set of functional overlaps amongst local agencies (Table 2). There are several city and parastatal agencies responsible for a range of aspects of environmental governance. For example, there are at least six different city agencies governing Bangalore's roads, shown below. There are five key agencies with urban and regional influence and impact whose remit aligns within climate change and low carbon development issues: the Bangalore Development Authority (or the BDA, the city's chief planning agency), the Bruhat Bengaluru Mahanagara Palike (or the BBMP, the city's municipal corporation), the Bangalore Water Supply and Sewerage Board (BWSSB), the Bangalore Electricity Supply Company (BESCOM), and the Bengaluru Metropolitan Transport Corporation (BMTC). However, across these five agencies there is little acknowledgement of climate change as an urban issue.

Agency	BBMP	BDA	BMRDA	BWSSB	BESCOM	BMRCL	BMTC	KSRTC	KUIDFC	KSCB
Jurisdiction	Municipal limits	Urban dvpt. area	Metro area	Metro area	Metro area	Metro area	Metro area	State-wide	State-wide	State-wide
Water, sewerage, & drainage	Coordinating		Coordinating	Original						
Electricity	Coordinating				Original					
Transport: road	Coordinating	Coordinating	Coordinating				Original	Original	Coordinating	
Transport: rail	Coordinating					Original				
Road infrastructure	Original	Overlapping	Overlapping							
Development control	Coordinating	Original	Overlapping						Overlapping	
Slum clearance & rehabilitation	Overlapping								Coordinating	Original
Urban finance	Coordinating	Original	Overlapping						Original	
Tax collection	Original									

Original function		Overlapping function		Coordinating function	

Table 1: Bangalore urban governance (Sami, 2017)

There has been considerable interest from a range of international donor organisations to support local climate action in Bangalore, including the Rockefeller Foundation and the Climate and Development Knowledge Network (CDKN). In addition, there are isolated instances of local environmental groups organising around specific issues, such as the preservation of green cover or the restoration of Bangalore's lakes, although these are typically reactive and rarely sustain the momentum. These networks of city-based environmental groups play an important role in developing and supporting coordination across state and city levels, through lobbying government agencies to take action or channelling the funds provided by international donor agencies to push state governments

towards local implementation. These remain piecemeal efforts. Moreover, according to individuals in donor agencies, working with government agencies at any level is challenging, especially from outside the government. It takes a significant amount of time to build trust within the government. This is often compounded by frequent transfers of officials, and a lack of interest in climate change or environmental issues. In the experience of international donor agencies that have been working with urban local governments in India, it is easier to work with governments with little capacity but interested in tackling these challenges, than to work with a very competent set of officials at a well-resourced government agency but with no interest (Sami, Forthcoming).

Bangalore has a complex web of state and city agencies, as well as non-profit and citizen groups. If we try to map these institutions in terms of their spatial scale, functionality or power, we get a picture of fragmented governance. In terms of scale, the Department of Forest, Ecology, and the Environment and EMPRI both have broad spatial coverage, since their responsibility is for environmental management or climate change planning across the state. However, in terms of functional coverage, both are very narrow. The state department is focused largely on forestry, conservation, pollution control and similar issues, and, for the most part, is concerned with enforcement and compliance. EMPRI is a research institute and its role is limited to knowledge production and dissemination. Given the weak capacity within EMPRI to engage with climate change issues, donor agencies as well as community-based groups prefer to engage directly with the state government rather than with the nodal agency.

At the city scale the challenges are different. Several city agencies with some form of environmental remit are appointed and controlled by state departments. The BDA (the chief planning agency) and the BBMP (the municipal corporation) have jurisdiction within Bangalore city limits, and probably have the widest functional coverage of the city agencies discussed here. However, there is no capacity within the BDA or BBMP to deal with environmental issues. The current draft of the Bangalore Master Plan includes an emphasis on planning for climate change as part of its mandate (Sami, 2017). However, by mid 2017, as this book goes to print, the Master Plan was under litigation and its implementation timeframe was uncertain. City utility agencies, also controlled by the state government, have jurisdictional boundaries that are different from each other, making coordination challenging. Their focus is also largely on service delivery. In addition, there are typically multiple agencies involved in governing these services.

Overall, the control and power that the state-level environmental agencies have over local or city-scale climate change issues is limited. Environmental concerns come second to economic development and growth priorities at all levels of government. The state department has the power to make decisions about specific environmental issues and enforce them, but it focuses more on compliance rather than progressive environmental regulations. EMPRI has no authority at all either to make or enforce decisions—the SAPCC that EMPRI prepared therefore is difficult to enforce. Among city-level agencies, the BDA is perhaps the most powerful in terms of decision-making as well as enforcement followed by the BBMP, but they lack engagement or capacity to act. While the utility agencies have a relatively greater degree of power with respect to enforcement, their decision-making

ability is weak, since these are largely made at the state level. When it comes to capital and investment capacity, across all state and city level institutions, there is little political support for climate change and related action. There is some scepticism around climate change being a urban/regional issue, rather than something that should be resolved at a national and international level.

In summary, in the case of Karnataka and Bangalore, there seems to be little connectivity between national, regional and local institutional frameworks for climate change. The urban is largely missing from the state's plans to address environmental sustainability or climate change. There are few specific institutions charged with climate action apart from the designated nodal agency (EMPRI), which in turn has little power to propose, enforce, or implement policy. While there is an attempt being made to align with the eight NAPCC missions launched in 2008 at the national level, the decision regarding which of these missions to adopt is left to the discretion of the state governments. As we shall see, the case is not very different in Tamil Nadu, despite being one of the few Indian state governments to have decentralised urban governance (Sami, Forthcoming).

3.1.2   Tamil Nadu and Chennai

In the state of Tamil Nadu the institutional responsibility for environmental governance is divided between two agencies: the Department of Environment and the Tamil Nadu Pollution Control Board. Following the spate of recent weather-related extreme events (from the tsunami in 2005 to the floods of 2015), there have been a series of proposals to tackle natural disasters like floods and hurricanes. However, these are largely reactive, developed in the aftermath of an extreme event, and the disaster management process seems to gradually lose momentum. There is also a regional office of the MoEFCC in Chennai (Table 1). However, as in the case of Karnataka, there seems to be little interaction between this and the state's agencies.

Rather than designating an existing agency, like Karnataka, Tamil Nadu created a new nodal agency for the SAPCC process: the Tamil Nadu Climate Change Cell (TNCCC), based within a local university. Tamil Nadu also hired an international consultant—the German Development Agency, GIZ—to help with the development of the plan. However, as of 2017, there had not been much progress on plan implementation. There was limited information released to the public on the TNCCC's activities or proposed plans. There have been isolated instances of climate action at the regional and city level, led by citizen groups or international agencies such as GIZ, but these have not been coordinated or aligned with the Tamil Nadu SAPCC process.

According to local activists and researchers, climate change is not a priority at the state or city level, despite an acknowledgement of the gravity of the issue from high-level state officials. Consequently, there is little explicit engagement around climate action (either adaptation or mitigation). A recent move towards renewable energy (especially solar) is an exception to this. There is more engagement around specific environmental issues, including a progressive movement around sustainable agricultural practices, and water

related issues (i.e. conservation, flooding and pollution). However, none of these is a coordinated effort and ends up being piecemeal. Several activists, consultants, and academics expressed frustration with institutions in the state, explaining that although there is a very wide range of institutional actors in Tamil Nadu with a clear and explicit mandate for environmental action, they do not enforce it.

At the state level, there are several institutional actors that impact environmental management. These include the State Planning Commission, the Public Works Department, State and District Coastal authorities, and the Forest and Wildlife Department. Of these, only the Coastal Authorities and the Forest Department come under the formal authority of the state's Department of Environment. In terms of spatial coverage, almost all of these have a state-wide mandate, with the exception of the Coastal Authorities and the District authorities. As with Karnataka, the functional coverage of each agency varies however. The State Planning Commission probably has the broadest functional coverage, since it is responsible for the creation of the State Five-Year Plans, and can mainstream climate policy by factoring it into the plans.

However, it is unclear if or how the State Planning Commission will continue to function, both in view of the dissolution of the National Planning Commission in 2014, and also the political instability in Tamil Nadu from 2016, which has yet to be resolved (in mid-2017). The institution with the next widest functional coverage is the Public Works Department, responsible for construction and maintenance of physical public infrastructure in the state including state buildings, roads, and bridges, and the management of water resources. The Coastal authorities have medium functional coverage, since they are limited to coastal regulation issues, but can have an impact on a range of issues through policies that they enact. The Forest and Wildlife department's coverage is similar to that of the State Coastal Authority: restricted spatially and functionally to issues related to and concerned with forests, wildlife, and tribal welfare. Almost all of these agencies have limited powers and capacities. They have limited ability to make decisions, and operate largely as enforcing agencies. Most decisions are taken by departments within the state government. However, because several agencies share responsibility for managing a particular resource or function, there are frequent jurisdictional and functional conflicts, which also impact enforcement. Finally, most agencies are weak in terms of both political and financial capacity, with little government funding available to them to be able to implement plans. Finally, with the exception of a few individual officials, there is little buy-in on topics of climate change.

The Chennai story is similar to Bangalore: there is no single agency that has the mandate for urban environmental governance, but rather a range of city and parastatal agencies responsible for different aspects of environmental management. The Chennai Metropolitan Development Authority (CMDA) and the Chennai Municipal Corporation (CMC) are both responsible for urban planning in the city. The CMDA has wider spatial coverage than the CMC since it is responsible for the greater Chennai urban region. In terms of functional coverage, the CMDA is the chief master planning authority although the CMC is responsible for land use planning and solid waste management. There are a few sustainability and low carbon initiatives that have been factored into planning regulations (such as rainwater

harvesting or switching to solar water heaters), but these are not part of a larger coordinated effort around climate action.

There is a considerable presence of international donors in Chennai. The city is part of the Rockefeller Foundation's 100 Resilient Cities Programme. The programme has struggled to get a foothold in Chennai for a number of reasons, including a lack of engagement at higher levels of government and a perception by local stakeholders that it was 'corporate funded and led'. GIZ is also closely involved with environmental planning in Chennai, as well as Tamil Nadu, but largely in an advisory capacity (they helped to prepare the SAPCC). Both the 100 Resilient Cities Programme and GIZ are weak on scale and power, but have some political and financial capital. While this has allowed them to engage with environmental issues in the city, they haven't managed to have much impact because of a lack of power to enforce or implement decisions. Both these international agencies have engaged largely with city level agencies rather than the state government. As a result, they have not been able to get much traction, since the decision-making authority lies with the state and not the city.

There are also several citizen movements in Chennai and surrounding areas. However, these have focused on particular moments or instances (such as the 2015 floods), but have not gained traction beyond a particular neighbourhood or issue. These movements are very limited in terms of scale (functional and spatial) as well as power (although some Resident Welfare Groups are beginning to try and enforce policy within their neighbourhoods). They have moderate political capital across the city, which enables them to mobilise citizens to get involved.

In the case of Tamil Nadu and Chennai, just as in Karnataka and Bangalore, there is a complex web of institutions and actors that have potential to act but are unable to leverage this potential. One of the chief reasons for this is the influence that electoral party politics has on planning and development in the state in general. When local and state governments are controlled by the same political party, policy making and implementation is smooth (Sami, Forthcoming; Tanner et al., 2009). On the contrary, when there are different political parties in charge, policy making and implementation breaks down. Interview respondents complained about a 'governance deficit' within the various government institutions at the state and city scale. They lamented the lack of communication and coordination across these agencies, which, they suggested, was one of the reasons why officials were unable to act to enforce their environmental management mandates.

4 Conclusion

By mapping the various institutions involved at the national, state, and local levels, this chapter has attempted to delineate the environmental and climate governance architecture in India. There is a range of institutions at multiple scales that have the mandate to act on environmental sustainability, with a growing awareness around climate change in particular. This has manifested itself, at the national and state level, in the creation of a number of new institutions that are responsible for climate action. However, in reality, few

of these institutions are stable, and their functioning is ad-hoc and driven by motivated individuals. In addition, if Indian climate policy is indeed focused on a co-benefits approach, mainstreaming of climate action is essential, and needs a much more knowledge-based integrated approach than is currently the case.

The institutional architecture created at the national level to tackle environmental and climate change issues takes on a different structural form at the state level. While most states have a designated department responsible for environmental issues, these are typically within the state legislature with mandates differing from state to state (as in Tamil Nadu and Karnataka), and have little interaction with the national ministry. National-level institutions rarely have state or city level counterparts. This makes continuity in policy difficult, particularly because state agencies have different priorities, as in the case of the NAPCC and the SAPCCs, for example, and restrict themselves to acting within their administrative boundaries. In addition, there is limited engagement with other stakeholders outside of government, such as academic institutions, private sector entities or community groups. International donor agencies such as the Rockefeller Foundation, and those who work with them at the local level, also experience significant challenges in getting a foothold within regional and local government to be able to influence the implementation of low carbon and other climate or environmental initiatives.

Overall, urban and regional governance in India is fragmented and weak, and there is little engagement with climate policy. Local governments lack personnel and technical capacity, and, as illustrated by Chennai and Bangalore, have not sufficiently leveraged the presence of a range of domestic and international non-state actors. The relationship between state and city government remains top-down, with local agencies responsible for implementation and the decision-making occurring at the state level. The largest challenge, however, is to build support for climate action within state and local government officials. There remains a perception within state and city agencies that climate change is beyond their mandate—an issue that needs to be resolved at a higher scale by national governments. However, in the absence of city or state government agencies taking on a coordinating role for climate action across different scales of government and different sectors, this role is being increasingly taken on by non-state actors such as donor agencies or community-based groups. The challenge is that their influence is limited, and often very focused on a particular problem or sector. Also, without the support of government agencies (especially at the state level), it is almost impossible to move to implementation. Consequently, any investments made in plan development or policy-making do not amount to much if they do not have the support of government agencies at the state level.

Urban governments and their agencies have the potential to play an important role in mobilising climate action at the city-scale. There are isolated examples of Indian cities and individual champions that are beginning to take action on climate-related issues such as Surat, but these remain few and far between (Sami, Forthcoming). There are also opportunities to engage with several non-state actors such as local academics, community organisations, and private sector entities to help fill the technical and knowledge deficit within government and to help mobilise effective climate governance. However, given the

Indian governance framework and the lack of power within urban governments, and as the examples of Karnataka and Tamil Nadu show it remains a latent potential.

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