World Resources Report

TOWARDS A MORE EQUAL CITY

Pune: Coalitions, Contradictions, and Unsteady Transformation

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EXECUTIVE SUMMARY

Highlights

▶ Diverse civil society organizations, in collaboration with open-minded municipal government representatives, have leveraged supporting national policies to help lead Pune towards transformative change.

▶ Two sectors have shown notable progress for both citizens' quality of life and the city overall: transport and solid waste management.

▶ Sustainable transport efforts include India's first bus rapid transit system and a pro-pedestrian street design. However, these efforts were challenged by the construction of flyovers, the widening of roads, and decisions within the bus rapid transit system that sabotaged its success.

▶ Solid waste management centered around creatively integrating waste pickers into the city's solid waste management systems. Sustainable solid waste management was introduced under enabling state and national policies, but has declined with corporatization and the sector's newfound profitability.

▶ To achieve lasting transformation, municipal financial, planning, and governance systems need to be strengthened, with additional autonomy granted to the Pune Municipal Corporation. Ideally, the state of Maharashtra would commit to urban sustainability and to supporting its cities with financial, technological, and institutional knowledge.

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Summary

Pune is an economically and politically dynamic city, well-woven into networks of goods, services, and ideas. However, it faces the increasing service and infrastructure demands associated with rapid growth. This case study looks at how civil society organizations (CSOs) and the local institutions interacted with state- and national-level policies and funding to forge innovative solutions to challenges in the transport and solid waste management sectors.

The paper examines transformative change in the transport and solid waste management sectors in Pune, India, between the 1990s and the present. Based on our theory of transformative change, it identifies triggers of change; explores the roles of enabling and inhibiting factors such as governance, finance, and planning; and examines the extent to which transformative change has been institutionalized. We analyze existing research, government data, and key informant interviews with representatives from government, civil society, and academia to consider whether and how transformative change has taken place.

Given the limited powers that Indian cities have, policy options must be framed within broader national and state contexts, which can be split into three phases of the 1992–2018 time frame that this study covers. The first phase, from 1992 to 2004, saw greater power allocated to Indian cities by the 74th Constitutional Amendment Act (CAA), along with a broader movement towards decentralization and economic liberalization. This provided greater capacity and authority for the local government, through the Pune Municipal Corporation (PMC), as well as broader space for CSOs' participation that allowed them to gain credibility and authority. The second phase, from 2005 to 2013, was dominated by the Jawaharlal Nehru National Urban Renewal Mission (JNNURM) that provided funds for infrastructure and basic services to the poor in exchange for urban governance reforms that promoted expanded roles for both CSOs and private firms, strengthening a technocratic approach that marginalized elected politicians. In this phase, CSOs took advantage of their greater role; many different coalitions were formed and partnerships with the PMC were consolidated. The third phase began in 2014 with the launch of the Smart Cities Mission. It further disempowered elected politicians through the establishment of special purpose vehicles[1] for project execution, while strengthening the role of private consulting firms and splintering local government authority. This third phase has also revealed the inability of CSO coalitions to accelerate change processes.

Pune's transformation towards sustainable transport began in the early 2000s. This has included efforts to reduce dependence on private vehicles by improving public transport, with the implementation of India's first bus rapid transit system (BRTS, sometimes also referred to as BRT), and creating more inclusive street space by emphasizing nonmotorized transport. Working within the framework of the National Urban Transport Policy and funding programs such as the JNNURM, CSOs helped nudge progressive city officials in this direction. However, this shift towards sustainable transport happened in an uncoordinated and incremental manner, with decisions supporting competing agendas. As a result, progress has not been linear.

Improvements in Pune's solid waste management systems have explicitly linked environmental, labor-related, and economic aspects of life in the city, driving the creation of new national-level policies and taking advantage of existing ones. Waste pickers organized to form a union in 1993 and were incorporated into formal municipal solid waste management (MSWM) service provision systems with the support of the CSO coalition Waste Matters, winning identity cards and benefits. National-level MSWM rules emerged in 2000 that acknowledged the role of waste pickers and incorporated their view that waste could be a resource with which to promote waste segregation, processing, and recycling. Spurred on by a state government deadline to achieve door-to-door waste collection, in 2008 the PMC launched a partnership with Solid Waste Collection and Handling (SWaCH), India's first fully self-owned waste-pickers cooperative. After initial success, the waste industry's increasing corporatization and profitability has reduced the PMC's support of the effort, and the city now seems to be shifting gears, moving towards more technology-based and centralized waste collection.

CSOs played key roles in both sectors, aligning with the municipality to catalyze positive reforms that affect labor, the economy, and the environment. They overcame differences among themselves to form effective coalitions that provided intellectual leadership, inputs into government policies and processes, and scalable pilots that triggered and sustained changes in both the transport and solid waste management sectors. However, while they have helped Pune move forward, they are not a substitute for effective government to plan, finance, and institutionalize necessary reforms. Thus, we recommend that municipal financial, planning, and governance systems be strengthened and that the PMC be given more autonomy, and be bolstered by policy and strategies that commit the state to supporting urban sustainability.

About This Paper

This case study is part of the larger World Resources Report (WRR), *Towards a More Equal City***, which considers sustainability to be composed of three interrelated issues: equity, the economy, and the environment.** The WRR uses equitable access to urban services as an entry point for examining whether meeting the needs of the under-served can improve economic productivity and environmental sustainability for the city. The case studies examine transformative urban change defined as that which affects multiple sectors and institutional practices, continues across more than one political administration, and is sustained for more than 10 years, resulting in more equitable access to core services and a more equal city. The goal of the WRR is to inform urban change agents—government officials, policymakers, CSOs and citizens, and the private sector—about how transformative change happens, the various forms it takes, and how they can support transformation towards more equal cities.

Box 1 | Abbreviations

BRTS	bus rapid transit system
CAA	Constitutional Amendment Act
CEE	Centre for Environment Education
CMP	Comprehensive Mobility Plan
CSO	civil society organization
DP	Development Plan
GB	General Body
IAS	Indian Administrative Service
ITDP	Institute for Transport and Development Policy
JNNURM	Jawaharlal Nehru National Urban Renewal Mission
KKPKP	Kagad Kach Patra Kashtakari Panchayat
MoEFCC	Ministry of Environment, Forests and Climate Change
MoUD	Ministry of Urban Development
MP	Member of Parliament
MSEDCL	Maharashtra State Electricity Distribution Company Limited
MSWM	municipal solid waste management
NUTP	National Urban Transport Policy
PCEF	Pune Citizens' Environment Forum
PCMC	Pimpri Chinchwad Municipal Corporation
PMC	Pune Municipal Corporation
PMPML	Pune Mahanagar Parivahan Mandal Limited
PTTF	Pune Traffic and Transportation Forum
SIDA	Swedish International Development Agency
SPV	special purpose vehicle
SWaCH	Solid Waste Collection and Handling
UDD	Urban Development Department
WRR	World Resources Report

Figure 1 | City of Pune at a glance

Access to electricity (% households)[h]		**98**
Access to piped water on premises (% households)[i]		**94**
Coverage of sewerage systems (% households)[j]		**97**
Trips by mode (%)[k]:		
	Private cars and two-wheelers	**42**
	Public transport (bus)	**18**
	Walking and cycling	**30**
Average trip length (km)[l]		**6.4**
Average prices of urban services (US$):		
	Electricity (per kWh)[m]	**$0.10**
	Water (per m³)[n]	**$0.08**
	Sewage treatment (per m³)[o]	**Linked to property value**
	Public transport ride[p]	**$0.08-0.38**
	Informal transport ride (auto-rickshaw,Ola/Uber, per km)[q]	**$0.27-0.46**
Average price of gasoline (price per liter, US$)[r]		**$1.10-1.16**
Primary decision-making level for cities:		**General body of Pune Municipal Corporation, followed by State Government**
Type of city leader, term years and term limits:		**Mayor and Deputy Mayor, 2.5 years** **Standing Committee Chairperson, 1 year** **Municipal Commissioner, 3 years**

Type of jurisdiction		**Municipal corporation**
Population in:	1951[a]	**488,419**
	2001[b]	**2,538,473**
	2011[c]	**3,124,458**
Total land area (in km²)[d]		**250.56**
GDP per capita, Pune[e]		**$1,821**
Human Development Index, Pune		**N/A**
Human Development Index, India[f]		**0.62**
Gini coefficient, Pune		**N/A**
Population living below the poverty line (%)		**N/A**
Population living in informal dwellings (%)[g]		**36**

Notes: All prices are reported in $US using market exchange rates corresponding with the source's year.

Sources: Authors' compilation from various sources, including: a–b. PMC City Census Department, 2017a; c. PMC City Census Department, 2017b; d. PMC, 2015; e. GDP per capita was calculated using data from Pune Smart Mission and converted to US$ using market exchange rates from 2009–11. Please note that this figure varies among other sources; f. UNDP, 2016; g–j. PMC, 2015; k. PMC, 2016b; l. PMC, 2008; m. Based on authors' personal correspondence with Maharashtra State Electricity Distribution Company Limited (MSEDCL) in Pune, November 2017; n–o. Based on authors' personal correspondence with the Pune Water Supply Department in Pune, November 2017; p. PMPML, 2016; q. Taxi Auto Fare, 2017; Uber, 2017; r. CheckPetrolPrice.com, 2017.

1. PUNE'S PATH TO TRANSFORMATIVE CHANGE

This case study examines the processes of transformative change and the conditions enabling and inhibiting it in Pune, the second largest city in Maharashtra state, India. Many initiatives across diverse sectors have had a positive, qualitative impact on sustainability and service provision in Pune, particularly in its solid waste and transport sectors. These initiatives reflect important shifts in the local government's attitudes and systems towards greater sustainability and equity, and have the potential to positively affect many lives. However, while Pune exhibits positive signs that it is on a trajectory of urban transformation, we conclude that Pune has not yet achieved this in a durable way.

The solid waste and transport sectors have complex and varied pathways to change due to their specificities, including different opportunities and costs for change. For example, transport governance is more centralized and has less opportunity for civil society organization (CSO) partnerships than does municipal solid waste management (MSWM). Overall, both sectors are characterized by CSO coalitions that drive change by collaborating with a relatively receptive Pune Municipal Corporation (PMC). This culture of initiating change—both within the local government and among CSOs—has historical origins. With the state government's consistent support, the PMC has acquired significant institutional capacity over time (in terms of funds, functions, and functionaries). In addition, a well-educated middle class has emerged that is committed to collaborating with and putting

pressure on the PMC to move towards urban sustainability and equity. Both of these factors make Pune special in its ability to adopt a path towards transformative change, though do not guarantee its durability.

Pune's leadership is distributed among CSO coalitions and the PMC, but CSO coalitions' contributions have been particularly significant despite the groups' small scale (see Figure 3). CSO leadership contributes visions, ideas, and technical advice to both the transport and MSWM sectors, and CSOs help facilitate primary waste collection in the MSWM sector. Thus, CSOs provide intellectual leadership (providing ideas for change within and across sectors), support in execution (initiating demonstration projects), service delivery (undertaking primary solid waste collection), and support for institutional changes (creating administrative protocols, informing local and national policy).

CSO networks adopt a particular approach that is characterized by two features. First and foremost, their efforts are geared towards the PMC; they respect the PMC as the elected local government and chief implementer, and thus work with it through collaboration, confrontation, or negotiation. However, since local governments are weak in India, CSOs often jump scales in initiating and sustaining specific initiatives—weaving back and forth between local, state, and national governments depending on where decisions are made, and figuring out how to leverage the authority of higher levels of government. In both transport and MSWM, CSOs have leveraged the national or state government's policy pronouncements or court rulings to lobby the PMC for change. An interview with one CSO member revealed that CSOs see laws as crucial for legitimizing and leveraging change.[2] Furthermore, when the PMC refuses to make politically difficult decisions, CSOs have lobbied the state government to use its power to overrule the municipality.

The second feature is CSO coalitions' multidimensional vision of urban sustainability, which has catalyzed significant partnerships with the PMC over time. To develop their visions, CSOs draw on relevant global research and innovations in making cities more sustainable. Their visions have been used to leverage and inform national and regional policy and governance. Initially focused on environmental issues and civic education, this vision now encompasses governance, finance, planning, appropriate technology, and commitment to longer-term democratic and public participatory processes.[3] Coalitions have emerged around issues, within sectors, and across sectors. These coalitions have facilitated recurring, working relationships between member CSOs, activists, and

a few consultants, thus reinforcing the network's structure and vitality. Such work has expanded their sphere of influence from sector to city, evidenced by the formation of city-wide forums like the Pune Citizens' Environment Forum (PCEF),[4] which works on a range of issues like conserving biodiversity and developing groundwater policy based on aquifer mapping. This has enabled joint initiatives with the PMC that have helped institutionalize the coalitions' approach. For example, the PCEF worked with a Development Control Regulation Committee to devise a 10 percent tax remit for households that invest in home composting, solar energy, and rainwater harvesting.[5] The PCEF was also involved in Pune's bicycle promotion program, participatory budgeting, and nascent activity towards activating area *sabhas* (area committees), the nationally proposed third tier of governance (below the city and ward level) that is currently non-functional in most Indian cities.

While CSO networks' multiple roles and contributions must be acknowledged, they lack political or executive power. In the Indian context, where cities are politically weak, multiple institutions and scales of government need to cooperate to achieve city-level transformative change. This makes the involvement of both the municipal and state government critical.

The PMC has shown remarkable receptiveness to the CSOs' agenda and taken a leadership role in executing the initiatives proposed by CSOs. State-appointed municipal commissioners (MCs) and a few well-informed politicians have put their power behind the CSOs' agenda and found innovative ways to push it, along with their own ideas, through the bureaucracy. There are several instances in which they have been successful, as evidenced by resolutions passed in the PMC's General Body, which is comprised of all the elected councilors. However, the PMC is internally divided, and change has been initiated without explicit consensus or wholehearted commitment. Several local politicians and municipal officials have also resisted the CSOs' agenda, seeing it as detrimental to their personal or professional interests.

The policy incoherence found at the city level is also witnessed at state and national levels of government and largely caused by fragmented governance spread across multiple institutions. Thus, national and state governments have provided leadership through policy and regulatory frameworks that are sometimes supportive, but occasionally inhibiting. Overall, local and state governments' lack of an explicit, coherent vision and an institutional will for transformative change has created the conditions that led the PMC to adopt multiple contradictory models that

accommodate opposing interests. This has resulted in mixed outcomes and contested and uncertain transformation that is only partially institutionalized.

Methodology

This case study is part of the larger World Resources Report (WRR), *Towards a More Equal City*, which focuses on equitable access to core services. The WRR is a series of working papers on housing, energy, the informal economy, urban expansion, water, sanitation, and transportation that analyze sectors and themes across *struggling* and *emerging* cities in the global South.[6] The WRR also features a series of city-level case studies on urban transformation, of which this case study is a part.

In the WRR, by definition, transformative urban change addresses a seminal problem that negatively affects many people's lives and involves multiple sectors and institutional practices. It continues across more than one political administration and is sustained for more than 10 years. Experience suggests that when cities solve a problem that affects many people, it creates momentum for change that has the potential to positively affect other spheres in a broad, virtuous cycle. Each of the WRR city-level case studies examines how approaches to addressing seminal problems have (or have not) triggered broader cross-sectoral, institutional, city-wide transformation and explores how transformative urban change occurs. It is important to note that every case has progressive and regressive elements, and every city experiences difficulties, conflicts, setbacks, and false starts. This case study explores these questions with respect to challenges involving transport and MSWM in Pune.

The study began with a detailed analysis of important initiatives in the domains of transport and MSWM to understand their impact on the city's environment and equity. We undertook an in-depth study of the BRTS along with an overview of multiple, connected initiatives in transport. For MSWM we focused on one innovation: the SWaCH model. The differences between the two domains reveal the diversity of pathways of change underway. We also examined the nature and linkages of CSO coalitions and partnerships with the PMC beyond these two domains to understand the expanding influence of change processes.

We analyzed three sources of data. We reviewed secondary literature and secondary data, through which we identified sectoral proposals and investments in city programs, and

service outcomes, since the 1990s. We also interviewed 20 key informants from diverse perspectives—academics, politicians, bureaucrats, and representatives from CSOs, the private sector, and the media.[7] Our primary data focused on explaining the policy choices made, studying moments of decision, conflict, and resolution, and examining the impact of policy outcomes on different groups.

2. PUNE: GROWING CHALLENGES FOR A STRONG CITY

Pune is the second-largest city in Maharashtra state (see Figure 1). It has become an economic powerhouse, first on the basis of its manufacturing sector and later because of its information technology (IT) sector. It has an advantageous location; it is a three-hour drive from Mumbai, the largest city in the state and its economic center, and is well connected to big cities in the south and west. Pune has plentiful sources of water, and water scarcity does not limit the city's expansion. It is also an educational center with a large pool of skilled manpower. This has enabled robust municipal finances; the PMC's annual budget was Rs. 34.84 billion ($518 million) for 2015–16, with its own sources of revenue[8] accounting for between 80 percent and 95 percent, compared to an average of 36 percent for the largest 20 cities in India.[9] Pune is also home to a large, educated middle class that is leading the IT boom as well as CSO activity.

There is a dark side to the city's growth, however. Its population increased 2.6 times between 1981 and 2011.[10] The city has also expanded in area; 23 villages were annexed to it in 1997. The rapid demographic growth and urban expansion have contributed to a periphery that is largely under-served in terms of basic services. Inequality has increased steadily, with 36 percent of the population living in slums with poor access to services.[11] All of this has placed heavy demands on the PMC.

Pune is important both economically and culturally, and thus the state government has invested in strengthening Pune's administrative systems and local government status over many decades. It has appointed dynamic officers to serve as Pune's municipal commissioners. Meanwhile, state-level political party structures in Maharashtra have given greater autonomy to city units to carve their path. The heads of Pune's city party units have a state-wide reputation for greater intellectual leadership.

Maharashtra also showed relatively greater commitment to decentralization well before the nationally mandated 74th CAA,

and this is clear in the greater power enjoyed by the PMC relative to other Indian cities.[12] The PMC undertakes a broader range of service provision than many cities (including transport and water supply) and has no significant state agencies that operate or compete for power in its jurisdiction. Pune enjoys the enviable position of being a very large, non-capital city, and thus to a larger extent is shielded from the overbearing intrusion of the state bureaucracy.[13] Due to the capability and autonomy of its officials and its more efficient administrative and regulatory systems, the PMC is a relatively powerful urban local body (ULB), especially considering the weakness of municipal government in India.

3. TRACKING COLLABORATIONS BETWEEN CIVIL SOCIETY AND THE MUNICIPAL CORPORATION

In India, state and national governments largely control city finances, recruit staff, and are responsible for regulatory frameworks. They also periodically intervene by introducing large infrastructure and township projects that significantly influence a city's development. The state government selects the city's municipal commissioner from the Indian Administrative Service (IAS), while councilors (called corporators in India) are elected. The interplay of local-level policies and initiatives with the larger national and state policies and programs defines the enabling and inhibiting context for transformation (see Figure 4). By analyzing this interaction in three phases (1992–2004; 2005–13; and 2014 and forward), we can understand how CSO coalitions became prominent and launched processes for transformative change with a relatively strong PMC.

The first phase (1992–2004) marked greater national attention to policies that pertain to cities and reflected movement towards economic liberalization and decentralization. National legislation for greater city autonomy is supported by the 74th CAA and reflects democratic and sustainability movements worldwide.[14] In this first phase, the PMC attained greater institutional maturity by building its capacity for specialization; city-level committees were formed to delegate work more efficiently and enable greater accountability. Building on its strong institutional and financial capacity to deliver services, the PMC devolved certain powers to the ward level and systematized the functioning of *prabhag samiti*[15] (ward committee) meetings. It was around this time that CSOs and activists concerned with sustainability issues emerged in response to the enabling climate for public participation presented by the 74th CAA, as well as the *prabhag samiti* meetings. CSOs started to develop their knowledge in different

domains and to discuss paths towards sustainability. While they initially focused on the environment, they slowly broadened their attention to consider MSWM and transport. During this period, CSOs introduced policy ideas and models to the PMC and started to build working relationships with the PMC.

During the second phase (2005–13), the launch of the JNNURM reinforced the shift towards neoliberal governance while including provisions for basic state-supported services for the poor.[16] The JNNURM mandated a standard set of 23 governance reforms that all cities had to undertake in exchange for receiving JNNURM funds for infrastructure. It promoted new roles for CSOs (by mandating public participation in developing city-level plans) and private companies (by encouraging consultants and public-private partnerships in service provision). Funds flowed into select cities during this time, which reinforced technocratic governance that excluded democratically elected city politicians, and reflected confusion between its market-oriented neoliberal and pro-poor policy goals.[17] The PMC and CSOs were in a position to take advantage of the JNNURM's funds for infrastructure. Pune secured a high volume of national and state funds for JNNURM projects (approx. Rs. 15 billion/US$230 million).[18] These projects provided opportunities for CSO coalitions to formally collaborate with the PMC on several MSWM and transport initiatives. In addition, this coincided with the PMC's preparation of the city's new Development Plan (DP) (2007–27), which mandated public participation according to town planning legislation.

The opportunity to engage in long-term planning led some CSOs to establish the Development of Pune Coalition, whose stated aim was "to enhance social, environmental and economic sustainability" in Pune.[19] A particularly hot-button issue during the DP's preparation was whether to partially open the hills surrounding Pune for development. In response, another campaign to save Pune's hills, the Green Pune Movement, was launched, steered by many of the same CSOs.[20] Citizens were galvanized by this movement and submitted over 85,000 objections and suggestions to the DP. In response to CSOs' demands, in 2009 the municipal commissioner applied for a grant from the Swedish International Development Agency (SIDA) to support the PMC to follow a Strategic Environment Assessment while formulating the DP.[21] A chapter on sustainability was added to the DP, underscoring that the municipal commissioner and the PMC's Environment Officer were committed to the CSOs' agenda. The PMC General Body also supported the CSOs' sustainability agenda by passing a resolution to protect Pune's hills, outright

rejecting the changes suggested by the state government to allow 4 percent construction of hill tops and slopes.[22] CSO coalitions emerged during this phase, seeding new policy ideas within the PMC and Pune's citizenry, and consolidating existing partnerships.

The introduction of the Smart Cities Mission in 2014 marks the beginning of a third phase in India's urban policy. Increasingly, urban local bodies are regarded as inefficient and corrupt because of their failure to deliver services and undertake neoliberal reforms.[23] The Smart Cities Mission mandated the formation of an SPV for project execution. Governance by SPVs has several consequences. It enhances the role played by consulting firms, especially in the domains of technology, knowledge, and media. CSOs deemed technically proficient have also become more valued than others. In addition, it has weakened the urban local body's position in the local governance system, further splintering an already fragmented local governance regime.[24] In Pune, this phase reflects the inability of CSO networks to accelerate change due to obstacles posed by

shifting national and state orientations and structural limits to the PMC's power. The municipal commissioner prioritized the Smart Cities Mission, embarking on new projects and corporate-style working relationships rather than building on existing CSO-led visions and coalitions.[25] He created a "war room" staffed by Fellows recruited from the country's top business schools and consultants working on different projects paid for by Pune City Connect, a platform for collaboration between private corporations and the PMC.

For the municipal commissioner, the greater reliance on private consultants to get things done represented an attractive way to bypass councilors, who were seen as lacking in vision, and was a way to address the perception of low capacity in the PMC.[26] Councilors, however, argued that consultants were not democratically accountable nor did they have a stake in the city's improved service outcomes.[27] They showed their resistance by subverting the execution of projects and policies. This exacerbated the conflict between executive and legislature, which further distracted institutional commitment away

Figure 2 | **Vehicle ownership in Pune**
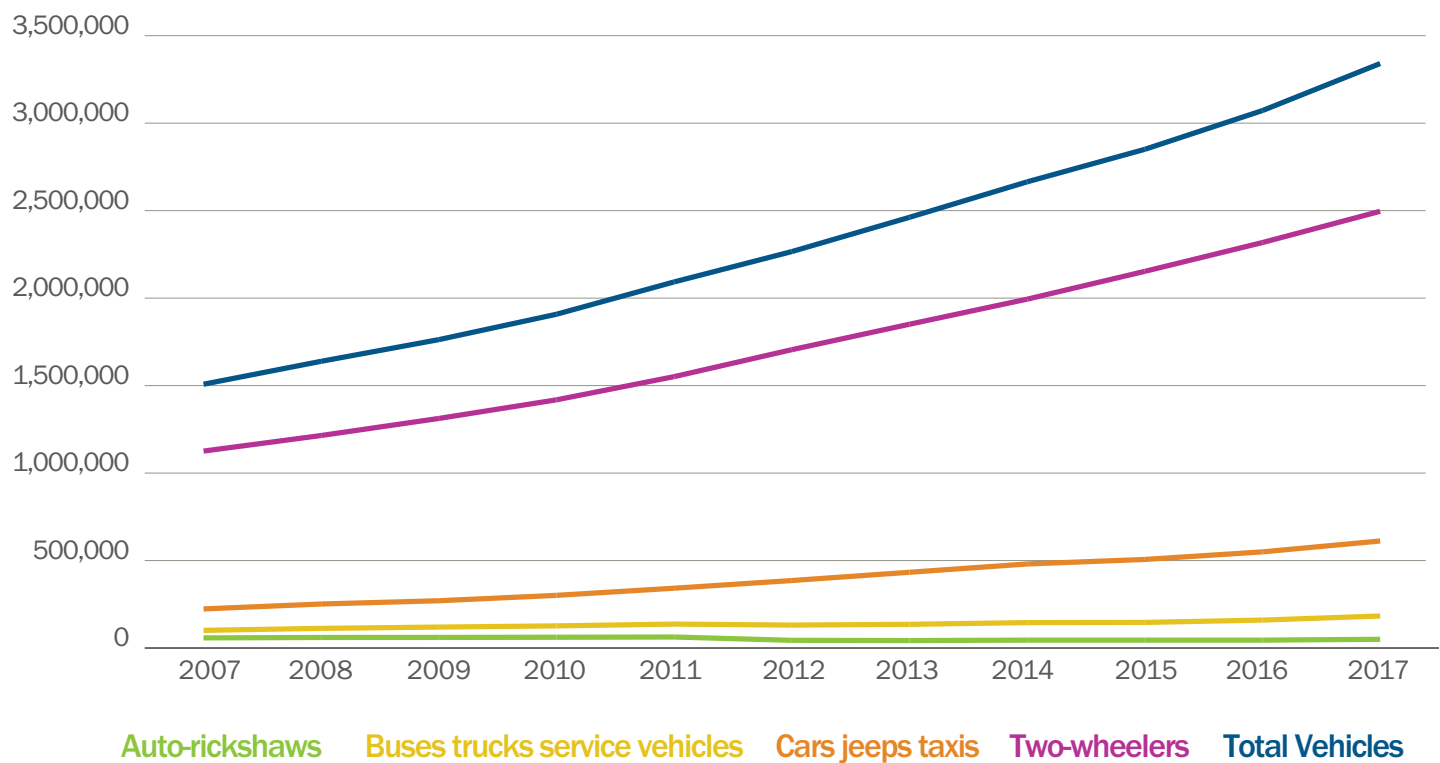
Source: Authors' analysis of official state level statistics from Department of Motor Vehicles, Maharashtra, 2017.

from the CSOs' sustainability vision. In addition, corporate interests lobbied the PMC to choose large, centralized, mechanized models for developing urban infrastructure over the decentralized, community-centered, sustainable models that CSO coalitions promoted.[28] As a result, the PMC is losing interest in more operationally complex, decentralized models. Thus, CSOs' vision for change has been impeded by the hollowing out of the urban local body and the creation of the SPV that privileges corporate interests over theirs.

4. DIVERSE SECTORAL TRANSFORMATIONS UNDERWAY

We now examine trajectories of change in transportation and MSWM, focusing on the importance of coalitions and the relationship between CSOs and the PMC.

Transportation

Pune has been moving unsteadily towards a transportation transformation since the early 2000s. This movement aims to reduce reliance on private automobiles by significantly upgrading public transport, valuing nonmotorized transport by restoring road space for this purpose, and thereby creating a more inclusive street space. The move towards sustainable transportation was first outlined in a declaration that emerged from a seminar organized by a CSO coalition.[29]

Traffic congestion has for a long time been Pune's most visible transportation challenge, and is the result of a rapid increase in both people and vehicles. The city's population doubled between 1991 and 2011, but area under roads has only increased marginally.[30] Total vehicle numbers more than doubled between 2007 (1.5 million) and 2017 (3.2 million), as did two-wheeler numbers (see Figure 2).[31] In fact, preliminary data for 2018 show 3.62 million vehicles, more than the current population.[32]

In 2011, public transport accounted for only 20 percent of trips (18 percent for bus and 2 percent for intermediate public transport modes like auto-rickshaws). Clearly, in relation to mobility demand, the public bus system—the only existing mode of mass transport—needed to improve its performance. In addition, Pune and the neighboring city of Pimpri Chinchwad each had their own bus service, despite being a single unit in terms of transportation geography. Poor coordination between them worsened the bus system's performance as a whole.

The first step towards a more sustainable transportation paradigm, the BRTS has taken hold after an inconsistent beginning. Other initiatives have followed over time, as Figure 4 reveals. This includes forming and strengthening Pune Mahanagar Parivahan Mandal Limited (PMPML) by merging the PMC's and Pimpri Chinchwad Municipal Corporation's (PCMC) bus companies. A second initiative is instituting the *Urban Street Design Guidelines, Pune* (NUTP, 2006) and the Comprehensive Mobility Plan (CMP) (2008),[33] formulated by the PMC in collaboration with Parisar, the Institute for Transport and Development Policy (ITDP), and Pedestrians First. Finally, developing policies (such as the public parking policy) that privilege pedestrians[34] and reduce dependence on private automobiles also reveal steps taken toward a sustainable transportation paradigm.[35] Technical capacity and institutional culture are being improved, and institutional arrangements are being made more efficient, effective, and logical in specific areas within the PMC and PMPML, though not uniformly.[36] CSOs like ITDP (which established its office in Pune in 2012) have worked on improving technical capacity related to street design within the PMC through collaborative projects and expert workshops.[37] A senior PMC engineer remarked that "before" (about 15 years ago) a corridor to introduce BRTS would have been chosen visually, based on "common sense"; but now, sound transportation planning methodologies are likely to be used.[38] These are pioneering initiatives in the Indian context, where cars come first and pedestrians come last in urban management, by default. These mutually reinforcing changes are more significant at this stage for the direction they have collectively given Pune's mobility strategies than for the numbers regarding achieved shifts in modal share.

Multiple triggers and enabling factors have together led to several changes, including national policies and funding programs (National Urban Transport Policy, JNNURM), the pressure of diverse CSOs and activists, and the fact that different municipal commissioners have been open to innovation and change where it did not contradict broader state agendas. Acting individually and as networks, CSOs have played a lead role in conceiving of the changes underway, and effectively leveraged more progressive national policies in their local advocacy. For its part, the PMC has incrementally adopted CSOs' proposals, and the emerging orientation of national policy and international discourse towards sustainable transportation has probably helped.[39]

Important CSOs like Parisar began with a more traditional focus on urban environmental issues through the 1990s; for example, preventing trees from being cut to widen roads and protecting the Mula and Mutha Rivers from pollution. In the early 2000s, Parisar, Pedestrian First, Nagrik Chetna Manch, and the Centre for Environment Education (CEE) forged the Pune Traffic and Transportation Forum (PTTF) as a platform on which to work collectively on transport issues. The forum emerged out of a series of monthly meetings that began in 2002 between different activists.[40] Debates over agendas revealed significant disagreements; out of the churning, a coalition of CSOs and individuals emerged that intended to promote a sustainable transportation paradigm for Pune (one that was anti-private automobile, pro-nonmotorized transport, and pro-affordable and cost-effective public transport).[41]

The forum's sustainable transportation vision underlies the "Pune Declaration: Citizens' Recommendations for Saner, Safer, and Sustainable Urban Mobility in Pune" issued by participants (including the incumbent municipal commissioner of the PMC) in a seminar organized by the Pune Traffic and Transportation Forum in 2004.[42] The document outlines a Pune-specific vision of sustainable transportation with decentralized and participatory governance tying together diverse recommendations— including improvements in safety, fuel quality checks, the shift to BRTS, the merging of the PMC and PCMC bus companies, and strengthening nonmotorized transport (by redesigning streets). Many of its proposals have been incrementally taken up for implementation by the PMC in collaboration with CSOs.

However, a sustainable transportation paradigm is not yet firmly entrenched. The PMC has undertaken this process in an incremental, non-explicit, and uncoordinated manner; its conflicted institutional will sustains many internal contradictions and makes transformative initiatives prone to stalling and reversals, especially when visible progress against congestion is not seen quickly enough. Unaddressed local-level contradictions mirror those at state and national levels. For instance, the sustainability-oriented National Urban Transport Policy has in effect competed with the heavily funded national expressway building program that encourages private car use, and the government's hope that the automobile industry would contribute 10 percent to the GDP and add 25 million jobs by 2016.[43] Meanwhile, the government of Maharashtra has developed a State Urban Transport Policy[44] aligned with the National Urban Transport Policy, but is pushing through an expensive and potentially disruptive Metro rail for Pune, disregarding the opposition of sustainable transportation advocates.[45]

The BRTS: A convoluted path

The BRTS can be considered the anchor initiative of the attempt to transform Pune's transportation system. Given the city's geographical expansion, and the fact that buses are the city's dominant public transport mode, CSOs and transport planners believe BRTS to be a crucial systemic intervention for Pune. The BRTS's story also exemplifies the conflicted institutional will mentioned earlier.

Pune was the first city in India to adopt BRTS. The adoption occurred in two broad phases: the first, Pilot BRTS, built under JNNURM in 2006, had many drawbacks and elicited much popular resistance and media flak, alongside less visible commuter appreciation. From 2006 to 2007, 101.77 km of BRTS corridor was approved under JNNURM.[46] The CMP adopted by the PMC as required under JNNURM incorporated these corridors and institutionalized BRTS as a strategy.[47] The second phase, called Rainbow BRT, was initiated after the CMP was published; it commenced in 2015. While Rainbow BRT is currently in operation on four corridors that extend into the PCMC, the lone Pilot BRT corridor, Katraj-Swargate-Hadapsar, is currently disrupted due to design modifications that are underway, but continues to operate.[48]

Pune's BRTS concept has an interesting genesis. A 2004 seminar organized by the Pune Traffic and Transportation Forum and addressed by transport specialists introduced BRTS into Pune's transportation discourse.[49] It also endorsed the existing agenda of merging Pune's and Pimpri Chinchwad's bus companies, which was ultimately realized in the establishment of the PMPML in 2007, and suggested other agendas, such as the pedestrian-friendly design that is currently being pursued. The municipal commissioner, who was in attendance, became convinced that BRTS was the only way to effectively address Pune's transportation challenge. The same year, the Pune Traffic and Transportation Forum also brought Enrique Peñalosa, the former mayor of Bogotá, Colombia, famous for successfully mainstreaming BRTS in his city, to endorse the BRTS idea at a public event in Pune that was attended by the PMC's political and administrative leadership and citizens, which helped consolidate the PMC's commitment to the idea.[50]

In parallel, the Pune Traffic and Transportation Forum lobbied for BRTS with Suresh Kalmadi, the then-powerful Congress Party Member of Parliament (MP), who saw promise for the 2007 local elections in the proposal. The

incumbent municipal commissioner included BRTS corridors in Pune's JNNURM proposal (typically developed without the participation or scrutiny of councilors, who noticed the scheme only after execution began) submitted in 2005. The 16.5 km Pilot BRTS corridor was sanctioned in July 2006 (at a cost of Rs. 1.34 billion/$29.6 million) and hastily inaugurated in December 2006.[51] JNNURM funds and city elections were thus key enabling conditions for Pune's adoption of BRTS.

Pilot BRTS revealed problems with institutional capacity and inconsistent and conflicted institutional will in terms of implementation and promotion, which stalled BRTS's expansion throughout the city. Due to haste, the Pune Traffic and Transportation Forum was not consulted and no overarching vision document or manuals of design and operation were prepared, leading to poor design, detailing, and construction.[52] Poor outreach to both the public and elected representatives, along with inadequate capacity building and training of PMT drivers and maintenance staff, were key factors for the bad press that Pilot BRTS received in its early years.[53] The incumbent Congress party lost the 2007 municipal election, which is often attributed to the perceived failure of BRTS. Support for BRTS weakened among bureaucrats, politicians, and the influential middle class.

In reality, however, the Pilot BRTS had increased bus speeds from an average of 8 km/hour to 13 km/hour and saved passenger time; it also improved driving conditions and reduced accidents and breakdowns.[54] Ridership increased on the corridor by 22 percent from February 2006 to April 2009, and also increased revenues: the publicly owned PMPML made a profit of Rs. 2,500 ($38) per bus on the route.[55] Importantly for a pilot, it secured dedicated lanes for buses without too much resistance from the public, and raised municipal and public awareness of the system.[56] Subsequently, learning from the pilot's failures, in 2015 the system was redesigned and promoted as Rainbow BRT on newer corridors in collaboration with consultants like IBI Group and CEE (a CSO), aiming for a network length of about 150 km, supposedly the largest in India.[57] The system continues to run as a "mixed BRTS" — that is, a system in which stretches of road lack dedicated bus lanes so the buses operate in mixed traffic.[58]

Structural conflicts between the two wings of the PMC—the administration headed by the municipal commissioner and the political wing of councilors (who make up the General Body)—have seeded contradictions in the BRTS's institution-

alization. For example, the PMC General Body approved the CMP (2008) in 2012 only after retaining the right to modify it from time to time, arguably to keep the door open for politically visible projects like flyovers.[59] This contradicted the technical logic and sustainability agenda of the CMP that had been endorsed by the municipal commissioner, threatening its integrity. Previously, in 2011, councilors had adopted the dubious compromise of "mixed" BRTS even though the central government had refused to fund the technically contradictory idea.[60] This can be read as a sharp reaction from the political class, which felt that the previous municipal commissioner had not adequately consulted them before introducing BRTS.

Sustainable Transport Coalitions and Policy Contradictions

Complementary competencies are now leveraged for joint action on specific BRTS issues, as between PMC leadership and a coalition of CSOs—say, Parisar (focused on the environment and governance, now active in transport), CEE (focused on environmental education and communication), and ITDP (an international CSO that specializes in transportation planning).

Diversity among CSOs means that the range of agendas is constantly widening. For example, when the street redesign initiative threatened informal street vending, the CSO coalition lobbied, with some success, to develop an initiative that made formal space for informal vendors, thus integrating the intent of the national Street Vendors (Protection of Livelihood and Regulation) Act (2014) into pedestrian-friendly policies. The PMC also institutionalized the hiring of urban designers— rare for an Indian urban local body—which indicates that the intent to design inclusive and effective streets has been institutionalized, as advocated for by CSOs.

At the same time, an essentially heterogeneous transportation paradigm—as practiced by the PMC, as well as national and state governments—is rendered vulnerable by its internal contradictions. The public transportation system is being strengthened alongside increasing investment in roads and flyovers to cater to the unsustainable growth in private automobiles. In fact, one flyover project has disrupted the Pilot BRTS corridor since 2015. The state government's reported keenness on the high-cost, lower-capacity (relative to BRTS) Metro is also questionable on the grounds of financial sustainability, especially since the PMC's burden of capital cost or loan repayment has not been publicly disclosed.

Figure 3 | Landscape of urban change agents in Pune
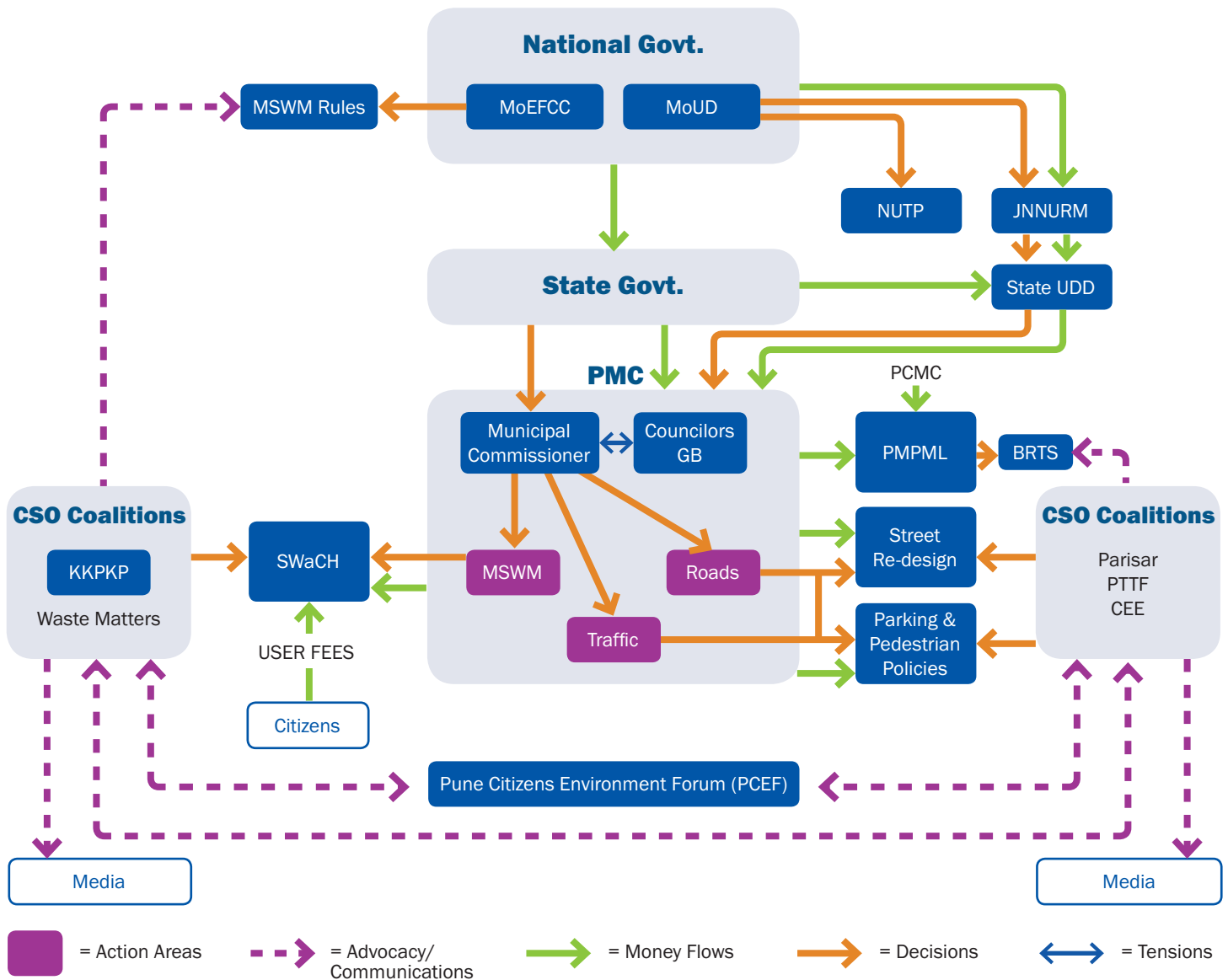
Source: Authors.

This state of contradiction may result from multiple factors. The state government makes key decisions, including appointing executive heads of major institutions like the PMC and PMPML, while national government increasingly directs urban governance through conditions and procedures tied to its funding programs. The latter has particularly pushed opposite agendas: on the one hand, sustainable and cost-effective transportation solutions like BRTS and pedestrian or parking policies first promoted by JNNURM and then the National Urban Transport Policy; and on the other, going along with a similarly national drive, the push for the Rs. 115 billion ($1.7 billion) Metro.[61] At the

same time, the PMC's commitment to a sustainable transportation paradigm is questionable. One veteran activist believes that the PMC is "only saying the right things but the thinking has not changed. They will still support the next flyover [proposal that comes along]."[62] This may be due to two factors. The first is the structural tensions between councilors and the bureaucracy, as seen in the contradictions within the BRTS, to contradictions in the institution and operation of the BRTS. The second is the increasing tilt of national and state governments towards expensive, centralized, high-tech solutions like the Metro.

Municipal Solid Waste Management

Unlike in many other sectors in Indian cities, governance and outcomes in MSWM have largely been locally determined. The PMC is legally responsible for MSWM[63] and devotes almost 10 percent of its budget (2017–18) to this important function. Effective primary solid waste collection deeply concerns residents; it is both an electorally important strategy for councilors and a vital means of dispensing patronage through (informal) service contracts.[64] The PMC takes center stage in MSWM, with the state government playing only a supportive, regulatory role. As such, examining change initiatives in this domain highlights the PMC's positive policy choices in initiating a better waste management system in Pune.

Catalyzing change: A waste picker's union collaborates with a CSO coalition

The transformative changes underway in Pune's MSWM system since the late 1990s have explicitly linked and targeted changes in primary waste collection across three dimensions: environment, labor, and the economy. Figure 3 outlines the landscape of change agents in MSWM, while Figure 4 highlights a timeline of important events. Several civil society individuals regarded the problem of high levels of municipal solid waste (1,400–1,600 tons of it generated daily in 2014, and the PMC estimates it will reach 3,600 tons by 2031)[65] and the PMC's inability to sustainably address MSWM as an opportunity to improve the livelihoods of marginalized workers, support economies of reuse and repair, and benefit the environment. In 1993 they mobilized to form a waste pickers' union called Kagad Kach Patra Kashtakari Panchayat (KKPKP). KKPKP won dignity as well as the right to access waste for waste pickers by integrating them into the city's formal MSWM systems. Unlike in other Indian cities, this approach marked a shift away from a purely managerial focus and towards a sustainable, decentralized waste paradigm that was worker-centered, all the while contributing to the city's sustainability and economic growth.

KKPKP effectively advocated at multiple scales (international, national, and local) using different strategies to integrate waste pickers into formal MSWM systems. It collaborated with the International Labour Organization (ILO) to quantify waste pickers' economic and environmental contributions to the city.[66] It took a delegation of waste pickers to meet the national Planning Commission's High-Powered Committee on Solid Waste Management in India, which subsequently endorsed waste pickers' integration into waste collection systems.[67] It has played a leading role in forming and expanding a national network, the Alliance of Indian Waste pickers (AIW), and supported initiatives launched by waste picker organizations in other cities.
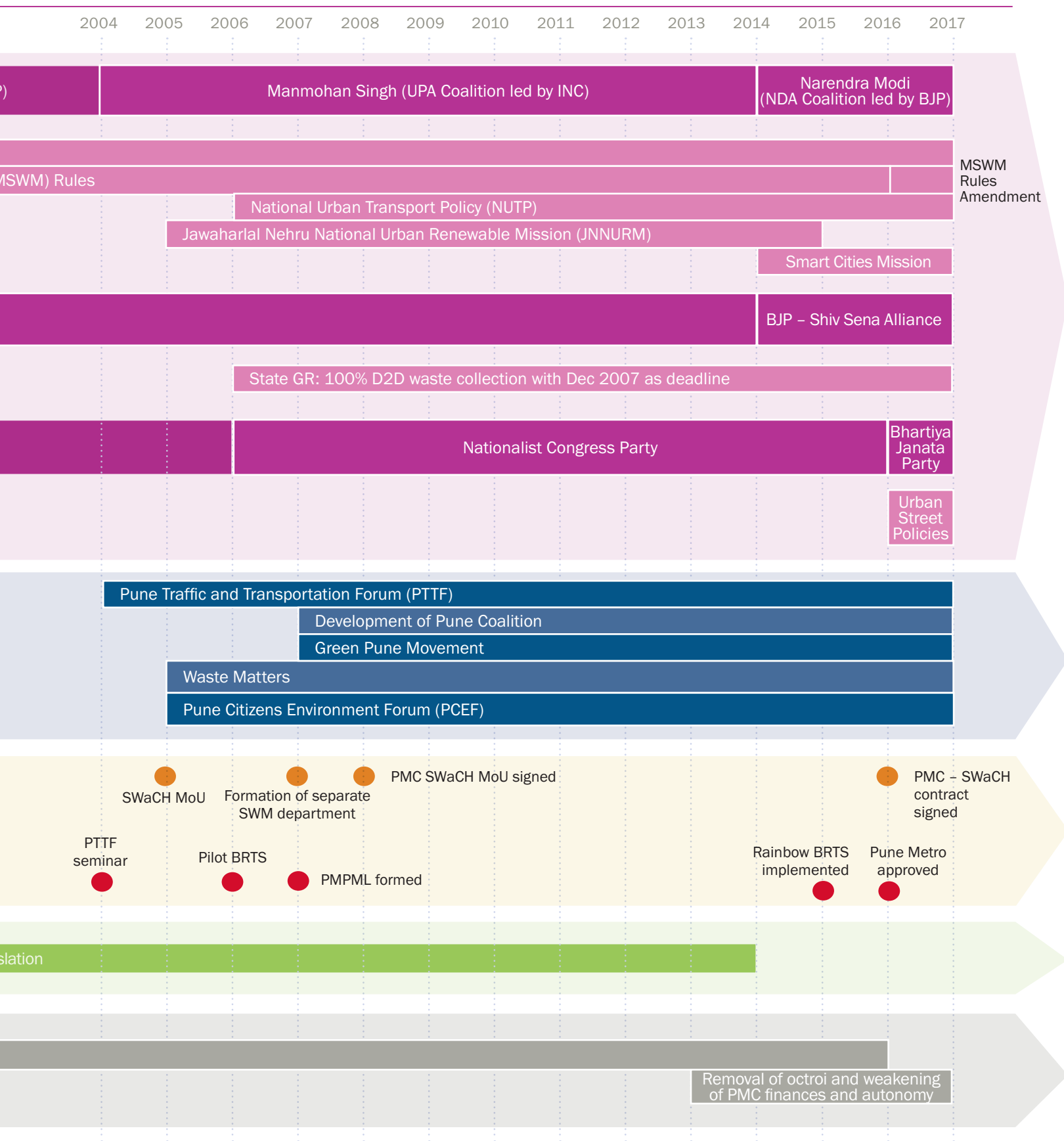
In Pune, one of KKPKP's founders noted that it built a broad base of local support for its approach across the realms of the environment and labor.[68] It formed a loose coalition of CSOs already active in city-level environmental issues, including CEE and Parisar, called Waste Matters. The coalition came up with a sustainable MSWM strategy, created basic communication materials, and worked closely with municipal commissioners, second-line leadership within the PMC, and a city-based member of the JNNURM's National Task Force[69] to advocate its decentralized MSWM model. KKPKP also benefited from the support and political clout of local unions, such as tempo and rickshaw unions, and rights-based organizations working for the welfare of Dalits, many of whom are women waste pickers and among the poorest and most marginalized in society. KKPKP leveraged a combination of research, policy, and political support to argue that the PMC should recognize waste pickers as workers. KKPKP succeeded in this as the PMC gave waste pickers identity cards and began covering their health insurance premiums (in 1996 and 2003, respectively), and these were regarded as significant victories for its approach.[70]

The role of supportive national and regional legislation

In 2000, national policy became supportive of KKPKP's approach as a result of a public interest litigation filed against the government of India regarding poor MSWM in large cities (those with a population of more than 100,000). The Supreme Court of India formed a committee to suggest improvements to MSWM practices. KKPKP and other network organizations were represented in the consultations that were held, and in its report, the committee ultimately recognized waste pickers' role in MSWM. The Supreme Court then passed a landmark judgment that led to the passage of the national MSWM Rules 2000. The MSWM Rules mandated urban local bodies to collect waste door-to-door, promote waste segregation at the household level, and divert waste away from landfills and into processing and recycling. This caught urban local bodies across the country—including the PMC—unprepared, as up to that point, MSWM was understood to simply involve the collection, transport, and disposal of waste.

Figure 4 | Timeline of Pune

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
National leadership	P.V. Narasimha Rao (INC)				H. D. Deve Gowda (Janata Dal led United Front)			Atal Behari Vajpayee (NDA Coalition led by BJP				
National policy	Liberalization of Indian economy (1991); 74th Constitutional Amendment Act (CAA)								Municipal Solid Waste Management (M			
State leadership	INC				Shiv Sena – BJP alliance			INC – NCP Alliance				
State policy												
City leadership	Indian National Congress											
City policy												

Coalitions

Triggers

Municipal Solid Waste Management (MSWM)
- KKPKP formed (1993)
- PMC gives ID cards to Waste Pickers (1996)
- PMC covers health insurance of Waste Pickers (2001)

Transport

Enablers
Strong city CSOs and coalitions that develop partnerships with PMC and harness supportive national and state legis

Inhibiting factors
Structural problems of weak city-level tier of government that render institutionalized change difficult

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017

P) | Manmohan Singh (UPA Coalition led by INC) | | | | | | | | | | | Narendra Modi (NDA Coalition led by BJP) | | |

(MSWM) Rules

MSWM Rules Amendment

National Urban Transport Policy (NUTP)

Jawaharlal Nehru National Urban Renewable Mission (JNNURM)

Smart Cities Mission

BJP – Shiv Sena Alliance

State GR: 100% D2D waste collection with Dec 2007 as deadline

Nationalist Congress Party

Bhartiya Janata Party

Urban Street Policies

Pune Traffic and Transportation Forum (PTTF)

Development of Pune Coalition

Green Pune Movement

Waste Matters

Pune Citizens Environment Forum (PCEF)

SWaCH MoU

Formation of separate SWM department

PMC SWaCH MoU signed

PMC – SWaCH contract signed

PTTF seminar

Pilot BRTS

PMPML formed

Rainbow BRTS implemented

Pune Metro approved

slation

Removal of octroi and weakening of PMC finances and autonomy

The PMC was unsure about how to activate door-to-door collection and waste segregation at source, since a state government ban prevented it from recruiting any low-level employees who would normally perform this work. The PMC therefore continued to use its own vehicles and employees, but serviced only 7 percent of households for door-to-door collection, with less than 50 percent efficiency.[71] Garbage entering the municipal system was not segregated or recycled, but rather dumped into the single landfill at Uruli village outside Pune. Irate Uruli villagers soon took the PMC to court to prevent Pune's garbage from being dumped in their backyard. Putting the PMC under further strain was the fact that Maharashtra's Urban Development Department set a deadline of December 2007 for cities to submit action plans for implementing the MSWM Rules 2000 and achieving 100 percent door-to-door collection. It also stated that preference was to be given to cooperatives—organizations of waste pickers or women's groups—for undertaking waste management with door-to-door collection and user fees. It is in this context that the PMC took the opportunity presented by KKPKP, supported by Waste Matters, to launch PMC-SWaCH, which rolled out transformative changes in its MSWM system.

Institutionalizing the SWaCH model of transformative change

KKPKP established Solid Waste Collection and Handling (SWaCH), the country's first fully self-owned cooperative of waste pickers, to integrate waste pickers into Pune's MSWM systems. This involved two types of transitions: SWaCH working with waste pickers to enable their change from "women with a sack" (waste pickers are largely women) to service providers with uniforms and push carts; and SWaCH developing a more collaborative approach to working with the PMC, different from the union's more combative approach.[72] Waste Matters played a significant role in supporting the second transition.[73] Today, SWaCH has 2,700 registered members out of more than 8,000 KKPKP members.[74] According to the KKPKP's secretary, the municipal commissioner was convinced that collaborating with SWaCH represented a workable solution for the PMC, and played a decisive role in initiating an experimental PMC-SWaCH pilot. While some councilors were supportive, those running their own private waste collection models viewed SWaCH as a threat to their influence and visibility in the ward. The municipal commissioner helped convince councilors to agree to the SWaCH model by holding open the possibility

that SWaCH could co-exist with other collection models.[75] Waste Matters and the city-based member of the JNNURM National Task Force strategically intervened to support the formation of a separate department in November 2007 to oversee MSWM. With the strong support of the municipal commissioner and the PMC's second-line leadership, and due to its innovative model, the SWaCH pilot phase (2005–07) achieved coverage of 150,000 households.[76]

The SWaCH model combined multiple benefits of sustainability, inclusion, and efficiency. While SWaCH provided the workers, the PMC provided the equipment and bore the administrative costs. SWaCH members collected waste door-to-door, recovered recyclables, and disposed remaining waste at designated points of the PMC's secondary waste collection system. Coordinators at the *prabhag* (ward) level ensured that user fees were collected, complaints were redressed, and value-added services (like composting, e-waste collection) were offered. Many of these coordinators were the children of waste pickers, revealing the integration of informal workers into positions of responsibility within the PMC. The municipal commissioner also issued letters appealing to citizens to pay user fees to SWaCH members for the doorstep collection of segregated waste.[77] The model thus allowed environmentally essential recycling and reuse, and enhanced waste pickers' dignity by treating them as valuable service providers.

The SWaCH model has been extremely efficient for the PMC. The head of the MSWM Department has acknowledged that the PMC saves Rs. 160 million ($2.46 million) each year in transportation costs due to recyclables retrieved by SWaCH members, savings that can be utilized for other developmental works.[78] Furthermore, between 2012 and 2013, SWaCH cost the PMC a total of Rs. 36.3 million ($619,500), which amounts to Rs. 2 per household per month, the lowest spent by any municipality in the country.[79] The initial success of the SWaCH pilot project led the municipal commissioner and the PMC General Body to formally support the model by signing a Memorandum of Understanding (MoU) with SWaCH in 2007. From an initial 150,000 households, SWaCH expanded its coverage of the city to 550,000 households (approximately 50 percent coverage).[80] However, the SWaCH model has faced serious challenges in its operation over time due to the lukewarm support of the PMC.

Internal contradictions within the PMC make the SWaCH model vulnerable

The PMC did not stick to the terms of the MoU, which was the first indication of its inconsistent stance towards the SWaCH model. It provided only 25 designated waste recovery centers where SWaCH members could sort and recycle waste, against the demand for more than 250 such centers. This forced members to depend on informal arrangements for keeping their sorted recyclables.[81] Additionally, the PMC paid only Rs. 42 million ($717,000) of the Rs. 80 million ($1.36 million) agreed upon in the MoU for 2008–13.[82] Second, after the period covered by the MoU expired, the PMC neither made efforts to renew the agreement with SWaCH nor did it pay SWaCH between 2013 and 2016, leaving SWaCH to continue doing MSWM but forcing it to rely on membership fees to function.[83] This revealed the conflicted will within the PMC to work with the SwaCH model and the fact that the poorest citizens effectively subsidized one of the city's infrastructure systems. It was only when a new, more supportive municipal commissioner took office in 2014 that discussions about renewing the SWaCH model were kickstarted, resulting in a signed contract for 2016–21. While bolstered by a legally binding agreement, the SWaCH model seems increasingly tenuous due to external changes in the waste economy and shifts in national and local priorities.

The increasing corporatization and profitability of the global waste economy has affected the SWaCH model's continued viability. The KKPKP secretary disclosed that the SWaCH contract specified that only the SWaCH model would be operational in designated areas—but since waste has become increasingly valuable, several PMC officials (from foremen upwards) and councilors continue to informally promote parallel models that yield personal benefits at the expense of both SWaCH members' livelihoods and the model as a whole. Corporate capital's newfound interest in securing municipal contracts for collecting waste, installing incineration plants, and selling recyclables has led private companies to build connections with those in the PMC who govern waste.[84] This means that private corporations in the business of waste are now competing with SWaCH for the right to collect municipal waste and recycle and use it in different ways. The PMC accepts that SWaCH is more cost-effective, efficient, and sustainable than mechanized models of primary collection that do not support waste segregation or economies of reuse, but it continues to promote competing models with corporate participation.[85] Thus after initially supporting the SWaCH model, there are signs that the PMC might soon adopt corporate-sponsored, technology-based, centralized solutions for primary waste collection that exclude the city's waste pickers and do not prioritze the more sustainable approach of waste recycling and reuse.[86] This contradictory approach has cast doubt on the SWaCH model's continued viability.

Moving Unsteadily towards Transformation

The trajectories of sustainable transportation and waste management outlined above represent different pathways for change, but ones bound by important commonalities that had larger effects. Both pathways steered initiatives towards the needs of the under-served. The improvement of public transport and formation and efforts to strengthen PMPML has been a boon for under-served lower- and middle-class commuters who have increasingly longer commutes to peripheral areas. They save time and travel more comfortably for the same fare that non-BRTS buses charge. SWacH has empowered waste pickers by including them in the MSWM system, providing status and a relatively stable livelihood. Furthermore, SWaCH members consciously served slums despite not receiving any monetizable recyclables or user fees from slum dwellers. While the PMC was supposed to contribute Rs. 10 ($0.15) per household to subsidize MSWM services in slums, it often delayed payments. SWaCH has therefore resorted to cross-subsidizing services in slums with user fees from middle-class colonies. SWaCH's door-to-door collection services have resulted in better hygiene in slums by eliminating (usually overflowing) waste containers. Across both trajectories, CSO coalitions have also privileged the participation of poor groups like street vendors and waste pickers in city governance. In addition, KKPKP's worker-centered approach to waste influenced CSO coalitions working in transport to consider vendors in the design of streets. This shows how coalitions influenced each other across issues that led to practical translations of their multidimensional vision of urban sustainability.

Both trajectories epitomized the crucial role that CSO coalitions played in building close working relationships with the PMC and leveraging national and state policy to initiate change. CSO coalitions' success was due to their quasi-institutional character—being organized (deciding on internal roles and having a steering/anchor organization), goal-oriented (creating vision documents), strategically flexible (using media, mass action, litigation, and information

obtained under the Right to Information Act), and able to both collaborate with and confront the PMC. CSO members shared that the PMC has remained open to working with CSO coalitions on numerous issues, despite the fact that the CSOs have disagreed with and even sued the PMC.[87] One CSO member explained that this might be due to the fact that the PMC respected the sincerity behind such disagreement and saw CSOs as indispensable, since "these are the same people who will help out when we want to do a report or review of policy [and] will help in drafting policy."[88]

Despite the considerable efforts of CSO coalitions and the PMC, Pune has not achieved transformative change—although it has come close. The gap between where it currently is and how far it has to go to realize transformation is much smaller than in other cities, said one CSO member.[89] In economic terms, the city's growth has consistently exceeded already healthy growth rates in India over the recent past. Pune has posted average annual real economic growth of 7.2 percent since 2011.[90] In terms of equity and environmental challenges, we believe that Pune's situation would be worse without the interventions discussed in this paper. Recognition and awards from national government and non-state organizations indicate wider acknowledgment of Pune's significant progress towards sustainability and equity.[91] However, a complex set of structural challenges is responsible for rendering change processes much less effective than they could have been.

5. STRUCTURAL CHALLENGES TO SUSTAINING URBAN TRANSFORMATION

While significant in terms of intention and direction (and to an extent, outcomes), many of Pune's change efforts have been dogged by problems related to the fact that the PMC's basic finance, planning, and governance systems remain weak. Historically, the PMC enjoyed a strong financial position largely due to octroi, a tax levied on goods entering the city. This tax is significant because it is controlled by the urban local body and contributes to its autonomy. With the abolition of octroi (on April 1, 2013) and the initiation of the Goods and Services Tax (GST)[92] (on July 1, 2017) there has been a significant decline

in local revenue sources, and the PMC has become more financially dependent on the state government. A public finance expert familiar with the PMC's financial affairs estimates that its own revenue sources, which earlier accounted for between 80 percent and 95 percent of total revenues, now accounts for only about 30 percent.[93] The same expert criticized the PMC's financial management system as rudimentary, with decisions regarding ward allocations not driven by data or criteria such as need, equity, or balance between sectors. The quality of human resources in both finance and planning is weak. For example, the Development Plan Cell is small and headed by the city engineer, and is thus led from an engineering perspective rather than a planning perspective.

Similar structural challenges exist in the domain of governance. Indian cities are sites of value creation but not political or institutional power.[94] Pune has little ability to improve its own systems to address existing and upcoming challenges, as control over the structural reform of city-level finance, planning, and governance systems rests with the state government. Since cities lack power over policymaking, politicians have little choice but to engage in patronage to build local support and strengthen state-level connections to remain influential.[95] Understanding the structural inhibitors of change in Pune highlights the fact that there are limits to what may be achievable at the city level. There are indications that changes in Pune may have hit a ceiling, and to actualize transformative change now requires coherent action on the part of the state government. In the absence of this development, the fate of ongoing change processes is uncertain.

6. CONCLUSION

Pune is on the path to urban transformation. Changes have been institutionalized in multiple sectors (including transport and MSWM) over ten years across multiple political administrations. The *direction* of change is more significant than the measurable outcomes—urban management and governance in Pune has become significantly oriented toward sustainability and greater equity.

CSOs have overcome internal differences to form effective coalitions that provide intellectual and even practical leadership to trigger and help sustain ongoing changes. Multiple transport-related initiatives (the launch of BRTS, the formation of the PMPML, the passage of pedestrian and parking policies) have promoted improved equity and access for under-served commuters and citizens. SWaCH has helped waste pickers integrate into the formal governance system, while also dramatically increasing coverage of primary source segregated collection from 7 percent to 50 percent of city households.[96] The PMC has embraced many CSO proposals to institutionalize pilot programs and followed up with full-scaled initiatives, which is unusual for an Indian urban local body. Local politicians have often provided crucial support in mobilizing opinion and institutionalizing political change despite a typically contradictory relationship within the General Body and with the PMC bureaucracy and uneven engagement with CSOs. Equally, national policy has enabled change towards sustainability in transportation (National Urban Transport Policy, JNNURM) and MSWM (MSWM Rules). These changes promise to improve environmental outcomes, economic productivity, and equitable access to services. They thus align with the argument of the World Resources Report (WRR), *Towards a More Equal City,* of which this study forms a part, even if "transformation" in Pune is not yet durably achieved using the definitions laid out in the WRR framing paper.[97]

At the same time, key initiatives like SWaCH show real vulnerability to being reversed, while BRTS has recently been revived after almost being abandoned (though it faces competition from other road and expensive Metro rail investment agendas and projects). The PMC has never formally committed itself to a larger sustainable urbanization and governance agenda nor to related comprehensive strategies. This may be traced to the PMC's structural weaknesses and to the shift in national- and state-level policies towards centralized, high-tech, and expensive solutions for cities. Both factors allow diverse actors and interests at the local, state, and national levels to aggressively promote projects in the city that contradict

and inhibit the sustainability transition earlier initiated by different levels of government. The national and state governments have intervened more actively in transport (in contradictory ways, such as by enabling the anti-car parking policy but also pushing the construction of expressways/flyovers and the Metro despite opposition) than in the more decentralized MSWM sector. In the latter, however, the decentralized, waste picker–focused model of SWaCH that prioritized sustainability and inclusion along with efficiency faces a threat from private vendors who increasingly appear more attractive to the PMC. The structural weakness of the urban local body within the Indian governance hierarchy—even with an otherwise "strong" institution like the PMC—may turn out to be the most crucial inhibitor of the city's sustainability transition. If Pune is to continue on the path to sustainable urbanism, the PMC needs to be given greater political and financial autonomy and further develop its institutional capacity.

State-level action to realize transformative change is required on at least two fronts. First, the state government should undertake structural reforms to improve financial, planning, and governance systems in the PMC (and other urban local bodies) and generally ensure greater autonomy for the PMC. With no remote level of government responsible for local issues, such autonomy is likely to render the PMC strong enough to commit to a comprehensive strategy and simultaneously open itself to being held more accountable to its citizens and CSO coalitions. Second, the state government should formally commit to an urban sustainability transition for Maharashtra with a broad policy that is backed by phased, sector, and strategic commitments. A key principle underlying such a commitment should be supporting cities in choosing their preferred pathways towards sustainability by providing financial, technological, and institutional knowledge support. To that end, the state could establish an urban sustainability network to strengthen the capacities of municipal officials and facilitate cross-city learning. The state's explicit commitment to urban sustainability would help CSO coalitions and internal champions within the PMC (at senior and middle levels) to accelerate sustainable change.

APPENDIX A. DESCRIPTION OF INTERVIEWEES

Interview Code	Date	Position
1.	June 14, 2017	Environment Officer, PMC
2.	June 14, 2017; March 3, 2018	Deputy Municipal Commissioner MSWM Department, PMC
3.	June 14, 2017	Transport planner, international NGO working with PMC
4.	June 15, 2017	Retired MC, PMC and ex-official in the state government
5.	June 15, 2017	Member, Rajya Sabha; current City Unit Chief of Nationalist Congress Party; ex-Mayor and four-time councilor
6.	June 15, 2017	Managing Director, PMPML
7.	June 28, 2017	Academic, practicing architect, and advisor on the Municipal and Regional Town Planning Act
8.	June 28, 2017	Academic
9.	June 28, 2017	Editor of leading newspaper
10.	June 28, 2017	Right to information activist
11.	June 28, 2017	Director, Pune International Centre
12.	July 3, 2017	Secretary, waste pickers' union
13.	July 3, 2017	Programme Director, CSO
14.	July 3, 2017	Retired IAS, State Training Institute; former Director, CSO, former head of MSWM, PMC
15.	July 17, 2017	Municipal Commissioner, PMC
16.	July 17, 2017	Executive Engineer, Vigilance Department, PMC
17.	Aug 9, 2017	Public finance expert
18.	Aug 28, 2017; Feb 14–15, 2018	Director, CSO
19.	Oct 20, 2017	Programme Director, CSO
20.	March 9, 2018	Deputy Mayor, Pune

ENDNOTES

1. SPVs are legal entities created for a specific purpose and for raising market financing, typically for infrastructure projects.

2. Interview 13.

3. Interviews 13 and 18; Pune Citizens' Environment Forum (PCEF) website, http://pcef.blogspot.in/.

4. PCEF website, http://pcef.blogspot.in/.

5. Interview 19.

6. Beard et al., 2016.

7. Avinash Madhale, an author of this report, works for the Centre for Environment Education (CEE), one of the CSOs active in Pune, and has worked closely with the PMC for over a decade. As such, he was invaluable in identifying interviewees and interpreting research findings.

8. This is revenue generated by the ULB itself, that is not reliant on financial transfers or grants from higher levels of government.

9. Interview 17; Janaagraha Centre for Citizens and Democracy, 2017. For US$ figures, the IMF average exchange rate for 2016 of 67.195 was used for calculations.

10. PMC City Census Department, 2017b.

11. PMC, 2015.

12. Bhide and Waingankar, 2011.

13. Based on authors' personal e-mail correspondence with Ranjit Gadgil, December 2017.

14. Houtzager et al., 2002.

15. Electoral wards are called *prabhag*s in Pune. *Prabhag samiti*s are ward committee meetings that were envisioned by the 74th CAA.

16. Mahadevia, 2011.

17. Mahadevia, 2011.

18. Based on authors' personal communication with a consultant in charge of JNNURM projects, PMC, in Pune, February, 2018. For US$ figures, the International Monetary Fund (IMF) average exchange rate for 2017 of 65.112 was used for calculations.

19. CEE, 2018.

20. Jagtap, 2018.

21. Interview 1.

22. *Indian Express*, 2011.

23. Hoelscher, 2016.

24. HLRN, 2017.

25. Interview 19.

26. Interview 15.

27. Interview 20.

28. Interviews 12 and 19.

29. PTTF, 2004.

30. PMC City Census Department, 2017a; PMC City Census Department, 2017b.

31. Department of Motor Vehicles, Maharashtra, 2017.

32. Zee Media Bureau, 2018.

33. PMC, 2016c.

34. PMC, 2016d.

35. PMC, 2016a.

36. Interviews 1, 3, 6, and 16.

37. Interview 3.

38. Interview 16.

39. Interview 18.

40. Parisar, 2005: 4.

41. Interview 18.

42. Interview 18.

43. Goswami, 2010.

44. Government of Maharashtra, 2017.

45. For more information, see Parisar, 2017.

46. Gadgil et al., 2015: 55.

47. PMC, 2008.

48. PMPML, 2016.

49. PTTF, 2004.

50. Parisar, 2005: 11.

51. Interview 18; Biswas, 2012: 56; Gadgil et al., 2015. For US$ figures, the IMF average exchange rate for 2006 of 45.307 was used for calculations.

52. The PTTF was not consulted in design and detailing. No meetings of the JNNURM-mandated Citizen Volunteer Technical Committee were conducted by the PMC; Gadgil et al., 2015: 54–55.

53. Menon and Warrier, 2015.

54. Menon and Warrier, 2015: 19.

55. Menon and Warrier, 2015: 19.

56. Menon and Warrier, 2015: 24.

57. In 2011, the Congress Party had demanded that BRTS be rebranded on the grounds that it was functioning well. See *DNA*, 2011.

58. In this case, it runs on 67 km out of 118 km (almost 40 percent) of the Pilot BRTS corridor.

59. PMC General Body, 2012.

60. *Times of India*, 2011.

61. Pune Metro, 2016. For US$ figures, the IMF average exchange rate for 2016 of 67.195 was used for calculations.

62. Interview 18.

63. The Maharashtra Municipal Corporation Act of 1949 defines MSWM as the mandatory responsibility of municipal corporations in Maharashtra.

64. In the 2002 PMC elections, several candidates got elected by building a name for themselves doing door-to-door waste collection.

65. Pallavi and Dutta, 2014.

66. Interview 12.

67. Chikarmane, 2012.

68. Interview 12.

69. The National Task Force was established by the Ministry of Urban Development to establish standardized service-level benchmarks in four basic municipal services for measuring ULB performance.

70. Interview 12.

71. Chikarmane, 2012: 4.

72. Interview 12.

73. Interviews 12, 13, and 19.

74. Interview 12.

75. Based on personal communication with the municipal commissioner about the Earth Care Award for SWaCH Model in Pune, August 30, 2016.

76. Interview 12.

77. Based on Public Notice Reference 10000-11-08 issued from the Municipal Commissioner's office in 2016.

78. Interview 2. For US$ figures, the IMF average exchange rate for 2017 of 65.112 was used for calculations.

79. CPHEEO, 2016: 13. For US$ figures, the IMF average exchange rate for 2013 of 58.598 was used for calculations.

80. Kulkarni, 2017.

81. SWaCH Pune, 2014.

82. Interview 12; SWaCH Pune, 2014. For US$ figures, the IMF average exchange rate for 2013 of 58.598 was used for calculations.

83. Interview 2; SWaCH Pune, 2014.

84. Gidwani and Corwin, 2017.

85. Kulkarni, 2016.

86. Kulkarni, 2017.

87. Interviews 13 and 19.

88. Interview 13.

89. Interview 13.

90. DES, 2018: 38. This is based on gross value added at district level and contrasts with the value of 6.9 percent for India overall reported in the Government of India's "State-Wide GDP at Constant Prices on a Yearly Basis" (see the Government of India's Visualization Engine. https://visualize.data.gov.in).

91. The numerous awards given to Pune include the following: 1) Vasundhara Award 2013 from the Maharashtra Pollution Control Board for best practices, and the 2013 Vasundhara film award for an awareness film for Kachara Muktnichya Dishene; 2) Housing & Urban Development Corporation (HUDCO) Awards for Best Practices to Improve the Living Environment 2012–2013, and the 2015 HUDCO Award for One Home One Toilet project; 3) IconSWM 2012 and 2014 Excellence Awards in SWM from the International Society of Waste Management, Jadhavpur University; 4) Nagarratna Award from the JNNURM in 2010–2011; 5) Skoch Digital Inclusion Award for the Benchmark of Best Practices, 2013, and three awards of merit for SWM and sanitation in 2015; 6) Andhra Pradesh Tourism Development Corporation award 2013: runner-up for SWaCH model and PMC best practices; 7) Sant Gadge Baba Nagari Swacchta Abhiyan: second number at the state level and Rs. 20 lakh price; 8) IUKAN Award for Benchmark of Best Practices, 2015.

92. The Goods and Services Tax is an indirect tax that is applicable throughout India and replaces multiple cascading taxes levied by central, state, and local governments.

93. Interview 17.

94. Heller et al., 2016.

95. Heller et al., 2016.

96. Interview 12; Kulkarni, 2017.

97. Beard et al., 2016.

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ABOUT THIS WORLD RESOURCES REPORT

This is the second city case study of transformative urban change in a series of case studies that, together with a set of sectoral and thematic papers, comprise the *World Resources Report (WRR): Towards a More Equal City*. It will be followed by other case studies of cities in Asia, Latin America, and Africa. To obtain electronic copies of this paper and others, and to view supporting materials, please visit www.citiesforall.org.

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