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E-GOVERNANCE AND CITIZEN ENGAGEMENT

Pathways to Resilient and Equitable Cities

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EDITORS

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Editors' Note

Dhaval Desai and Nandan Dawda

The quest for resilient and equitable cities has never been more urgent than in this era marked by rapid technological advancements and increasing urbanisation. ORF's latest volume in its Urban Frontiers series, *E-Governance and Citizen Engagement: Pathways to Resilient and Equitable Cities,* brings together expert insights on the transformative power of e-governance and the role of citizen engagement in shaping the cities of the future.

E-governance, with its promise of efficiency, transparency, and accessibility, has emerged as a critical tool for modern urban management and services. It leverages digital technologies to streamline administrative processes, facilitating better decision-making and enhancing

service delivery. However, the true potential of e-governance can only be realised when it is coupled with citizen engagement. Nurturing informed and empowered citizens who actively participate in the governance process is essential for ensuring that the digital transformation of city management reflects the diverse needs and aspirations of all urban inhabitants.

The synthesis of e-governance and citizen engagement is not just desirable but necessary; one cannot thrive without the other. E-governance provides the tools and frameworks for more responsive and accountable governance, but it is the active involvement of citizens that would ensure that these tools are used to build resilient and inclusive communities. Together, they pave the way for cities that are not only smart but also just, sustainable, and resilient.

This anthology delves into the interplay between e-governance and citizen engagement. Our contributors explore how digital platforms can foster inclusive participation, the challenges of digital divides, and the innovative approaches that cities worldwide are adopting to bridge these gaps.

This compendium is divided into two sections. The first section focuses on the digitalisation of city systems aimed at providing better governance and ease of access to municipal services. The second section deals with the need to foster citizen engagement and create robust avenues for participatory governance. The 16 articles intersect at several points, highlighting the factors of governance, policy frameworks, and institutional mechanisms.

Through diverse views offered by our expert contributors, this publication provides practical insights to policymakers and urban practitioners and outlines an actionable agenda to help cities tackle the real-world challenges that confront them as they gear up for technology-based solutions that are people-centric and inclusive.

Gautham Ravichander and Viraj Tyagi argue that technologies such as Digital Public Infrastructure (DPI), Internet of Things (IoT), and

Artificial Intelligence (AI) present a "generational opportunity" to build sustainable, resilient, responsive, and inclusive urban environments. They evaluate ongoing schemes and programmes and demonstrate the urgent need for their convergence to help local governments integrate their digital capabilities to plan for the future and operate and deliver a good quality of life to citizens.

New-generation Integrated Transport Systems (ITS) offer features such as traffic prediction, analytics, traveller information, ticketing, and fare collection through targeted technological interventions. Presenting a study of Chandigarh's ITS-based bus modernisation programme, *P. K. Sarkar* highlights how the city achieved a substantial increase in the use of public transport and reduced traffic congestion and harmful vehicular emissions by encouraging people to use the city buses instead of personal vehicles.

Rumi Aijaz then describes the transformations in city governance and services brought about by the Integrated Command and Control Centres (ICCCs) set up in the 100 mission cities under India's Smart Cities Mission (SCM). The ICCCs have helped city agencies optimise time and resource utilisation and promptly and effectively respond to challenges such as pollution, flooding, water loss, disasters, traffic congestion, and crime. They have also benefited citizens through improved access to essential services. The article highlights challenges, such as the digital divide and poor digital literacy, which can make such technology-led solutions exclusive and inequitable.

In their piece, *Shailendra Kaushik and Megha Tyagi* urge the adoption of 'Mobility as a Service' (MaaS) in India's SCM cities. MaaS offers integrated journey options across transport modes by using a single travel booking and payment platform. The article presents a policy framework encompassing nine policy pillars under data coverage, institutional and governance structures, and regulation and accountability to enable real-time information-sharing between different transport modes and service providers to facilitate MaaS in India's urban regions.

Gayatri Doctor, in her piece, points out that despite numerous e-governance initiatives by the central and state governments and urban local bodies (ULBs), India fares poorly in the United Nations E-Government Development Index (EGDI). If India can leverage the impetus provided by the SCM, which has enabled cities to move from analogue governance to e-governance, it can further evolve from e-governance to achieve the ultimate status of GovTech—a whole-of-government approach to public-sector modernisation. She also urges the government to consider expanding the coverage of SCM to India's tier 2 and 3 cities.

Evaluating the pros and cons of the autonomous and private-consultant-managed special purpose vehicles (SPVs) to plan, implement, and govern SCM cities as corporate entities, *Uttara Purandare* asks pertinent questions about their administrative and financial sustainability in the absence of central government funding at the end of the Mission period. The article calls for a critical examination of the SPVs and the capacities of ULBs to sustain technology-based interventions beyond the SCM deadline of March 2025.

Anusha Kesarkar-Gavankar and Swarali Bhutekar conclude the first section with an essay that highlights persisting gender digital inequalities, including low digital awareness, financial constraints, cultural norms, and online safety issues, which restrict the benefits of digitalisation from reaching marginalised communities, especially women, in the Global South. They recommend integrating digitally inclusive goals into development agendas to ensure that the benefits of digital advancement are accessible to all.

The second section of this compendium begins with an article by *Banashree Banerjee,* which argues that limited ULB autonomy, irregular elections to local bodies, and digital exclusion have prevented participatory governance in Indian cities despite government initiatives and urban programmes such as the SCM and the National Urban Livelihoods Mission integrating citizen engagement in their design. It recommends strengthening local government capacities and institutional reforms and embedding

participatory practices in the core of policy frameworks and governance structures to catalyse citizen engagement in urban governance.

In the subsequent article, *Shelly Kulshreshtha* notes how decentralised and participatory urban governance remains an "unfinished agenda" in India three decades after the Constitution (74th Amendment) Act (CAA) was passed in 1992. She presents a conceptual framework of the channels and purpose of engagement between the ULB and citizens, emphasising the representation of the people in city governance through diverse sources.

Mercy Samuel and Dhaval Desai then challenge the government's regard of online complaint-redressal platforms of certain municipal administrations in India as a measure of enhanced participatory urban governance. Though such platforms may have increased customer convenience in larger cities, they fall short of meaningful citizen engagement unless they are backed by a robust and strategic technological backend, enhanced ULB capacities through trained human resources, two-way communication channels, and transparent feedback mechanisms. At the same time, smaller cities must strengthen their conventional analogue data collection and complaint-redressal processes before leapfrogging to online platforms.

The next contribution by *Rahul Srivastava and Matias Echanove* narrates their decade-and-a-half experience of working with communities in Koliwada, Dharavi, one of Asia's largest informal settlements located in the heart of Mumbai. Their essay explains why grassroots-level, location-specific governance is often lost in regional and national considerations, where local needs get subsumed by complex political, bureaucratic, and administrative processes. It highlights the need to bridge the "epistemological gaps" in understanding the intricate and interdependent ecosystem of local communities to facilitate tangible and meaningful decentralisation and participation.

Milind Mhaske then highlights the findings of a study of the administrative frameworks of all states in India. Despite being mandated by the CAA in 1992 and the Jawaharlal Nehru National Urban Renewal Mission in 2005, Ward Committees and Area Sabhas (committees) in ULBs across India are not functioning effectively. He calls for a tripartite collaboration between the three constituents of governance, including the civic administration, elected representatives, and citizens, to catalyse participatory governance in urban India and pave the way for a transparent, inclusive, and responsive urban governance framework.

The subsequent article by *Reashma P. S.* recounts the experiences of citizen-led civic campaigns in Bengaluru. Though the city has seen healthy civic activism, mainstreaming citizen engagement in governance still has gaps between different societal classes and their varied interests, which could be bridged by increased grassroots involvement and a conscious endorsement and acceptance of people's participation from political leaders, government authorities, and civic administration.

Through examples from India and abroad, *Anusha Kesarkar-Gavankar* stresses that participatory governance is not a one-off policy intervention but a continuous process involving the people, civil society, and non-governmental organisations in a two-way dialogue with the government. Such a process is possible only if the governments recognise civil society and its agencies as equal stakeholders in decision-making.

Dhaval Desai closes the volume by examining how states across India, betraying their lack of will to decentralise urban governance and promote participatory governance, have repeatedly neglected ULB elections despite the CAA lending ULBs constitutional status and recognising them as the "third tier" of government. The article recommends sweeping institutional transformations at the state level, granting total autonomy to State Election Commissions, and empowering them with the same enforceable mandates enjoyed by the Election Commission of India to ensure timely elections to the government closest to the people.

The insights presented in this compendium underscore a fundamental truth: for e-governance initiatives to be effective and equitable, they must be rooted in genuine, ongoing dialogue with citizens. However, states must first create a conducive policy framework and a time-bound action agenda for the tangible and effective implementation of the mandates of the CAA to encourage and mainstream citizen engagement in all civic matters that affect their daily lives.

It is our hope that this compendium serves as a valuable resource for policymakers, urban planners, researchers, and citizens alike, inspiring collaborative efforts towards creating cities that genuinely serve and uplift their people.

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I

Digital Governance and Smart Cities

Harnessing Technology for Improved Urban Governance in India

Gautham Ravichander and Viraj Tyagi

The rapid pace of urbanisation in India presents numerous challenges. From strained infrastructure and inadequate public services, to environmental degradation and the lack of inclusive development, urban administrators face increasingly complex issues in the governance of cities and municipalities.[1] Emerging technologies offer solutions to tackle these challenges and build sustainable, responsive, and citizen-centric cities.

This transformation can be catalysed by the convergence of digital public infrastructure (DPI),[2] Internet of Things (IoT) networks, and Artificial Intelligence (AI). By harnessing the synergy between these digital capabilities, local governments can ensure a good quality of life for residents and revolutionise how cities plan for the future.[3]

India has pioneered the use of DPI for nearly two decades. During this period, a number of policy and programmatic initiatives for digital governance in cities have also been implemented, such as the Jawaharlal Nehru National Urban Renewal Mission (JNNURM)[4] and the ongoing Atal Mission for Rejuvenation and Urban Transformation (AMRUT).[5] There is also the Smart Cities Mission,[6] which encourages the application of digital technologies to urban governance.

Laying the Digital Foundation

At the core of smart city initiatives is developing robust DPI aligned with the G20's principles of open, secure, and interoperable digital platforms that can enable seamless data exchange within and across agencies.[7] DPI serves as the connective tissue, facilitating communications between agencies and shared resources and allowing the coordination of decisions and on-ground actions while promoting transparency, competition, and innovation.

In the past decade, governments at the centre, state, and local levels have created DPI building blocks and exemplified how they can drive better governance and responsiveness. While the Greater Chennai Corporation[8] and the Andhra Pradesh[9] government have historically been the leaders, Punjab[10] and Odisha[11] have also emerged as lighthouses of digital transformation.

Deploying DPI for governance has improved service delivery, revenue realisation, and financial management. This transformation has withstood changes in state and local political leadership.[12] Punjab's and Odisha's transformation through effective governance and public-private partnerships (PPPs) highlights the possibility of such initiatives succeeding within shorter time periods.

National Urban Digital Mission

Guided by these pioneering initiatives, the Government of India (GoI) has launched the National Urban Digital Mission (NUDM)[13] to help cities nationwide undertake similar transformations. NUDM's

Urban Platform for Delivery of Online Governance (UPYOG)[14] is a shared digital infrastructure with core capabilities encompassing urban property tax management, municipal services, and financial management. This overarching foundation reduces costs for local bodies and drives the adoption of sector-specific governance applications. States like Kerala, Chhattisgarh, and Himachal Pradesh are already leveraging NUDM. In the interim budget for the Financial Year 2024, the GoI committed INR 14.5 billion to scale NUDM country-wide.[15]

However, realising NUDM's full potential to reimagine administration and governance for the digital era requires not just funding but collective efforts to overcome systemic inertia, implement data policies, address cybersecurity vulnerabilities, and upskill stakeholders across *samaj, sarkar,* and *bazaar* to transition to a 'digital first world'. This involves robust capacity building at the strategic and programmatic levels, designing PPPs with trust and accountability, and continuously monitoring real-world outcomes. Learnings from these frontrunner states will be instructive for others that are only starting to embark on their own journeys.

Fostering Good Governance on Digital Foundations

Effective urban governance must be a two-way endeavour that involves citizens, community stakeholders, and industry in decision-making processes. DPI can open new avenues for such collaborative participation. Cities that have already laid a digital foundation and improved their capacities for service delivery and governance must open up their decision-making processes to collect more significant input from residents on aspects of the city that work well for them. The data registries provided by DPIs enable citizens' perspectives to be married with trusted data across all agencies in the city, allowing the pragmatic negotiations and prioritisation required to move forward collectively.

Additionally, the digital backbone will help identify priority projects that require multi-stakeholder coordination, ensuring that all involved agencies achieve efficiencies in the execution and spending of public funds.

Constant two-way communication between governments and citizens will establish feedback loops that can help government agencies keep citizens informed on the progress of their specific service requests and general development works as well as improve the functioning of these agencies to maintain service levels and quality.

However, digital participation faces challenges such as the lack of digital literacy and the linguistic diversity in the population. There are also risks of exacerbating existing inequalities if sections of society cannot effectively access digital interfaces. 'Assisted access' models, such as training local facilitators to handhold communities to access digital services, partnering with local civil society organisations to enable them to aggregate and apply for services on behalf of communities, and setting up helpdesks and citizen-service counters (preferably in PPP models) will ensure that digitalisation does not lead to exclusion.

GoI's ongoing investments in AI[16] also enable cities to improve their ability to serve citizens in languages of their choice through more intuitive channels like voice recognition and language-translation technologies, thus easing the process of applying for services.[17] AI can ensure that governments not only engage at scale but also listen at scale, making it easier to obtain citizen inputs in their language and voice and analyse these inputs to inform policymaking. Punjab is already exploring AI-powered voice interfaces for citizen services. The recent focus on establishing an AI Centre of Excellence (CoE) for sustainable cities at leading research institutions will further boost the use of AI in cities.[18]

Improving City Sensing and Operations

IoT is becoming central to the data-driven optimisation of urban services and operations. By leveraging interconnected networks of sensors and devices, cities can achieve unprecedented visibility and control across critical domains.

- **Transportation:** IoT sensors detect road congestion points, enabling the dynamic optimisation of signal timings and prompts for digital traffic guidance systems to ensure smoother mobility.[19] Intelligent parking solutions guide motorists to available spots using occupancy data, reducing emissions from circling searches.[20] Public transit is enhanced through intelligent systems that track vehicle locations, predict arrivals, and automate passenger counting. Cities like Bengaluru are leading the way in this space, with the rapid adoption of smart signals, smart parking, and improvements in public transport provisioning.[21]
- **Urban Planning:** AI simulations can model the impacts of land-use zoning, infrastructure projects, and development plans on mobility, pollution, and accessibility to amenities.[22] Geospatial data combined with climate inputs allows for strategically planning eco-friendly interventions like urban forests to combat issues like the 'heat island' effect.
- **Utilities:** Smart meters allow utility companies to remotely track energy and water consumption patterns, enabling demand forecasting, proactive maintenance, and leak detection. Consumers gain insights into their usage through web and mobile apps to reduce their environmental footprint.[23] This can also enable the implementation of sustainability plans for better energy and water consumption through positive and negative reinforcement of desirable and undesirable consumption patterns, respectively, using ratcheting user charges and fines.
- **Environment:** Air-quality monitoring stations and noise sensors map pollution hotspots, aiding mitigation strategies like optimised waste-collection routes using smart bin fill-level data. Flood-detection sensors provide early warning against inundation risks. When integrated with operational platforms like UPYOG, resource allocation and operational planning can be responsive to emerging situations and assist in containing and mitigating them in a timely manner.

Integrating these IoT data streams with digital infrastructure platforms enables a unified operational picture, driving optimised planning, disaster management, and resource utilisation across sectors.

An Urban Renaissance

The compounding impacts of digital infrastructure, IoT, and AI can catalyse an urban renaissance, ushering Indian cities into an era of sustainable development, operational resilience, responsive public services, and inclusive governance.

Data-driven resource optimisation and strategic eco-urban interventions guided by AI/geospatial mapping can reduce the environmental footprint of cities while increasing green cover and biodiversity, supporting sustainability in future development and day-to-day operations. By integrating climate data with smart infrastructure sensors, predictive analytics enables the use of early warning systems and coordinated disaster preparedness across agencies. Virtual twins[a] can model impacts for strengthening climate adaptation strategies.

Innovative modes of multilingual-assisted access can bridge the digital divide, ensuring that no community is excluded from the benefits of e-governance and civic engagement. Crowdsourced data capture ensures that development is informed by grassroots realities. Unified operational dashboards provide administrators with comprehensive civic situational awareness, enabling proactive planning and agile response. AI-powered assistants can deliver personalised services based on predictive needs while automating issue resolution. Open data, immersive visualisations like Augmented Reality, and comprehensive digital audit trails can enhance transparency, accountability, and citizen trust in urban governance processes.

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[a] Digital replicas of cities which can be used for modelling and analytics by consuming multiple data streams.

The possibilities are numerous. However, unlocking this urban renaissance requires strategies spanning equitable access, ethical AI principles, cybersecurity paradigms, and sectoral data governance policies. Public-private collaboration through regulatory sandboxes[24] and cloud innovation hubs can accelerate the co-creation of intelligent solutions between governments, technology firms, civic organisations, and research institutes.[25]

It is easy to dismiss concerns about the potential harms of blind technology adoption as mere fearmongering. The government needs to engage with critics to ensure that these harms are acknowledged and mitigated in the design, implementation, and governance of urban digital transformation agendas to nurture citizen trust at scale.[26] Thoughtful design and implementation of data governance strategies and technologies will be vital to harnessing the benefits of the digital revolution while mitigating associated harms.[27]

Conclusion

Cities are the present and future epicentres of civilisational progress. With India's rapid urbanisation, emerging and converging technologies like DPI, IoT, and AI present a generational opportunity to build urban environments that are sustainable, resilient, responsive, and inclusive for all. Integrating these capabilities through a cohesive long-term vision can help Indian cities redefine responsive urban governance in the twenty-first century.

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Bus Modernisation Through an Integrated Transport Plan: The Case of Chandigarh

P. K. Sarkar

India's Smart Cities Mission[1] involves the use of information and communications technology (ICT) and digitalisation to develop an urban renewal and retrofitting programme for 100 cities under its purview. The aim is to improve the quality of life of citizens while ensuring sustainable growth and enhanced prosperity for all.

The Ministry of Housing and Urban Affairs had conceived the mission based on three strategic components—city improvement (retrofitting), city renewal (redevelopment), and city extension (greenfield development)—in addition to a pan-city initiative to apply smart solutions.[2] These components aim to develop public policies, regulations, and institutional arrangements for municipal and city governments; evolve a collaborative

ecosystem for governance mechanisms to manage the stakeholder networks; and leverage technology to increase governance efficiencies and improve the quality of life of citizens.

Adequate investments in technology, specifically ICT, are critical to improving urban infrastructures such as housing, transportation, and public utilities. In the transportation sector, technology and digital innovations enable an integrated transport system (ITS) architecture and standards operated by a skilled workforce, improving service delivery and enhancing the carrying capacities of multimodal transportation through efficient management and real-time monitoring. As the extended deadline for the Smart Cities Mission concluded in June 2024,[3] the effectiveness of its ITS interventions needs to be examined. This article evaluates the ITS interventions in Chandigarh, a union territory that is the shared capital of Punjab and Haryana, to understand the efficacy of technology and digitisation in improving service delivery and encouraging the shift from personal modes of transport to buses.

ITS Solutions for Smart Cities

New-generation ITSs include features such as traffic prediction, analytics, traveller information, ticketing, and fare collection through targeted technological interventions, including roadside sensors, radio frequency tags, and global positioning systems, to help monitor and manage transport more effectively. These systems aid prompt, accurate, and effective decision-making during emergencies and disruptions.[4] City transport agencies can deploy the following ITS-driven technologies to enhance operational efficiencies and ensure optimum bus fleet utilisation along with other transport services:

- Multimodal transportation and traveller information systems
- Smart ticketing and mobile payments
- Intelligent traffic management systems
- E-mobility

- Cooperative ITS, vehicle-to-infrastructure (V2I), and intelligent road infrastructure
- Freight solutions
- Car and bike rental and sharing
- On-demand taxis
- Congestion zones and road user charging
- Autonomous vehicles

The Implementation of a Bus Modernisation Plan

Chandigarh's bus modernisation plan was funded by the World Bank and implemented by the Chandigarh Transport Undertaking (CTU) in collaboration with the Ministry of Housing and Urban Affairs.[5] The primary aim of the plan was to explore ITS interventions for the better utilisation and management of CTU's bus fleet, provide real-time information about bus arrivals and departures to users to enhance ease of access, increase ridership by encouraging a shift from private transport modes to buses, and improve the reliability and safety of the services.[6] The bus modernisation plan also aimed to streamline the functions of the CTU's central administration and integrate bus depot activities.

Specific interventions under the plan helped Chandigarh leverage multiple technologies, including scheduling and roster software, an electronic fare collection system, a passenger information system, a transit management centre with trained staff, and an automated bus-tracking system.

Study Area

Intra-city and daily travel in the Chandigarh tri-city cluster[a] makes it imperative for city planners to view public transport for the

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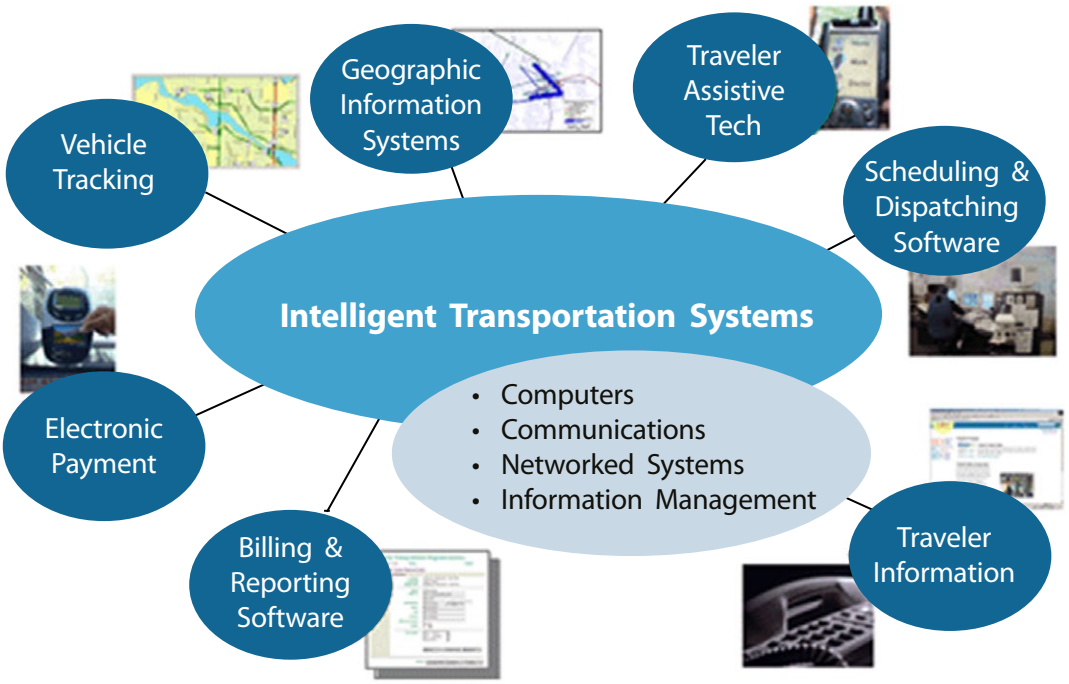
[a] The Union Territory of Chandigarh is spread over 114 sq km and has a population of over one million. It adjoins Punjab's Mohali to the west and Zirakpur to the south, and Haryana's Panchkula to the southeast. Chandigarh's population density has grown from 56 to 92 persons per hectare in the last 20 years, with a moderate density of up to 100 persons per hectare in its central sectors.
See: https://chandigarh.gov.in/sites/default/files/documents/demography.pdf

composite urban area. The CTU has a fleet of 453 buses that serve people across the tri-city network.[7]

The Bus Modernisation Programme

The backbone of the ITS-based modernisation plan is an ITS-based system architecture, which includes the Automatic Vehicle Tracking System (AVTS), Passenger Information System (PIS), Transit Management Centre (TMC), Scheduling System, and Automatic Fare Collection System (AFCS). Figure 1 presents the conceptual framework of the CTU's bus modernisation plan.

Figure 1: A Conceptual Framework of Chandigarh's Bus Modernisation Plan



Source: ITS.[8]

After a conceptual framework has been established, it is critical to plan the technical requirements in detail before switching to any ITS-based interventions. Such an ITS architecture must also consider various scenarios to estimate future demand growth and the corresponding expansion of services.

A communications mechanism connects the Transport Management System (TMS) to various system components, including buses and PIS at bus stops, depots, workshops, inspection units, equipment stores, and sales units. Similarly, the AVL, PIS, AFCS, electronic ticket machines (ETMs), and single controller unit (SCU) are connected to a SIM module to send and receive transactions and other real-time data. This communication channel between TMS and buses also includes 4G long-term evolution (LTE) and 5G mobile communications. If one module malfunctions, there is a backup communications mechanism to ensure uninterrupted operations. Table 1 highlights the sub-sections of the ITS architecture and their utilisation.

Table 1: Sub-Systems of ITS-Based Bus Operations

System	Sub-System	Utilisation in Different Activities
Automatic Vehicle Location System (AVL)	• Vehicle tracking system • Single controller unit (SCU) • Bus console display • Back-end application software • Communication system	• Real-time bus arrival information • Real-time monitoring of scheduling and bus dispatch • Ensuring schedule adherence • Driver en-route guidance • Monitoring service-level agreements (SLAs) of contractors • Incident and emergency Management • Fuel management • Performance monitoring • Management information system (MIS)

Passenger Information System (PIS)	• PIS at bus shelters • On-board PIS • External PIS • En-route or pre-trip PIS • Back-end application • Software	• Real-time bus arrival information • Customer interaction and experience
Fare Collection System	• Electronic ticketing machines • Pass issuance and renewal system • Pass (smart card) validation • Waybill management system	• On-board fare collection • Pass handling • Concessions and discount handling • Fare integration with other modes • Data availability for future planning • Traffic inspection • Traffic and revenue reconciliation • MIS
Transit Management System and MIS	• Trip scheduling and vehicle assignment system • Crew management and rostering system • Fuel management • Store inventory management system • Vehicle maintenance management system • Attendance management system • Passenger feedback and grievance address system • Passenger feedback system • Infrastructure and asset monitoring system • Purchase management • Contract and bid management • HR management system • MIS	• Automated depot, terminal, and workshop activity • Decision making • Integrated systems approach to enhanced operations • In-bus security cameras on older buses

Central Control Centre	• Data archival • Display of surveillance • Display system for bus monitoring • Communications system	• Performance monitoring • En-route driver guidance • Adequate data availability • Monitoring of SLAS of contractors • Monitoring vehicle movements • Emergency and incident management • Passenger guidance
Data Archiving	• Tapes • Servers • NVRs	• Supports analysis and planning

Source: Compiled by the author from ITS.[9]

Assessing the Impact: Modal Shift to Buses

The study used a binary logistic model to estimate the shift of passenger trips from existing modes of transport to ITS-driven public transport systems. It constructed nine scenarios using orthogonal design for the optimum number of options for car vs. bus, autorickshaw vs. bus, two-wheeler vs. bus, and bicycle vs. bus.[10] The study further prepared specific attributes of each comparative mode using three levels of data: waiting time, travel time, and travel cost. The findings indicated commuters' willingness to shift from personalised modes to public transport through levels of 1-5, 6-10, and 11-20 minutes for each attribute. For example, a car user would prefer shifting to bus travel only if the waiting time for the bus is not more than five minutes, the bus travel time is not more than ten minutes compared to the travel time by car, and the cost of bus travel is less than travelling by car. The study adopted the same approach to estimate travel costs and travel time.

Conclusion

The study revealed that a car vs. bus travel time of less than 20 percent, travel cost between 10 and 25 percent, and a maximum threshold waiting time of up to ten minutes for the bus was

the most effective scenario to encourage the modal shift of a commuter from a personalised vehicle to a public bus. The ITS-based bus modernisation plan implemented this combination, resulting in a 19-percent shift from private modes to buses.

Chandigarh has shown how the dedicated pursuit of technology-driven reforms can contribute to a city's 'smartness' quotient while reducing congestion on roads, curbing vehicular emissions, and increasing the utilisation of public transport modes. Chandigarh's success in enabling a shift from personalised and paratransit modes, such as autorickshaws and taxis, to buses through improving in its bus services through the ITS-based modernisation plan sets an example for other Indian cities.

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Integrating Technology in the Management of Cities

Rumi Aijaz

Technological interventions are increasingly being used to address complex problems in many spheres, with evidence showing that the practice enhances the quality and performance of urban services and reduces consumption, wastage, and overall costs of service provision.[1] Nations are regularly engaging with each other to share and benefit from available technological solutions. Within this context, this article examines the nature and experience of technology use in Indian cities to improve quality of life.

Indian cities are experiencing a crowding of population, buildings, infrastructure, and economic activities. Many cities are also vulnerable to the negative impacts of climate change. To combat these issues and ensure proper city

management, governments have introduced various reforms, including the application of innovative technological solutions.

The Evolution of ICCC under the Smart Cities Mission

An Integrated Command and Control Centre (ICCC) has been established in each of the 100 cities under India's Smart Cities Mission.[2] These centres are equipped with information and communication technologies that facilitate the real-time monitoring of city conditions and the management of response activities.

Pollution Mitigation

In Agra, Uttar Pradesh, air quality is monitored at the ICCC with the help of 39 sensors installed at various locations across the city.[3] The data generated on different environmental parameters (such as particulate matter, carbon monoxide, nitrogen dioxide, and sulphur dioxide) are shared with the city administration for preparing a pollution control plan and making appropriate decisions on traffic diversions for reducing air pollution.

In Ahmedabad, Gujarat, data generated from 50 environment sensors deployed at various locations are supplied to the health department for targeted interventions in the health sector. These include issuing health advisories about the impact of pollutants on people with lung and heart diseases as well as the respiratory effects on healthy people.[4]

Flood Management

The ICCC helps cities prone to flash floods, such as Agartala, Tripura, to address waterlogging on city roads.[5] Surveillance cameras are used to monitor the conditions, and immediate action is taken to manage stormwater, such as the timely discharge of flood water, with the help of water pumps. In Chennai, Tamil Nadu, real-time monitoring of people's locations during extreme weather events such as floods allows authorities to undertake timely measures for rescue and relief.[6] In the coastal city of Kakinada, Andhra Pradesh,

an early warning system—which includes 30 public announcement systems and five big screens—has been established to inform citizens about approaching emergencies such as cyclones or heavy rains.[7]

Energy Efficiency

Populous cities consume large amounts of electricity, the generation of which involves the burning of fossil fuels. Several cities have introduced technologies to ensure optimum energy utilisation. For example, energy-saving smart poles are installed and integrated with the ICCC in the New Delhi Municipal Council (NDMC) area for real-time monitoring and effective management. The lights from these poles can be operated and dimmed as required, with centralised control at the ICCC. Further, smart electricity meters installed in domestic and non-domestic premises allow for the efficient monitoring of electricity consumption.[8]

Kerala's Kochi and Thiruvananthapuram cities, for example, generate electricity from solar power. In Kochi, about 791.72 megawatt-hours (MWh) (which equals 1,000 kilowatts of electricity generated per hour) of green energy generated from solar rooftop systems in 28 buildings is used to meet electricity requirements.[9] The integration of this system with the ICCC allows for the generation of data for improved energy management. Such practices help conserve energy, reduce costs, and lower carbon emissions.

Urban Mobility

ICCCs are also crucial for the smooth functioning of the urban mobility sector. Chandigarh uses intelligent traffic management systems (ITMS) and adaptive traffic control systems (ATCS) for better traffic monitoring and management.[10] The ICCC-integrated ITMS and ATCS devices include:

- Infrared-enabled automatic number-plate-reading cameras
- Overview cameras
- Radar-based instant speed detection systems

- Traffic-light countdown timers
- Dynamic message signs
- Public address systems

The regular monitoring of these systems at the ICCC helps reduce travel time and identify traffic-light-crossing violations, over-speeding vehicles, and criminal activities on roads. They also enable the real-time reporting of irregularities to the enforcement department for prompt action. In Delhi, the NDMC offers smart-parking facilities to motorists. Information on the occupancy status within parking lots is obtained using sensors and provided to the public through a mobile app (NDMC 311) for hassle-free parking.[11] In Ahmedabad, the ICCC's integration with ITMS allows for the real-time monitoring of public buses plying on roads, and the information generated helps the transport department in the efficient provision of this service.[12] Other facilities provided to passengers include an automated fare-collection system and a national common mobility card.

Water and Sanitation

Efforts are underway to manage and improve people's access to water and sanitation. The civic agency in New Town, Kolkata, West Bengal, uses supervisory control and data acquisition (SCADA) for the real-time monitoring of water that is supplied to consumers. The technology helps in the improved operation of the water-supply system and the timely resolution of water complaints such as pipeline leakages and low pressure.[13] Similar measures have been taken in Tiruchirappalli and Tirunelveli, Tamil Nadu. In Indore, Madhya Pradesh, the movement of garbage collection vehicles is tracked with the help of a global positioning system (GPS) to know whether all areas of the city are being covered by the sanitation services.[14] In Dehradun, Uttarakhand, in addition to vehicle tracking, sanitation workers are provided with a mobile app. Households are tagged with a quick response (QR) code to ensure 100-percent household coverage by waste-collection services.[15] The monitoring

of activities at the ICCC helps address inefficiencies in waste collection.

Safety and Security

The safety and security of citizens is ensured through surveillance cameras installed at various locations. In Varanasi, Uttar Pradesh, the 425 cameras deployed at key junctions allow for improved monitoring and post-incident investigation and help city police maintain law and order.[16] Similarly, the ICCC in Vadodara, Gujarat, ensures prompt responses to fire-related emergencies and helps address encroachments on public land. In Sagar, Madhya Pradesh, a mobile app has been introduced that allows women to instantly report any crime in public places to the police control room.

Monitoring Tax Collection

The ICCCs in Indore, Madhya Pradesh, and Visakhapatnam, Andhra Pradesh, regularly monitor the municipal revenue-collection process and keep revenue-department officials informed about collection patterns at the ward level. The method helps identify property and water tax defaulters while facilitating improved revenue collection.[17]

Conclusion

There is evidence to suggest that targeted technology-based interventions under the Smart Cities Mission are benefiting Indian cities. Civic agencies are benefiting from the integration of various services with the ICCCs. Real-time sharing of information and data generated at the ICCCs with concerned government departments is helping city administrations respond to various civic needs and other urbanisation-related problems in a time-bound manner. Better time and resource utilisation through such an integrated, technology-driven approach has reduced the financial burden on city governments. Cities are now better equipped to respond to the challenges of environmental pollution, flooding, water loss, disaster

rehabilitation, traffic congestion, and crime. Citizens, too, benefit from improved access to essential services such as water, sanitation, public transport, energy, and safety.

The introduction of innovative technologies in city management and governance is attributed to the national government. Indeed, many initiatives were developed and partially financed under the Smart Cities Mission. Such support, however, is offered only to select cities.

The provision of suitable infrastructure and new technologies entails enormous financial costs, which smaller Indian cities cannot bear. Many also lack the capability to develop customised solutions. One of the imperatives is to bridge the digital divide and ensure equitable access to technologies. Further, to reap maximum benefits from technology integration, creating efficient crisis response mechanisms is essential.

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Towards a Mobility Data-Sharing Policy for India's Smart Cities

Shailendra Kaushik and Megha Tyagi

Imagine navigating congestion-free streets, seamlessly switching between public transport and micro-mobility, and customising a journey in real time, all on a single platform that even gives the consumer the chance to compare pricing. This scenario, though seemingly implausible, is a core element of the rapidly evolving global digital transformation in the transport and mobility sectors. Recent advancements in information and communications technologies (ICT), including the global positioning system (GPS), smartphones, expanding 5G connectivity, the Internet of Things (IoT), and improved computational power, have unlocked new opportunities for innovative urban mobility service delivery.[1]

One innovative concept that has emerged from these developments is 'Mobility as a Service' (MaaS)—an intelligent mobility framework that supports public transit and active mobility and shapes private-sector initiatives and technology.[2] Although a universal definition of MaaS is lacking, it can be expressed in terms of a data-driven solution for future mobility provisions that integrates real-time journey planning with integrated ticketing options. MaaS has its origins, and notable developments, in Global North contexts, particularly in Sweden and Finland, which have also been leaders in implementation and field trials.[3] MaaS offers integrated journey options across different transport modes using a single travel booking and payment platform, providing multiple choices for a journey. Such real-time information exchange between various modes and service providers under MaaS requires a robust data-sharing governance framework that ensures accountability, data security, privacy, and accessibility.[4]

Several large-scale MaaS schemes in the Global North[5,6,7] that employ open mobility data ecosystems have yielded promising results. The findings, however, are not directly applicable to countries of the Global South,[8] including India. Unlike in the West, which has more standardised infrastructure and transport systems, Indian cities have diverse, complex urban mobility environments. Data is fragmented across government agencies, app companies, and transport modes, making it a challenge to gain a holistic view of mobility patterns. Additionally, the lack of standardised data formats across these diverse sources hinders seamless data exchange and integration for comprehensive analysis.

The Indian government has initiated different programmes and schemes, such as the National Data Sharing and Accessibility Policy (NDSAP)[9] and the Smart Cities Mission, to encourage data sharing across sources. Cities, too, have attempted to integrate technology (for example, the Kochi One App).[10] However, most of the transportation data shared under the two national initiatives are aggregated, enabling an analysis of overall mobility trends against the more granular transportation data needed to understand urban mobility comprehensively. Various factors have contributed

to this situation: the lack of clear guidelines around data privacy and security; poor technical expertise and resources within public agencies; and the reluctance of private companies to share their data, fearing loss of competitive advantage.

This article presents the findings of GIZ-funded research undertaken by the authors, who represent Cities Forum,[a] which analysed existing data and proposed a holistic framework for developing a national urban mobility data-sharing policy for India's smart cities.

Proposed Policy Objectives, Framework, and Measures

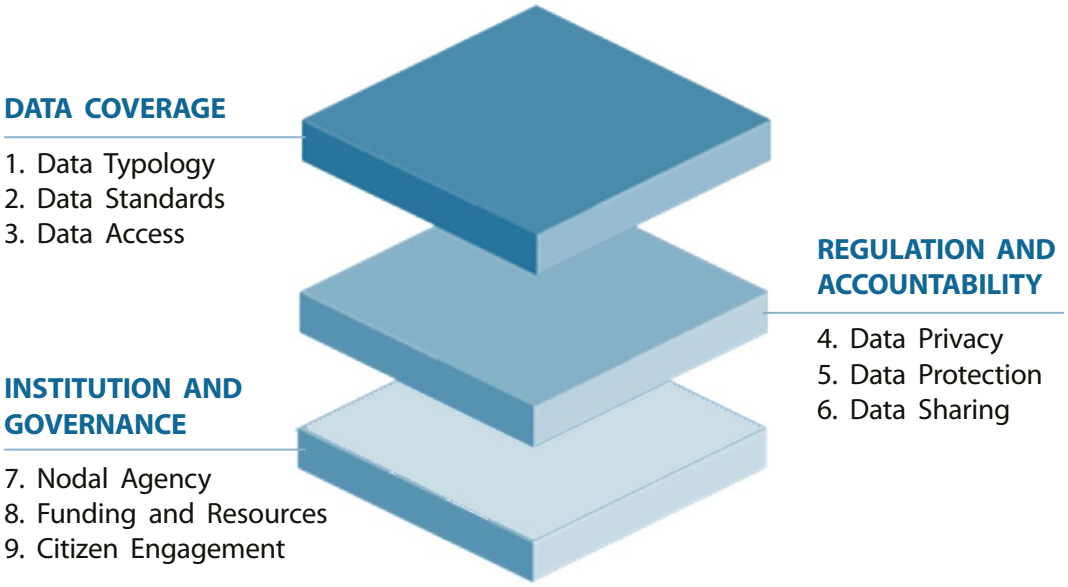
The research considered the needs of various stakeholders (public agencies, private operators, users) and reviewed the international principles from the National Association of City Transportation Officials to frame its key policy objectives:

- Create a framework to foster data standardisation, storage, retrieval, and sharing in an urban area.
- Enable public, private, and third-party operators to access shared mobility data while ensuring data protection and ethical usage.
- Identify the roles and responsibilities of different parties in data sharing and management, as well as those concerning physical and digital infrastructure for data resources and data flow.
- Define a structured standard for creating, developing, and adopting an interoperable data format by different stakeholders.

Figure 1 presents a potential policy framework covering nine pillars within three policy instruments or measures.

[a] Cities Forum is a global strategic advisory firm and think tank that aims at being a catalyst and working with cities and governments to solve their sustainable urban development challenges. The organisation is headquartered in London with branches across India, Spain, UAE, Colombia, and Kenya (https://www.citiesforum.org/). The authors are officials of Cities Forum.

Figure 1: Proposed Policy Framework



Source: Ministry of Housing and Urban Affairs, Government of India.[11]

Data typology

Public and private agencies collect different types of urban mobility datasets. A central data hub can optimise urban mobility by storing relevant information, from traffic flows to land-use patterns. Standardised data formats on an open data platform will ensure seamless sharing between public agencies and private companies and share public transport details, spatial data, and real-time traffic feeds. Leveraging the National Common Mobility Card,[b,12] the research suggests anonymising travel data sharing for planning purposes while prioritising user privacy through robust anonymisation practices.

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b The National Common Mobility Card (NCMC) is an interoperable transport card conceived in 2019 by the Ministry of Housing and Urban Affairs of the Government of India. The card enables the user to pay for travel, toll duties (toll tax), and retail shopping and withdraw money.

Data standards

Collaboration between cities to create or adapt existing open data formats can create standardised, machine-readable information to ensure smooth data exchange between systems. Cities can leverage already established standards, such as the Mobility Data Specification[13] and others like the General Transit Feed Specification[14] and the General Bikeshare Feed Specification[15] as a reference and encourage the seamless sharing of data through the development of standardised application programming interfaces (APIs).[16]

Data access

The data should be available in two tiers: (1) open access to general information data (requiring registration), such as vehicle fleet size, trip frequencies and routes, and details about stops and interchange zones; and (2) restricted access to anonymised data that is sensitive but valuable for research and planning, such as individual trip details, ticketing information, and live location data, to protect user privacy.

Data privacy

The geospatial mobility data must be treated as personally identifiable information (PII) and gathered, stored, and released in accordance with standard PII policies and practices. These protocols must include clear guidelines for handling public disclosure requests while recognising the privacy concerns associated with mobility data. It is also essential to regularly update data policies and practices to keep pace with evolving technology. Furthermore, all involved parties, including transport service providers and vendors, must adhere to established mobility data standards and privacy laws. Finally, the development and deployment of MaaS platforms should be based on the Digital Personal Data Protection Act, 2023, complying with its 'seven principles'.[17] These principles ensure informed consent, limit data collection to specific purposes, and

require accurate data with strong security measures. They provide users with the right to data deletion after it is no longer required, with data-holders being accountable for breaches and violations.

Data protection

Cities must establish comprehensive policies, regulations, and agreements that govern how mobility data is handled, used, stored, accessed, and disseminated. They must set clear limits on how long individual trip records can be retained before secure deletion and also ensure the anonymisation of geospatial data before permanent storage, preventing the identification of specific trips. Companies and contractors involved with mobility data must be held accountable and adhere to industry best practices for record retention and storage. MaaS must effectively monitor and safeguard sensitive data, such as individual trip records, by employing, regulating, and enforcing strong IT practices.

Data sharing

While open-access data must be available through a public API, a separate secure login system must be created to access restricted data that requires authorisation. All data sharing must be governed by well-defined contracts that outline the terms of use, liabilities, and the roles and responsibilities of each party involved. Additionally, only anonymised, aggregated data must be made publicly available. Cities must reserve the right to share data with researchers and other stakeholders for public interest purposes, with the condition that these parties adhere to industry best practices for data storage, access, and retention.

Nodal agency

A city data officer must be the custodian of urban mobility data and drive the mobility data policy. Data champions and senior functionaries must act as trainers and lead data coordinators to manage data at the departmental level. A designated mobility data cell within a relevant ministry will serve as the regulatory and

policymaking body at the national level. A smart city data alliance can be established to handle local data sharing and management responsibilities. Finally, designated city agencies must ensure secure data sharing from public mobility services as mandatory for operation. This comprehensive structure would ensure the clear ownership, leadership, and regulation of effective data governance.

Funding and resources

As the custodian of urban mobility data, the government must invest in infrastructure development to store and share mobility data by leveraging existing infrastructure and data rooms established under the Smart Cities Mission. A public-private partnership between transport authorities and service providers enabling service providers to share data with the authorities for secure storage and hosting can enhance funding and resources. It is also essential to boost capacity building in cities, particularly in data assessment and management, to effectively evaluate the quality of data received from private vendors.

Citizen engagement

Citizens must be made aware of their rights and responsibilities under the urban mobility data policy. Cities must set up public consultation processes before implementing the mobility data policy. Any data collection and sharing must have user consent. Cities must also appoint a data fiduciary to address any breaches of the data-sharing policy and establish appropriate penalty and compensation mechanisms to protect user privacy.

Conclusion

The research proposes a framework across nine policy pillars for sharing urban mobility data in India's smart cities. It aims to combine public agency data, information from private transport providers, and anonymised user data to optimise transportation. Standardised data formats and open data platforms are crucial for

seamless information sharing. However, substantial data privacy measures are needed to protect user information. City data officers and data champions can ensure responsible data management. There should also be collaborations between national and local entities and secure data-sharing agreements with mobility service providers. Such a tailored policy has the potential to unlock a new era of efficient, sustainable, and user-friendly transportation systems across India's smart cities.

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The Role of Digital Governance in Creating Smart Cities

Gayatri Doctor

Across the world, the digital age—characterised as "open, digital and global rather than closed, analogue and local"—is changing the conduct of governance, with governments embracing digital tools to improve service delivery. But what is a "digital government", to begin with? The Organisation for Economic Co-operation and Development's (OECD) Digital Government Policy Framework (DGPF) specifies six dimensions: digital by design; data-driven public sector; government as a platform; open by default; user-driven; and proactive.

GovTech, a whole-of-government approach to public sector modernisation introduced by the World Bank in 2020, promotes simple, efficient and transparent government, with citizens at the centre of reforms. It emphasises three aspects

of public sector modernisation: (i) citizen-centric public services that are universally accessible; (ii) simple, efficient, and transparent government systems; and (iii) a whole-of-government approach to digital government transformation. Further, it proposes a four-stage progression of government functioning from traditional analogue operations to achieve the whole-of-government approach to digital transformation (see Figure 1). As such, GovTech supports governments in modernising core government operations and promoting civic participation, accountability, and trust.

Figure 1: Digital Transformation of the Public Sector

Analog Government	e-Government	Digital Government	GovTech
Closed operations and internal focus Analog procedures Government as a provider	User-centred approach but supply driven One-way communications and service delivery ICT-enabled procedures, but often analog in design Sliced ICT development and acquisition Greater transparency Government as a provider	Procedures that are digital by design User-driven public services Government as a Platform (GaaP) Open by default (co-creation) Data-driven public sector Proactive administration	Citizen-centric public services that are universally accepted Whole-of-government approach to digital transformation Simple, efficient, and transparent government systems

Source: World Bank.[4]

GovTech and Smart Cities both aim to transform urban environments into efficient, sustainable, user-centric spaces that improve quality of life by harnessing technology and digital transformation. While GovTech is about digital transformation in the public sector, the Smart Cities initiative focuses on solving urban challenges using innovative and digital technologies. But there is no universally accepted definition of a smart city. Its conceptualisation varies depending on the level of development of the country and city, the willingness to change and enact reform, the availability of resources, and the aspirations of residents.

India's Smart Cities Mission (SCM), launched in 2015, aims "to promote cities to provide core infrastructure and give a decent quality of life to its citizens, a clean and sustainable environment through the application of 'smart' solutions."[5] It caters to sectors such as smart mobility, smart energy, and water, sanitation, and hygiene (or WASH); economic infrastructure; social infrastructure, including health and education; vibrant public spaces; and smart governance. Smart governance can be defined as the "use of technology and innovation to facilitate and support enhanced decision-making and planning within governing bodies."[6] As such, the SCM presented opportunities for cities to apply information and communication technology (ICT) solutions to the various sectors and governance.

e-Governance in India

MyGov, the Indian government's online citizen engagement platform, collaborates with multiple government bodies and ministries for policy formulation and seeks people's opinions on issues and topics of public interest and welfare.[7] Social media platforms such as X, Facebook, and YouTube have also enabled civic engagement.

All 100 of India's smart cities have set up Integrated Command and Control Centers (ICCCs) for the enhanced monitoring of municipal services using ICT interventions.[8] Cities are using ICCCs for the following:

- Monitoring grievances from grievance redressal systems (both the web-based portal and mobile application)
- Improving water quality monitoring through water supervisory control and data acquisition (SCADA) systems. SCADA is the term for digital networks and computer systems that gather and analyse real-time data.
- Operating smart streetlights
- Monitoring bus rapid transit, public buses, and bike-sharing
- Ensuring city surveillance, crowd management, and detecting crime incidents
- Operating early warning systems

Notably, the India Smart Cities Awards Contest (ISAC)[9] seeks to reward cities, projects, and innovative ideas that promote 'smart' development in cities. Other competitions, such as the Streets for People Challenge, Nurturing Neighbourhoods Challenge, Cycles for Change Challenge, and the Cities Investments to Innovate, Integrate, and Sustain Challenge, also encourage cities to innovate and improve. These competition models helped select cities for funding, and an area-based and citywide development strategy was enabled by forming special purpose vehicles (SPVs) in select cities.[a] The SPVs were responsible for planning, appraising, approving, releasing funds, implementing, managing, operating, monitoring, and evaluating the SCM's development projects through joint ventures, subsidiaries, public-private partnerships, and turnkey contracts, suitably dovetailed with revenue streams. The revenue streams were expected to make the SPV self-sustainable and enhance its creditworthiness to raise additional resources from the market.[10]

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[a] Special purpose vehicles are autonomous administrative mechanisms to implement the Smart Cities Mission in each city, with a full-time CEO and nominees from the central, state, and urban local governments on their boards.

While the SPV mechanism facilitated the creation of project revenue streams from user fees and beneficiary charges, land monetisation, impact fees, debts, loans, and innovative finance mechanisms like municipal bonds, tax increment financing, and public-private financing, their long-term sustenance without revenue streams or central and state funding is in doubt. The projects were either citywide or area-based development projects. The area-based projects were pilots that could be scaled up to larger areas of the city depending on the project outcomes—financial viability, technological appropriateness, social inclusion, and ecological sustainability.

Additionally, throughout the SCM period, cities were constantly ranked based on different parameters, instilling a spirit of competitiveness. New technologies were implemented, and learnings from the early implementers were shared with others, facilitating process re-engineering to improve the process and project life cycle. It also focused on citizen involvement and engagement, initiating behavioural change.

The DataSmart Cities strategy,[11] Data Maturity Assessment Framework,[12] the initiation of the Smart Cities Open Data Portal,[13] the appointment of city-level chief data officers,[14] and city data policies[15] are vital to realising the full potential of technology interventions and innovation ecosystems in Indian cities. They catalyse the adoption of data-centric governance and foster a data culture in the urban ecosystem and among stakeholders, such as government, citizens, academia, and industry.

India's National Urban Digital Mission aims to build a shared digital infrastructure to strengthen the capacity of cities to solve complex problems at scale and speed.[16] For instance, at the state level, programmes such as M-Sewa[17] in Punjab, SUJOG[18] in Odisha, and K-Smart[19] in Kerala are providing e-governance services such as grievance redressal, water and sewerage, building plan approval, property tax payments, and trade licences across the respective states' urban local bodies.

India has also made strides in digital public infrastructure (DPI). DPIs are a set of shared digital systems that should be secure and interoperable and can be built on open standards and specifications to deliver and provide equitable access to public and private services at a societal scale.[20] They are governed by applicable frameworks and enabling rules to drive development, inclusion, innovation, trust, competition, and respect for human rights and fundamental freedom. India has several DPIs, such as Aadhaar, United Payments Interface (or UPI), DigiLocker, eSanjeevani, Government e-Marketplace (or GeM), and Digital Infrastructure for Knowledge Sharing (or Diksha, an education platform), showcasing the country's ability to leverage technology to ease governance and improve service delivery.

India's Urban Data Exchange[21] is a data exchange platform for smart cities and urban data, enabling data exchange between various city governments, government agencies, citizens, and the private sector. The India Urban Observatory[22] helps obtain reliable, up-to-date information on meaningful indicators over multiple domains, including transport, health, the environment, water, and finance, further assisting future strategies and policy interventions. Additionally, a city finance portal offers standardised, timely, and credible financial information on cities. The National Urban Learning Platform aims to enhance the capacity of the urban local body staff. Similarly, initiatives like the Smart Cities Fellowship Programme provide opportunities to create solutions for urban needs.[23]

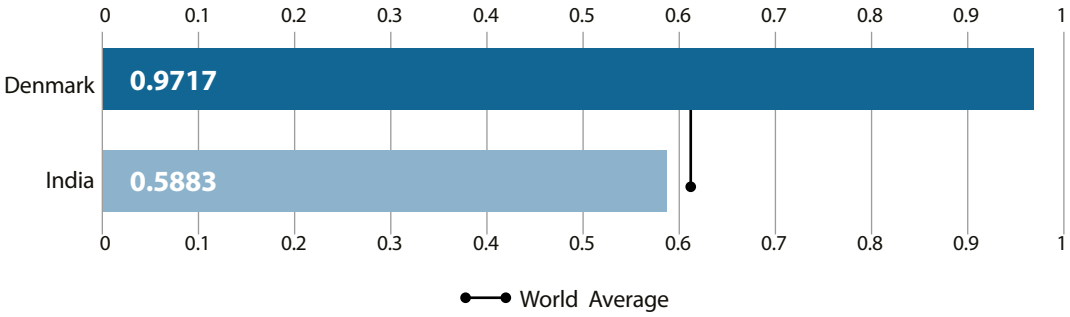
Where India Stands

The United Nations (UN) E-Government Development Index (EGDI) presents the state of e-governance in the UN's 193 member states.[24] While assessing the website development patterns in a country, it incorporates the access characteristics, such as the infrastructure and educational levels, to reflect how a country uses information technologies to promote access and inclusion. The EGDI is a composite measure of three essential

dimensions of e-government: (i) Online Service Index; (ii) Telecommunication Infrastructure Index; and (iii) Human Capital Index.

The UN E-Government Survey 2014 ranked India at 118, with an EGDI of 0.3834.[25] E-governance received an impetus with the launch of the SCM and Digital India in 2015, with the mainstreaming of online government services aided by telecommunication connectivity and an increased focus on enhancing human capacity. Consequently, India's rank improved to 105, with an EGDI of 0.5883 in the UN E-Government Survey 2022 (see Figure 2).[26] Denmark is ranked first, with an EGDI of 0.9717, while the global average is 0.6102.

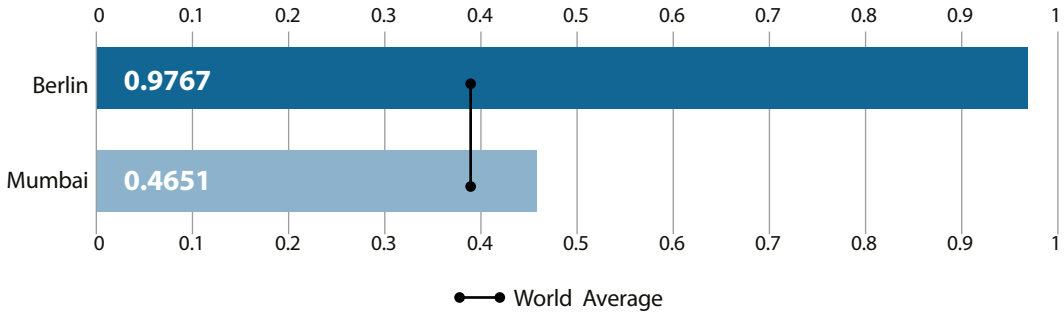
Figure 2: UN E-Government Development Index 2022



Source: United Nations.[27]

Regarding the penetration of local e-government development in the most populous city in each member state based on the UN Local Online Service Index (LOSI), the survey ranked Mumbai at 80, with a LOSI score of 0.4651.[28] Berlin ranked first, with a LOSI of 0.9767, while the world average is 0.3943 (see Figure 3).

Figure 3: UN Local Online Service Index 2022



Source: United Nations.[29]

Notably, the ICCCs established under the Smart Cities Mission (SCM) helped cities manage the COVID-19 crisis, highlighting the success of such innovations. They provided the data required for dashboards of hotspots, applications for contact tracing, and other services crucial to pandemic management.[30] The monitoring of citizen services, housing, safety, water, sanitation, mobility, green spaces, skill development, and job creation have emerged as core areas of the ICCC. Healthy start-ups promoted by SCM support ecosystems, build resilience, keep a check on crime, and prevent flooding.

From e-Governance to GovTech

The SCM has been instrumental in helping 100 cities move towards the goal of providing core infrastructure and improving the quality of life of its citizens. However, changing citizens' and stakeholders' mindsets is necessary to transform a city while retaining its unique identity.

While the SCM has given some impetus, it has only scraped the tip of the iceberg. Based on the overall learnings of India's current 100 smart cities, successful projects, and the various challenges faced, the government now needs to summarise and strategise to expand the SCM to the country's 4,000-plus urban local bodies, especially in the tier-2 and tier-3 cities, to give the much needed broader push toward digitisation, e-governance, and citizen-centric public services.

The road ahead is riddled with diversities and challenges. However, the SCM has set a template as India's journey to urban e-governance continues to evolve from 'e-governance' to 'digital governance', with the ultimate destination being GovTech to deliver efficient and transparent governance, with the citizens at the centre of reforms.

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Digital Governance in India's Smart Cities Mission

Uttara Purandare

India's Ministry of Housing and Urban Affairs (MoHUA) launched the Smart Cities Mission (SCM) in June 2015, which sought to promote the use of digital technologies and data to improve urban governance, services, and infrastructure in Indian cities. Unlike similar programmes in most other parts of the world, this one was federally coordinated rather than initiated by city governments. The SCM was designed for implementation in 100 'mission' cities, chosen through a competitive and cooperative federalist approach.[1] MoHUA's emphasis on adequate representation for every state in the SCM resulted in significant diversity across the 100 cities in terms of size, aims and objectives, technological advancement, and ability to raise funds.

With cities having largely utilised mission funding and the SCM having reached the end of its extended deadline in June 2024,[a,2] the question is whether the programme has rolled out digital governance in the cities equitably and democratically, or whether it has exacerbated regional differences and made the country veer towards becoming a surveillance state. These are critical questions that need to be addressed, with the spread of digitalisation under the National Urban Digital Mission (NUDM) launched in February 2021.

There is no universal definition of a 'smart city'. This has often been a point of discussion in academic literature on the subject, with some researchers arguing that this ambiguity is by design.[3] Others have noted that the smart city follows a form of corporate[4] or neoliberal[5] governance that favours technology firms and other private-sector entities over urban citizens, especially those at the margins.

Governments at various levels, international organisations, funding agencies, and corporate actors have used this vagueness to experiment with what 'smartness' means and the different aspects of city life that can be governed through innovative initiatives and digitalisation. In India, too, the SCM guidelines do not define 'smartness' or a 'smart city';[6] it leaves this to the discretion of the mission cities, depending on their "level of development, willingness to change and reform, (and) resources and aspirations of the city residents".[7] Based on this guiding principle, a January 2021 MoHUA document defined a smart city as one that "works for its people".[8]

Though they are not included in definitions of a 'smart city', digital technologies and data form the core of the smart city paradigm. Along with the use of digital technologies and the collection of vast amounts of data that can be used for urban

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a The mission was originally slated for five years and was to come to an end in 2020. This was later extended to June 2024. Just before this deadline, the mission was further extended to March 2025.

governance, smart cities also aim to further digitalise urban spaces and services. 'Smart' is a helpful label for governments to attract global capital and private-sector partners who can support the implementation of smart-city projects. In other words, while the smart city paradigm is a bundle of interventions, often digitally driven, that can be implemented in cities in various combinations, it is also an indication of the type of urban development that a city is keen to pursue and the most critical actors required for that approach (usually corporate actors, technology firms, and urban entrepreneurs).

India's SCM aligns closely with the prominent global rhetoric and approach.[9] Its vision is to improve cities to meet the needs and aspirations of their rapidly growing populations. However, the desire for efficiency—often conflated with speed in decision-making—has led the policy to privilege digital solutions and privatised governance over long-term capacity building. The SCM has adopted, as its preferred approach, the setting up of a Special Purpose Vehicle (SPV) in each of the 100 cities to plan, implement, and govern them.

The SPV, headed by a CEO, is a corporate entity which, if it chooses, can have minimal decision-making interventions from the city's elected representatives. SPVs are outside the purview of urban local bodies and can choose which actors—be it from the private sector or civil society—they want to engage with for smart interventions. While this has allowed for quick decision-making, it has also led to greater dependence on management consultants and other private actors for core governance functions.[10] Additionally, urban digitalisation is taking place without adequate checks and balances[11] nor proper planning to keep them sustainable in the longer term.

Digital Governance and Interventions in Smart Cities

The SCM's aims, objectives, and approaches to urban digitalisation have changed since its inception. When launched, the mission had three focus areas: liveability, economic growth, and sustainability.

Accordingly, most cities seeking to become 'smart' earmarked a marginal portion of their budgets for technology-led interventions, allocating most smart-city funding instead for roads, public transport, housing, and related sectors.[12]

In 2018, MoHUA began prioritising technology and data-driven interventions, aiming for data monetisation through a 'data marketplace', eventually moving towards data-driven city governance.[13] The ministry also published a number of documents and assessment frameworks, including the Data Smart Cities Strategy,[14] the National Urban Innovation Stack,[15] and the Data Maturity Assessment Framework[16] (all in 2018), followed by Designing a City Data Policy: A Reference Guide (in 2020),[17] and Building Data Alliances (in 2022).[18] Each document aims to help cities develop and improve aspects of their digital governance, from setting up and managing diverse data to drafting data policies, building cooperative alliances, and sharing knowledge.[19] Besides providing normative guidelines, MoHUA has helped cities measure and track their progress through various assessment frameworks.

All 100 smart cities were required to build an Integrated Command and Control Centre (ICCC) to catalyse centralised monitoring and coordination among the various agencies engaged in digital interventions and to serve as a central data repository. The ICCC can manage traffic, collect environmental data, address citizen grievances, approve applications or permits, observe real-time public transport utility, and surveil feeds from CCTVs across the city. The capabilities of the ICCC depend on the nature and scope of the digital technologies deployed. It has ample scope for expansion and integration as these technologies become more ubiquitous and cities continue to digitalise.

Some cities, for example, are using their CCTV networks to track violations and issue e-challans. While newer sensors can continue to feed information to the ICCC, the next stage of digitalisation will involve using this data to build software and algorithms that will aid decision-making and reduce the need for coordination and

oversight.[b] MoHUA has also published an ICCC Maturity Assessment Framework (in 2021, updated in 2023) to help cities design, build, and optimise their ICCCs.[20]

Other common digital interventions in the 100 smart cities include city apps and dashboards, integrated traffic management systems (ITMS), sensors that collect data on air and noise pollution, flood sensors, public WiFi, e-governance services, smart water metering, and smart parking meters. Each city SPV has the discretion to determine the design and implementation of digital solutions based on the unique needs of the city and the contextual relevance of the technology.

The varying extents to which the 100 smart cities have managed urban digitalisation depends largely on the history of digitalisation[21] in that city and state. Some cities, especially those that were part of the earlier Jawaharlal Nehru National Urban Renewal Mission (JNNURM), launched in 2005, began introducing e-municipal services a decade before the launch of the SCM. States like Karnataka and Odisha had developed platforms that their smart cities would later use. Cities in these states have expanded their digital infrastructures under the SCM. Urban digitalisation also depends on what the city can afford, even with SCM funding.[22]

Questions remain about how cities will manage these projects after mission funding ends, who will lead and manage them, how interventions will be funded, who will be the custodians of city-level and citizen data, who will have access to the data, and how it will be protected. Similar questions regarding the role of strategy consultants, project management consultants, and system integrators—all from the private sector—who have become increasingly indispensable to the mission, also persist. This mission-mode approach to governance not only excludes elected representatives from decision-making processes but also hinders long-term capacity building and sustainable urban transformation.

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b So far, even cities with advanced ICCCs are yet to achieve this level of data application.

Thus, while the SCM has made noteworthy contributions to urban growth in the 100 smart cities, questions remain over how these will be sustained. It is also an open question whether the mission has successfully empowered city governments, improved local-level democracy, and made all citizens partners in this form of urban development.

Digitalising Without Democratising

By MoHUA's own definitions and objectives, however vague, digitalisation alone is not enough to make a city smart; technology is a means for development and not an end in itself.[23]

As the SCM tapers out, it is critical to examine its specific interventions and their impacts on the mission's objectives. Despite digitalisation-driven transformations under the SCM, India continues to grapple with the extent of digitalisation achieved and the lack of capacity for data monetisation. There is an urgent need to focus on the actors and institutions that lead digital governance. This should include critically evaluating the privatisation of governance following the SCM's growing dependence on management consulting firms and technology firms.

It is also imperative to evaluate whether the SPVs can deepen the provisions of the 74th Constitutional Amendment Act (passed in 1993 with the aim of empowering local urban bodies) by catalysing decentralised city governance and ensuring that the checks and balances for data collection and digital governance do not violate the fundamental right to privacy or exclude groups of citizens. Without such provisions, the smart city will not serve citizens and will only be a tool for corporate extraction and state overreach.

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Bridging the Gender Digital Divide for Inclusive Urban E-Governance

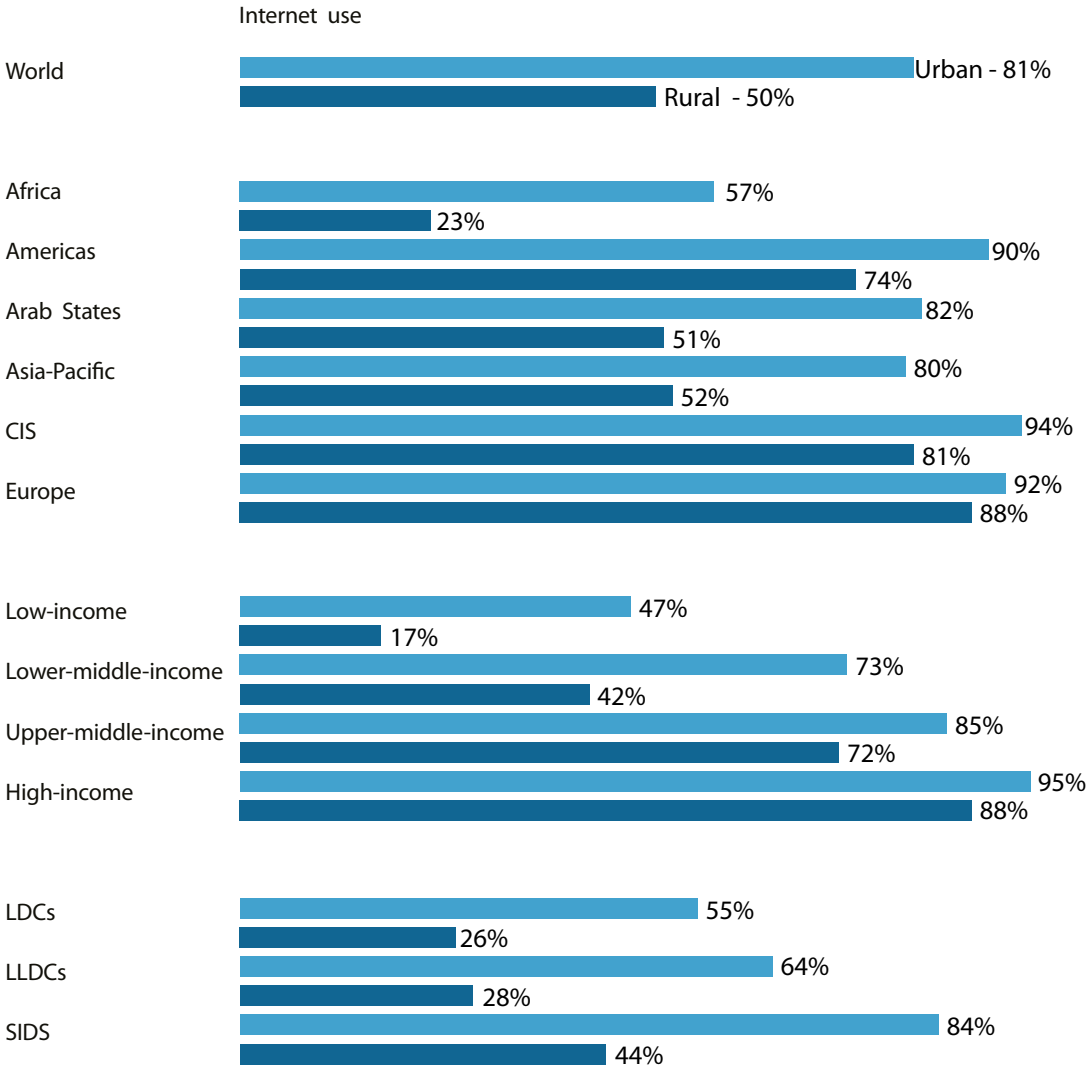
Anusha Kesarkar-Gavankar and Swarali Bhutekar

Cities worldwide are aspiring to achieve[1] sustainability through technological applications[2] that enhance operational efficiency, boost citizen welfare, and improve service delivery. In this context, the New Urban Agenda[3] reinforces tech advancements while UN-Habitat encourages[4] the use of technology to involve more women and girls in planning public spaces. Despite these efforts, however, digitalisation appears to have only widened digital inequalities.[5]

Digital penetration has grown globally, with total urban internet usage reaching 81 percent in 2023.[6] Yet this overall figure does not show persisting gendered inequalities, especially in the Global South.[7] South Asia, for instance, has the world's largest mobile gender gap.[8] India,

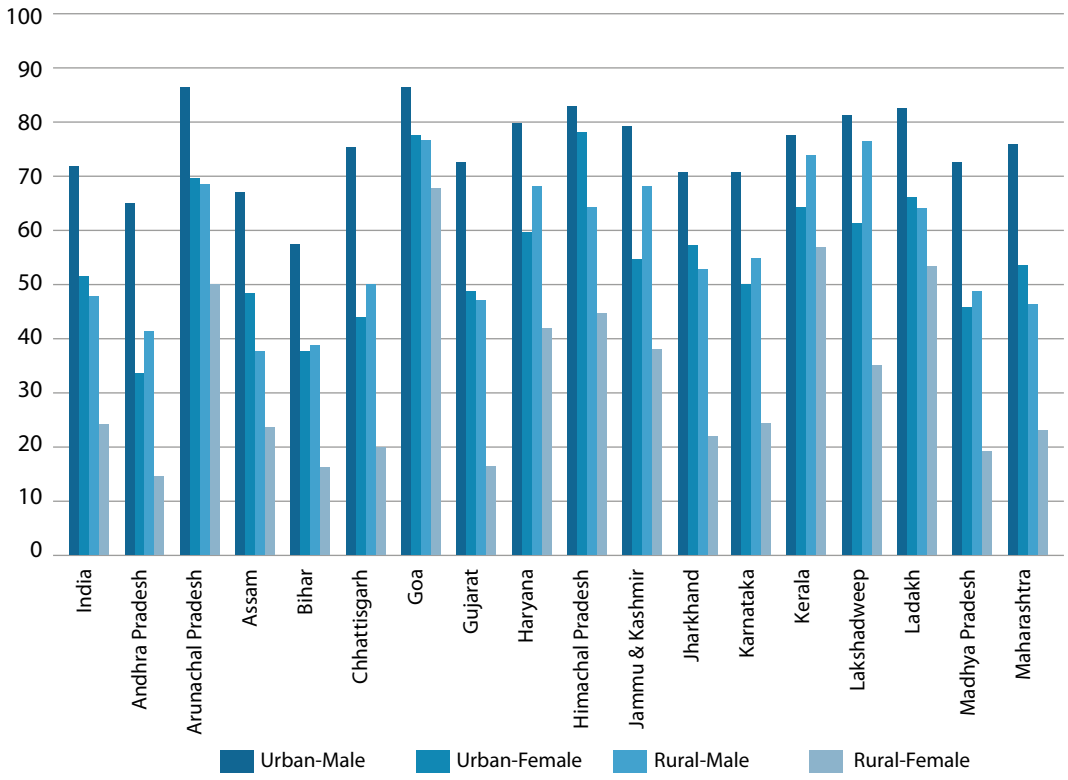
despite the initiation of the Smart Cities Mission, faces a massive gender gap in internet usage.[9,10] Aided by several e-initiatives, India's urban internet subscribers increased by 158 percent from 2015 to 2021;[11,12] however, only 51.8 percent of urban women use the internet compared to 72.5 percent of men.[13] Such discrepancies deny women—particularly those from vulnerable communities with limited access to digital infrastructure—equal participation in city planning and e-governance.

Figure 1: Percentage of Individuals Using the Internet in Urban and Rural Areas, 2023



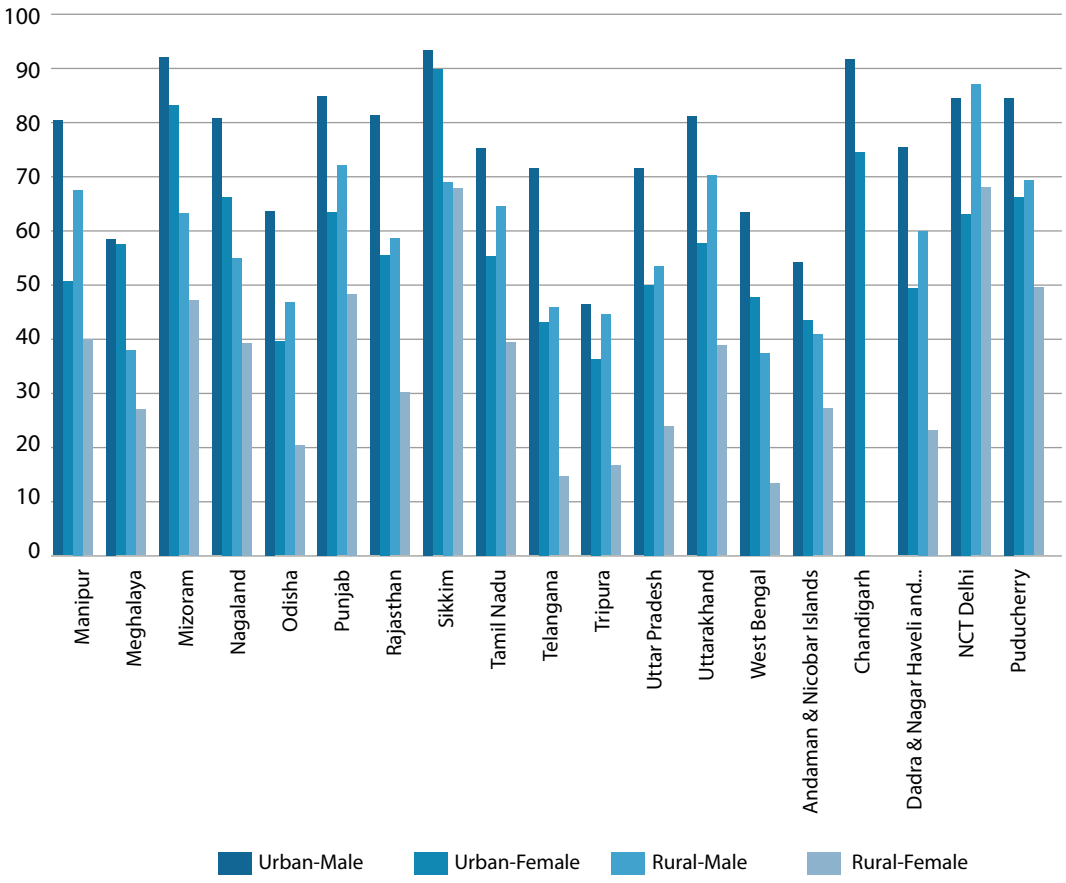
Source: International Telecommunication Union.[14]

Figure 2a: Individuals Who Have Ever Used the Internet, by State, Gender, and Rural/Urban



Source: Observer Research Foundation;[15] *National Family Health Survey, India (NFHS 2019-21).*[16]

Figure 2b: Individuals Who Have Ever Used the Internet, by State, Gender, and Rural/Urban



Source: Observer Research Foundation;[17] *National Family Health Survey, India (NFHS 2019-21).*[18]

With the digitisation of economies, particularly following the COVID-19 pandemic, e-governance has become crucial[19] in enhancing public services and citizen engagement. There is thus is an urgent need to bridge digital disparities[20] and address gendered digitalisation.[21] Cities need to ensure digital access for all, especially women who are marginalised by digital inaccessibility and low awareness. In this context, it becomes important to address the following questions: What challenges do cities face in bridging the gender digital divide? How can policy initiatives be more inclusive in addressing and bridging these gaps? How can India enhance women's engagement in urban e-governance?

Identifying Barriers

Low digital awareness limits women's access to online opportunities and digital entrepreneurship.[22] Without sufficient skills, despite owning smartphones, women may struggle to navigate online platforms and marketplaces effectively, which hinders their ability to participate in e-commerce or online communities. Lack of proficiency makes women susceptible to online harassment, cyberbullying, and cybercrimes, with 95 percent of such incidents targeting women.[23] Weak legal protection and privacy concerns also dissuade women from utilising digital platforms.[24]

Financial barriers, which are particularly prevalent in low-income areas, coupled with limited access to affordable and reliable internet deter women from consuming digital devices and services.[25] Gender biases further compound these challenges. For instance, despite India's low data costs of US$0.16/GB compared to the global average of US$2.61/GB, income-based disparities persist.[26] In low-income households, the cost of data would equal a significant portion of the monthly income, making it a luxury they cannot afford. Discrimination within the household further impedes women's equitable digital access.[27] Cultural norms and gender roles[28] often give male family members control over women's online activities,[29] which further limits their digital engagement.[30] Enduring parochial mindsets also prevent women from actively engaging in e-governance and gaining social security benefits. For instance, there is evidence to suggest that during the COVID-19 pandemic, it was more difficult for women to access vaccination slots.[31] Overcoming this barrier demands an attitudinal shift towards gender equality. Inclusive e-governance further suffers due to the lack of gender-disaggregated data,[32] insufficient policy focus,[33] limited stakeholder engagement,[34] inadequate funding allocation,[35] and weak monitoring mechanisms.[36]

Building Digital Bridges

Integrating digitally inclusive goals into development agendas can ensure that the benefits of digital advancement are accessible to all. In this regard, various efforts to combat digital exclusion are underway. For instance, Women20, the G20's platform promoting gender equity, prioritises online inclusivity for women-led development towards global progress.[37] Moreover, UN-Habitat's Playbooks on digital inclusion have extended beyond the gaps in physical access to infrastructure to improving digital skills, providing better internet usage opportunities, and building positive attitudes towards internet use.[38]

Expanding digital infrastructure and providing economic support

Investments in digital inclusivity are necessary for empowering women in education and work. For instance, the Government of India's Sanchar Shakti[39] provides subsidised mobile information services about essential resources to marginalised women through Short Message Service (SMS) and interactive voice response (IVR) networks. Rwanda has established Irembo, a secure platform staffed by trained personnel for accessing government services.[40] Similarly, the EQUALS Global Partnership network seeks to bridge the digital gender gap worldwide through the Global Digital Gender Equality Action Map.[41] This collaboration also works on creating offline platforms that can function without the internet and electricity.

Promoting digital literacy and ensuring online safety

Training programmes to improve digital skills among women and girls have also facilitated inclusivity. For instance, the Stay Safe Online campaign by the Indian government promotes online safety.[42] Further, organisations such as the Mahila Housing Trust in Gujarat[43] and the e-Jaalakam initiative in Kerala[44] have

designed comprehensive digital training programmes for women. Beyond India, Laboratoria, a Latin American social enterprise, promotes a more competitive and inclusive technology sector by providing coding training to young Latina women.[45] Additionally, Somalia's Dab IYO Dahab initiative uses an interactive audio instruction mechanism to improve financial literacy among young women.[46] Madrid's DIVERCITY project developed the City of Women mobile application to promote citizen participation and inclusive development.[47]

Addressing gender biases

Specific frameworks have been implemented to encourage community-based interventions for challenging restrictive norms and promoting gender equality. Costa Rica's Gender, Science and Technology Policy aims to eliminate gender stereotypes and employment gaps in the technology sector by offering incentives to educational institutions and companies.[48] The Bangladesh government's partnership with Huawei and Robi Axiata goes beyond traditional practices to empower rural female students through the Digital Training Bus Programme.[49] The programme uses custom-built mobile buses with modern Information and Communication Technology (ICT) facilities to provide girls with access to laptops, mobile devices, and mobile banking.

Collating data

Periodic gender analysis with gender-disaggregated data and data collation can facilitate e-governance and monitor the success of gender inclusion frameworks in future-proofing women's access to technology.[50] For example, the Internet and Mobile Association of India (IAMAI) releases reports with gender-disaggregated data for urban India in areas like internet usage, digital financing, and online entertainment.[51] The Philippines government commissioned the Women and ICT Development Index (WIDI) Survey in 2020 to gather gendered statistics for planning and policy formulation[52] to understand women's digital needs and identify interventions for improving access, use, and

skills. Further, the Gender and Development budget policy of the Philippines directs government departments to allocate 5 percent of their annual budgets for gender programmes.[53] Another example is Mozambique's National Institute of Statistics collaboration with A4AI and local research organisations to include gender-disaggregated ICT data in the national census.[54]

Inclusive Urban E-Governance: The India Opportunity

Most countries are yet to frame gender-sensitive digital policies. The United Nations E-Government Survey found that only 61 of 193 member states offer tailored online services for women.[55] As India aims for a US$1-trillion digital economy by 2025,[56] integrating women into development plans has the potential to transform urban areas. The National Urban Digital Mission,[57] supported by tech giants like Cisco,[58] Google,[59] and Microsoft,[60] aims to enhance urban ecosystems through technology. However, with digital literacy in urban India at just 61 percent, there is a significant gap in awareness and the use of government e-services.[61] Despite the Digital India programme's emphasis on ICT for governance, India needs a comprehensive digital gender equality policy.[62]

Access to technology and digital literacy

India's urbanisation must focus on providing equal public internet facilities and digital literacy programmes through targeted workshops, online courses, and vocational skills in coding and data analytics. Similar to the BharatNet initiative,[63] these programmes should ensure non-discriminatory access to broadband connectivity. Further, it is crucial to make these programmes accessible, affordable, and tailored to urban Indian women's needs, while expanding internet connectivity, reducing device and data costs, and promoting community-based internet access points.

Addressing online harassment and gender-based violence is also essential for women's safety. Successful projects such as the Digital Shakti campaign, which trained 60,000 women in digital literacy and safety,[64] and Digital Didi, which helped women sell products online during COVID-19,[65] provide lessons for effective outreach. The Maharashtra State Rural Livelihood Mission's partnership with Amazon for the online skill training of women's self-help groups demonstrates the impact of targeted efforts in meeting the diverse needs of women and making e-governance platforms welcoming for them.[66]

Multistakeholder partnerships

Digital gender responsiveness will require collective effort and sustained action through multistakeholder partnerships. Such associations should increasingly involve policymakers, the private sector, civil society, communities, and NGOs. For instance, Digital Shakti,[67] which evolved into Facebook's 'We Think Digital' programme[68] in collaboration with the National Commission for Women, CyberPeace Foundation, and Autobot Infosec, aims to sensitise over one million girls, women, and netizens across India to build resilience in online spaces. Examples of such joint endeavours include NITI Aayog's Women Entrepreneurship Platform[69] and the Digital Sakhi[70] programme with Larsen & Toubro Financial Services.

Encouraging entrepreneurship and innovation

Women entrepreneurs must be encouraged through funding, mentorship, and networking opportunities. Promoting STEM education for girls from an early age and highlighting successful women in tech can inspire engagement with technology. Creating incubators and accelerators for women in tech-driven businesses and raising the awareness of programmes like Startup India's Female Founders[71] and Nasscom's Women Wizards Rule Tech[72] can foster industry-driven learning ecosystems.

Providing subsidies or financial incentives for digital devices and services and offering community-level financial support can improve women's livelihoods. Mann Deshi Foundation's low-cost EMI for the purchase of smartphones[73] and Gujarat's Human Development and Research Centre's mobile library for online skilling sessions provide models that can be scaled up across India.

Administrative efforts

Periodic data collection and gender analysis at national and sub-national levels are crucial for revealing digital urban trends and providing accurate gender-sensitive evidence.[75] Government initiatives, such as the Jan Dhan-Aadhaar-Mobile (JAM Trinity)[76] and One Nation One Ration Card,[77] should effectively mainstream women in urban frameworks to enhance their digital experiences.[78] Data collation is essential for updating laws and introducing new policies for inclusive urban governance. Studies such as 'SHE Rises' can help evaluate the impact of gender-responsive digital policies to understand women's perceptions of safety and their ability to use public spaces freely.[79] Further, inclusive digital governance will ensure adequate gender representation in urban local bodies and regular capacity-building initiatives at all levels.[80]

Conclusion

The Broadband Commission Working Group on the Digital Gender Divide has recommended[81] a four-pronged strategy to promote digital gender equality: (i) collecting and analysing sex-disaggregated internet data; (ii) integrating gender perspectives into policies; (iii) addressing accessibility and safety barriers; and (iv) fostering multistakeholder cooperation. Further, the G20 New Delhi Leaders' Declaration aims to halve the digital gender gap by 2030 by emphasising women's inclusion and participation as decision-makers.[82]

Finally, these efforts must continuously aim to align[83] with Sustainable Development Goal 11 to ensure that digital infrastructure, services, and opportunities are equitably accessible to all urban residents, empowering women and marginalised groups.

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Institutional Collaboration for Sustainable Road Transport: The Need for Compatible Data Formats

Mukti Advani

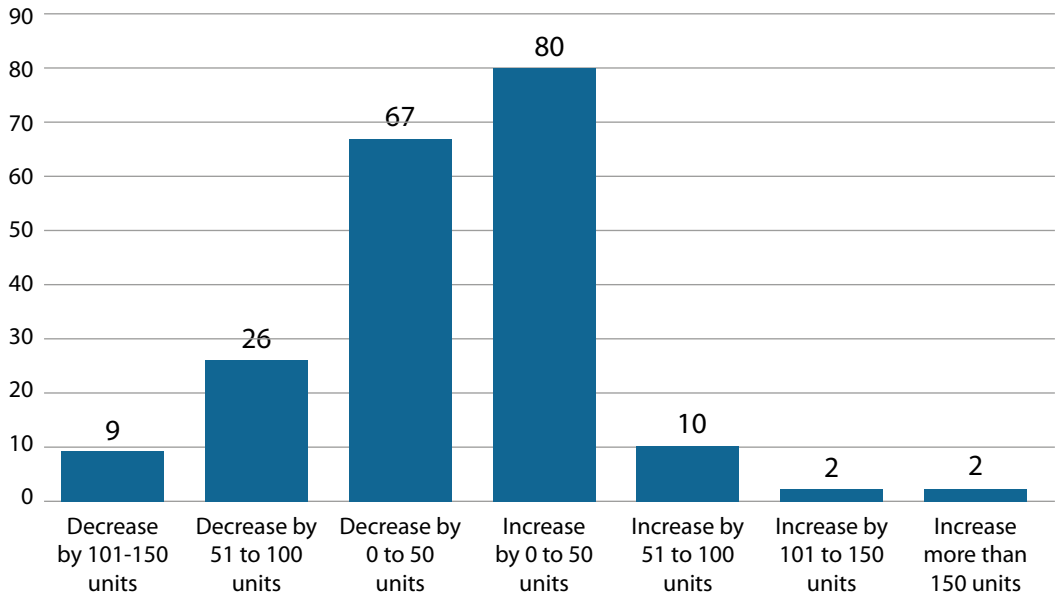
Urban transportation has several adverse impacts, such as air and noise pollution, lack of safety, and negative health effects. These issues also influence commuters' travel choices. Developing sustainable and holistic solutions to reverse the adverse effects of increased road networks[1] requires accurate and synchronised data from multiple agencies. Cities also need to coordinate multiple agencies and create compatible data formats to ensure better decision-making systems and provide overarching solutions.

People's travel choices are often based on the quality of existing modal options, ranging from walking, non-motorised transport (NMT), and public transport, to

personalised vehicles and motorised two-wheelers. An expanding road network improves accessibility for a portion of the population; however, the unchecked growth of the road network may also exacerbate air pollution, increase accidents, and raise induced traffic rates.

This author extracted the Air Quality Index (AQI) values measured by the Central Pollution Control Board (CPCB) for 196 Indian cities to identify changes in AQI on two days one year apart, i.e., 28 March 2023 and 28 March 2024.

Figure 1: Change in AQI Levels vs. Number of Cities



Source: Author's own, using Central Pollution Control Board data.[2]

Out of 196 cities, AQI values decreased in 102 and increased in 94 in 2024 compared to 2023. The reasons for these changes can only be confirmed through compatible data on factors such as change in population, vehicles, road infrastructure, land activities, and other sources of pollution. Although the CPCB provides daily AQI measurements for Indian cities, the lack of supporting and compatible data makes it difficult to understand the reasons for the movements in AQI levels.

Lack of Data Synchrony

Various government bodies collect specific data to support data-driven decisions. For example, besides the CPCB's live updates on the AQI across states and cities,[3] the Ministry of Roads, Transport and Highways (MoRTH) provides data on accidents on Indian roads.[4] The Ministry of Health and Family Welfare offers data on various health issues reported in states and cities.[5] Information from other institutes and organisations is available as standalone statistics. For example, MoRTH's Parivahan Sewa portal's e-Vahan provides information such as registered vehicles, their models, vehicle types, and fuel types.[6] The Census of India provides population data, including the number of people and families living in a city and state.

These datasets are used by road and transport agencies to make policy decisions. For example, the Commission for Air Quality Management (CAQM) in the National Capital Region (NCR) and surrounding areas is a statutory body established by the government to protect and improve air quality in New Delhi and NCR.[7] The CAQM implemented a Graded Response Action Plan (GRAP) in 2021, which comprises emergency measures to prevent the deterioration of air quality in the Delhi-NCR region beyond a specific threshold.[8]

Such bodies are essential for managing air quality in urban areas as they provide a systematic and graded approach to addressing air pollution based on pollutant levels and severity. However, in many cases, the causes of the observed pollution levels are unknown or not linked to decision-making. Therefore, the impact of any proposed or implemented remedial measure remains unclear. For example, GRAP was implemented based on air quality data; however, the impact of implemented GRAP-based restrictions is not quantified due to the lack of synchronised or compatible data.

Similarly, data on the growth of the road network is not linked with road crash data. Road crash data does not provide an understanding of the most unsafe locations, the most common vehicle types involved, or the nearest medical care centres. Expanding the road network leads to more vehicles on the roads, but the lack of synthesised data makes it difficult for agencies to analyse specific parameters.

The Comprehensive Mobility Plans (CMPs) for various cities include information on road networks, proposed infrastructural development plans, and broad traffic characteristics.[9] However, they lack data on periodic trends in vehicular pollution and crash-prone locations, which limits their ability to study the negative impacts of transportation in relation to urbanisation and the growth of road and transport infrastructure over time. This reduces their effectiveness in proposing long-term sustainable solutions.

The Geodatabase Imperative

These separate datasets must be synthesised to create a metadata-enabled geodatabase that can be shared with all relevant stakeholders to support informed decision-making. Such granular geodatabases must include data on four broad vectors: air pollution, noise pollution, crashes, and health impacts.

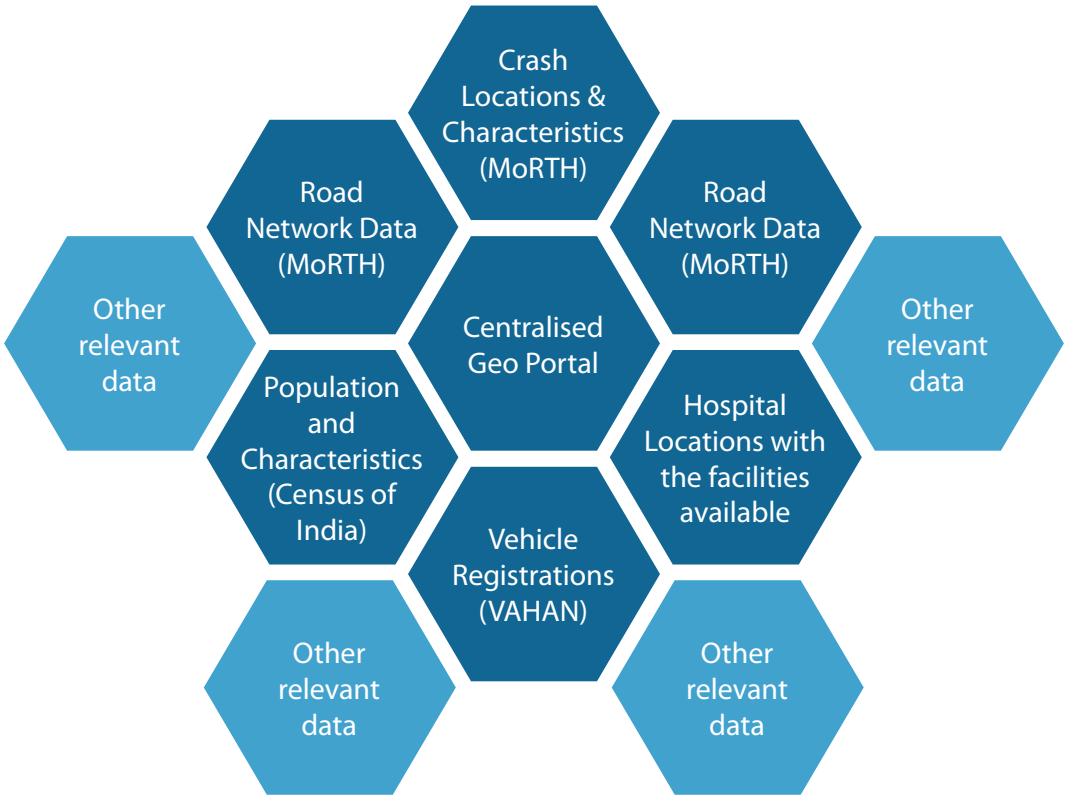
- **City characteristics:** Commuting requirements depend on each city's unique shape, size, and population density. These factors influence decisions about feasible commuting modes within a transport system.
- **Road infrastructure characteristics:** Road width and design affect vehicle speed, while infrastructure for walking and cycling impacts their modal share of total commute. Road furniture and safety features also influence commuters' choices.
- **Traffic characteristics:** Traffic composition, speed, and delays affect the level of service provided by a transport system, as well as safety and crash rates. Higher speeds increase the number of crashes, while lower speeds lead to more

congestion and pollution. Identifying an optimum speed for a city requires synchronised time-series data analysis.

- **Pollution levels:** Road infrastructure and traffic characteristics influence transport mode choices, which determine the proportion of the population using various vehicles and, consequently, the city's level of vehicular pollution.
- **Individual health parameters:** An individual's health must be a central focus of all city policy decisions regarding accessibility, mobility, and infrastructure expansion.

These factors can function in isolation or be interrelated. However, there is need for multilateral coverage involving town-planning strategies, city-utility departments, and other health- and education-related service-provider authorities (see Figure 2).

Figure 2: Centralised Geo-Portal for Storing Data and Metadata from Various Stakeholders



Source: Author's own.

Compatible data formats can foster institutional collaboration for sustainable road transport. To ensure compatibility, the government must consider the following:

- Assign clear responsibilities among various ministries, departments, and local agencies for uploading data in the required format.
- Implement multiple levels of checks within each department for data uploading.
- Clearly record the time of data upload.
- Ensure that there is scope for mentioning additional information (e.g., major events and instances) at every stage of data upload and data checks.
- Geo-tag all uploads.

Qualified sustainability needs to be defined as scenario in which the percentage change in vehicular pollution should be a non-positive number and should not be more than the percentage change in the city's population.

Conclusion

The future of sustainable road transport depends on robust institutional collaboration, which is achievable only through the adoption of compatible data formats. The challenges associated with urban transportation, such as pollution, traffic crashes, and health impacts, necessitates a comprehensive, data-driven. Integrating diverse datasets from various agencies into a centralised geo-database is crucial for understanding and addressing the complex issues of urban transport. This synthesis of data, covering air and noise pollution, road infrastructure, and public health, would enable policymakers to make informed decisions that are both effective and sustainable.

The proposed measures for ensuring data compatibility—such as clear responsibilities for data uploading, rigorous checks, and geo-tagging—are crucial steps toward this goal. By standardising data formats and making them accessible to all relevant

stakeholders, it is possible to foster a collaborative environment where decisions are not merely reactive but also predictive and preventative. Such an approach would enable a holistic understanding of the relationships between transportation, urbanisation, and public health to create more sustainable and safer urban environments.

To achieve truly sustainable road transport, there is need to redefine goals to ensure that any increase in vehicular pollution is proportionately less than a city's population growth. Only through coordinated efforts and the sharing of compatible, high-quality data can the negative impacts of urban transportation be mitigated, towards a future where mobility and sustainability co-exist.

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II

Citizen Engagement and Participatory Governance

Citizen Participation in Urban Governance

Banashree Banerjee

Good governance is critical to managing rapid urbanisation and ensuring the goals of liveability and all-round sustainable growth in Indian cities. A pillar of well-governed cities is the participation of citizens in decision-making processes. Such engagement enables responsive development outcomes through voice and accountability.[1] As such, citizen engagement in urban governance is essential to deepening democracy and fostering inclusive service delivery.

The 74th Constitutional Amendment Act (CAA)[2] of 1992, which sought to turn urban local bodies into self-governing institutions, presents opportunities to bring about both.[3] It led to substantive changes in the form of regular elections to these bodies and more diversified representation. However, the limited uptake by states,

both on the formation of ward committees[a] and the enactment of a community participation law,[b] has impeded the growth of grassroots democracy in Indian cities. With the CAA leaving the constitution of ward committees by states as a recommendation rather than making it a directive, most states have either ignored it or formed the committees with political expediency in mind rather than participatory governance.[4,5,6]

The complex socio-economic and political context of cities makes citizen engagement a challenging task, especially since they have limited capacities and information, and reforms of local governance structures have been partial.[7] Thus, there is near absence of inclusive, well-informed participation forums in urban areas.[8]

Even so, a number of examples of public participation have emerged over the years in different cities, albeit with varied outcomes. This article examines some of them. It suggests that there is no perfect model of participation that can work across the diversity of Indian cities and, indeed, within a city, too. However, a combination of tried and tested approaches can lead to positive outcomes.

Learnings from Previous Approaches

Spaces for citizen participation are mandated or designed by the government in various forms in Indian cities. They may consist of 'invited participation' of citizens, or may be restricted to stakeholder groups such as beneficiaries or implementing partners of projects. They may also take the form of public hearings, opinion polls, public information campaigns and grievance redressal mechanisms. In addition, there are 'claimed' or 'organic' spaces, comprising social movements and NGO-led platforms, which have brought about changes leading to greater equity and social justice.[9]

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a The CAA recommended the constitution of the ward committees by the state legislatures in all cities with a population of more than 300,000, to enhance people's participation in the municipal decision-making that directly affects the planning, administrative and financial matters of the municipal ward.

b The Jawaharlal Nehru National Urban Renewal Mission (2005) mandated all states to enact the Community Participation Law to foster citizens' participation in local decision-making.

Historically, most urban development schemes sponsored by the central government have had community/citizen participation built into them. Examples include the National Urban Livelihood Mission, which requires the setting up of women's self-help groups; the National Urban Health Mission, which calls for Mahila Arogya Samitis; the Atal Mission for Rejuvenation and Urban Transformation (AMRUT), encouraging public participation; or the in-situ slum redevelopment (ISSR) vertical of the Pradhan Mantri Avas Yojana-Urban that uses the People-Public-Private Partnership model.[10]

Assessments of these programmes, however, have shown that despite the participatory processes, the disjuncture between planning, governance, and poverty alleviation, on the one hand, and the limited functional and financial autonomy of municipal governments on the other is an impediment to both sustaining project benefits and community participation.[11] The well-known Kerala model[c] shows that while schemes can serve as a starting point, ultimately, the success of participatory approaches lies in embedding them in urban and rural governance structures at different levels and in funding streams. This alone can lead to building capacity of people's groups participating in local government, and when the need arises, fostering voluntarism to support planning and prioritisation at scale.[12]

Public hearings, as part of the Environment Impact Assessment of projects—made mandatory by the Environment Act, 1986—allow people to voice their views before projects are launched. Preparation of city development plans requires formal recording of public objections and suggestions. However, how much impact

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[c] Decentralised governance in Kerala, institutionalised in the form of participatory platforms at different levels, is popularly known as "the Kerala Model". The model has evolved since the 1960s with three special provisions in the 1990s taking it forward. The ward committees mandated by the Kerala Municipality Act 1994 provide a platform for participation within urban government. The second platform is the People's Planning Campaign begun during the 9th Five-Year Plan and mandated through government order for every State Five-Year Plan and Annual Plan, with a dedicated percentage of the state budget assigned to the implementation of People's Plans. The community-based organisations of Kudumbashree constitute the third platform. They are mandated to work with the State Poverty Eradication Mission, which converges all poverty alleviation programmes funded by the National and State government.

such inputs have on the final decisions is unclear.[13] Ongoing urban planning reforms are trying to overcome this shortcoming by incorporating more opportunities for public participation.

It is worth noting that there has already been considerable civil society mobilisation and advocacy around the preparation of development plans. Civil society organisations, trade unions, and academia have come together in organisations such as 'Sanjha Manch'[14] and 'Mai Bhi Dilli'[15] to shape planning in Delhi. Mumbai has a long history of civil society activism around civic issues and urban development, flagging matters of rights, citizenship, service delivery, and planning, and working both as challengers to, and partners with government and private providers.[16]

Social movements and NGO coalitions and platforms have taken up important issues of social and environmental justice, entitlements, and equity in Indian cities. By galvanising civil society around these issues, they create fertile ground for participation and advocacy, which on certain occasions have led to supportive governance and legislative reform. It is civil society pressure that led to laws such as the Right to Information Act (2005),[17] the Right to Education Act (2009),[18] and the Street Vendors Act (2014),[19] as well as government schemes to secure the livelihoods of waste pickers,[20] and in Mumbai, shelter for the poor.[21]

With the global move towards market-led approaches, there has been a shift in thinking about participation and partnerships. In urban management and service delivery, the importance of public-private participation models has grown. One innovative example was the Bangalore Agenda Task Force (BATF),[22] set up in 1999 under the office of the chief minister as a collaboration of citizens, the corporate sector, and administrative agencies, to contribute to urban governance. BATF stimulated service improvements in the city during its five-year term, but the model could not be sustained beyond 2004 nor replicated elsewhere.[23] Later efforts at collaborative governance in Bengaluru have also been unsuccessful.

A more straightforward approach across most large cities is the acceptance of Residents Welfare Organisations (RWAs) as neighbourhood-level development partners of urban government for service delivery and grievance redressal. Delhi has diversified the approach through the Bhagidari initiative, which was started in 1998 and includes market and industrial associations, RWAs, and representatives of concerned government institutions in certain areas of city development.[24] This initiative, however, has also been criticised as an 'elitist' model that banks only on middle-class engagement and excludes the poor housed in informal settlements, who often have to resort to collective insurgency to claim their entitlements and access to essential services.

The other shift in engaging with citizens in urban governance is the use of Information Communication Technology (ICT). It started from the early 2000s with urban bodies setting up websites for grievance redressal and e-seva kendras (digital service centres) for access to services. This was followed by mobile phone apps providing an interface with civic institutions on service deficiencies. These initiatives have been lauded for their convenience, but also questioned for excluding those who do not have access to digital infrastructure.

This debate has sharpened with the Smart City Mission, which carried out a massive public outreach programme during the proposal formation phase and seeks to continue it during execution. However, only the digitally savvy have been able to respond to it.[25] Inclusive digital participation therefore remains a work in progress, underscoring the importance of multiple modes of citizen engagement for inclusive governance.

The Way Forward

Encouraging citizen participation in urban governance is certainly not new, nor is the related discourse. There is still a lack, however, of research on the subject. It is imperative to understand better what works, where and why, to identify the constraints and potentials that could provide lessons for the future.

Notions of participatory governance, how it should happen, and who should be involved, continue to evolve. They are also tied to questions about the larger development discourse. The government's role has changed from that of a regulator and provider to one of facilitator and enabler. It is clear that there are three sets of stakeholders in urban governance: the government, the private sector as suppliers of services, and civil society as beneficiary or consumer of services. Collaborations and accountability mechanisms among the three are critical to build equitable and sustainable cities.

Of particular significance to civil society participation is the market-based model of public management with its emphasis on entrepreneurialism,[26] specifically manifested in service delivery and institutions such as special purpose vehicles (SPVs). Such initiatives could well bypass the capacity constraints of local governments and deliver more efficiently. But processes need to be established to ensure that the goal of people-centric development, that is both equitable and environmentally sustainable, is not compromised.

The central position of local government in cities, as mandated in the 74th amendment, has great relevance to fostering participatory governance. It has the dual role of ensuring supply of services and enhancing the demand-making capacity of citizens. Thus capacity building and institutional and financial reforms of local governments are crucial, specifically to enable and nurture multi-stakeholder participation. Equally, embedding the concept of participatory governance in policy and higher levels of government is critical for the future of cities.

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Pathways to Participatory Urban Governance in India

Shelly Kulshrestha

As the world becomes increasingly urban, development discourses are giving greater attention to the complexities of governance. In urban areas, matters related to citizen engagement and participatory governance, which form an integral part of the democratic process, need to be addressed.

Participatory governance institutionalises citizens' participation in decision-making processes. The concept has gained importance in developing countries due to its potential to increase government accountability for service delivery and citizen empowerment.[1] Participatory platforms that support long-term and continued citizen engagement have the potential to improve the local economy, reduce poverty, and meet

the challenges of rapid urbanisation.[2,3] However, the execution of participatory governance is often overlooked amid the complex and demanding processes of urban governance.

In India, this is evident from the low penetration of participatory spaces like ward committees[a] and area *sabhas*[b] in the local governance setup. While participatory governance is valued globally for its ability to bring citizen involvement and state accountability for delivering public services,[4,5] its practice is impeded by challenges.

Unfinished Agenda

The introduction of ward committees in 1993 through the 74th Constitutional Amendment Act (CAA) was a step towards institutionalising citizen participation and expanding the representation of citizens in local governance. Article 243S of the 74th CAA provided a broad structure to the states to frame their own rules for implementation of ward committees. Most states diluted the rules, resulting in complete absence or restrictions on representation, functions, roles, responsibilities, and budgetary provisions among the ward committees.[6,7] These inconsistencies have impacted the effectiveness of the participatory spaces. For example, the Gujarat Ward Committee Rules, 2007[c] have limited the power and functions of the ward committees, restricting them to a supervisory and advisory role and missing out on the deliberative, visioning, and implementation role they could play.

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a Article 243S of the Indian Constitution makes it mandatory for any Urban Local Body (ULB) with a population of three lakhs or more to constitute a ward committee of one or more wards.

b In 2006, the formation of area *sabhas*, embedded within the ward committee, was framed as a mandatory reform for accessing funding provided by the Jawaharlal Nehru National Urban Renewal Mission (JNNURM).

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Similarly, the implementation of area *sabhas*—which were introduced as an invited space at the sub-ward level to involve all voters of a polling booth in an institutionalised, deliberative space—has been weak. In 2006, the Jawaharlal Nehru National Urban Renewal Mission (JNNURM) introduced the Community Participation Law (CPL) as a mandatory reform for cities to avail funding for development work under the scheme. Multiple cities signed tripartite agreements between the national, state, and local governments to form area *sabhas*, but only three[d] out of the 29 cities studied have a functional area *sabha*.[8] In Gujarat, it took six years to pass a resolution before an area *sabha* was constituted in 2012; even after the resolution was passed by the Standing Committee, area sabhas have not been formed.[9]

Based on the assessment of the forward committees and area *sabhas*, it is seen that provisions like representation, procedure, and functions are critical for determining the effectiveness of the invited spaces.

Representation

In theory, diverse representation of citizens is a desirable goal in participatory governance; there are challenges, however, to fulfilling this aim. There are concerns related to who needs to be represented when ward committees include large and diverse populations and how the representatives should be selected—whether through nomination or election. Analysts suggest that representation of the marginalised or people with the least voice is desirable for expansion of participatory governance.[10,11] Exclusion of citizens from the representation process shifts the nature of the participatory space—from deliberative and visioning, to seeking.

[d] According to the report by Praja Foundation (2020), functioning area sabhas exist in Aizawl, Dharamshala, and Gangtok.

Operational Procedures

When the rules lack in provisions for information sharing, citizens remain unaware of the minutes of the meeting, ward plan, or budget. It creates communication barriers between the citizens and the ward committee members. As the minutes of meeting are not shared publicly, there is little update to the public about the tasks which have been completed or are in progress at the ward level. This reflects low importance to transparency, voice of the citizens, and responsiveness of the government.

Functions

Theoretically, ward committees can play a key role in responding to citizens' needs by engaging them in activities related to planning and development, monitoring performance of municipal services, financial planning, information-gathering and dissemination, and municipal administration.[12,13] For example, Gujarat Ward Committee Rules, 2007 have limited the planning and development functions of ward committees—it does not expect ward committees to be proactive in addressing deficiencies in key services and engaging with civil society. The rules could benefit from an expansion of the roles and responsibilities, similar to the more comprehensive frameworks seen in Kerala or West Bengal. They have provisions to identify problems, prepare development schemes, implement, and monitor projects. Financial devolution of power to the ward committees gives them authority to generate resources and allocate them for appropriate work.[14]

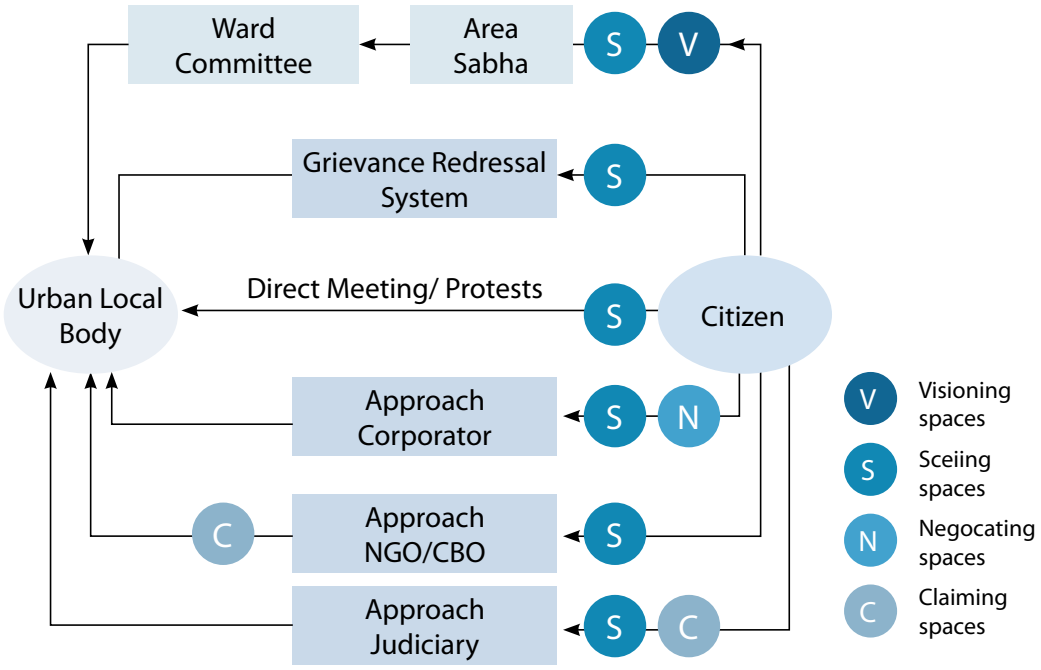
The mandates, if well defined, can maximise accountability, transparency, responsiveness, and information sharing—leading to effective spaces of participation.

Strengthening Participatory Urban Governance in India

Participatory platforms do not need to be limited to one type of space; instead, they need to amplify the voice of citizens through diverse sources. Multiple channels should be incorporated to

allow citizens to communicate or interact with the government. These include engaging directly or through local representatives, registering complaints using the grievance-redressal system, organising group or individual protests, directly meeting Urban Local Body (ULB) officials, leveraging social media, mobilising non-government organisations (NGOs) or community-based organisations (CBOs) for specific issues, and approaching the judiciary. Figure 1 shows frequently used channels of engagement between ULBs and citizens.

Figure 1: Channels and Purposes of ULB-Citizens Engagement



Source: Author's own.

Urban areas need to have multiple participatory platforms consisting of visioning, seeking, enforcing, negotiating, and claiming spaces, to cater to the diverse intentions of engagement between the citizens and the government. These spaces can vary in design, allowing diverse actors to participate in urban governance processes. The relevance of a participatory platform can be assessed

by factors such as whether it allows for the representation of all, gives room for deliberation among representatives, and allocates roles in financial planning, decision-making, and budgeting.

Unfragmented citizenship is imperative for developing an enabling environment that supports meaningful participatory governance. Rules and regulations need to be framed to promote representation, accountability, transparency, proximity, information sharing, and collective action. Functional and effective participatory spaces require cooperation and coordination between the political and executive actors and citizens. Further, a continuous claim-making process would help to foster the empowerment, voice, and visibility of all, including the marginalised citizens.

The key deterrents to participatory governance are fragmented citizenship and centralisation of power. While fragmented citizenship excludes certain groups or individuals, centralisation of power limits their participation in governance. Centralisation is the result of multiple factors such as political and economic conditions, which minimise the role of non-state actors in decision-making; policies that result in the financial dependence of ULBs on the centre and the state; and the absence of financial devolution of power to the ward committees. The models of area *sabhas* and ward committees in India must therefore consider ground realities and the size of the population under their jurisdiction to establish empowered participatory mechanisms that foster the involvement of citizens in decisions that impact their lives and livelihoods.

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Fostering Citizen Engagement Through Online Municipal Complaint Redressal

Mercy Samuel and Dhaval Desai

Citizen engagement is imperative for efficient delivery of municipal services. The Constitution (74th Amendment) Act of 1992 created mechanisms for participatory local governance through the establishment of ward committees.[1] In 2005, the Jawaharlal Nehru National Urban Renewal Mission (JNNURM), India's first crucial initiative for overarching urban reforms and infrastructure development, urged cities to form area *sabhas* (committees)[2] to enable citizens to share their concerns with municipal officials and participate in decisions that impact them.

However, the 2023 Annual Survey of India's City-Systems (ASICS)[3] report by the Bengaluru-based non-profit Janagraha reveals that only 22 percent of Indian cities have active ward committees. These include some which have set them up to merely comply with the letter of the constitutional

requirement rather than satisfy its spirit of creating robust avenues for participatory governance. In Ahmedabad,[4] for example, meetings of only the four elected councillors of each municipal ward—without the presence of any citizen or citizens' groups—are being passed off as 'ward committee' meetings.

It is clear that the participatory governance envisioned by the constitutional amendment, and promoted by several central government programmes, are not being effectively implemented at the city level. However, it is also true that some cities have proactively used technology to open direct communication channels with their citizens to simplify complaint redressal processes. Though online complaint redressal does not satisfy the larger objective of participatory governance, it is still a stepping stone towards such a goal. The Department of Administrative Reforms and Public Grievances (DARPG) has "accorded the highest priority" to public grievance redressal through digital avenues that allow citizens to seek prompt and seamless resolution for deficient municipal service delivery.[5]

The question is whether online complaint redressal systems have increased citizen engagement with civic officials and catalysed participatory governance. Have they increased people's confidence in urban local body (ULB) administration? How effective have they been in resolving the day-to-day hurdles faced by citizens in accessing municipal services?

Effectiveness of Apps in Complaint Redressal

ULBs in India are increasingly deploying digital apps that enable individuals to file complaints around deficiencies in civic services. Many municipal apps such as Bengaluru's Sahaaya,'[6] Indore's 'Indore 311,'[7] Ahmedabad's Comprehensive Complaint Redressal System (CCRS),[8] and Chennai's 'Namma Chennai,'[9] have been launched to facilitate online filing of complaints across multiple civic departments and services. However, an analysis of Google Play Store downloads reveals that only a tiny fraction of the urban population employs these virtual platforms, as shown in Table 1.

Table 1: Indian Municipal App Downloads

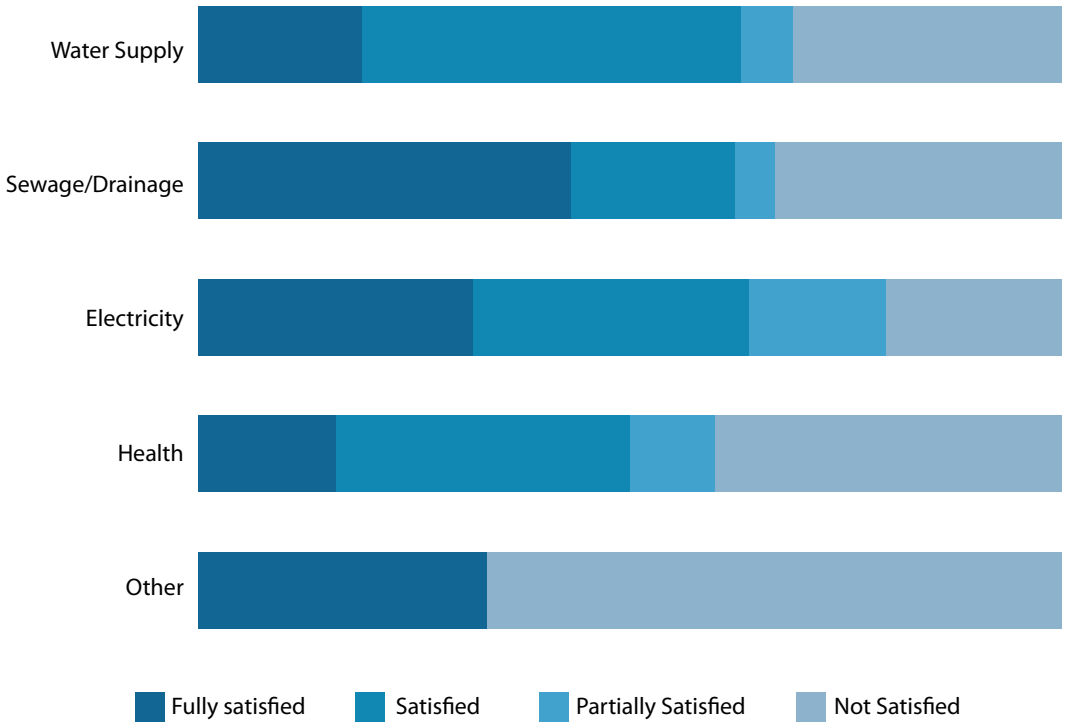
City	Population (2011)	App Name	Google Play Store downloads as of 2 June 2024
Chennai	8,653,521	Namma Chennai	100,000+
Hyderabad	6,809,970	My GHMC (Greater Hyderabad Municipal Corporation)	20,700+
Bengaluru	8,530,425	Sahaaya 2.0 (Namma Bengaluru)	50,000+
Mumbai	12,442,373	My BMC (Brihanmumbai Municipal Corporation)	100,000+
Delhi	11,007,835	MCD (Municipal Corporation of Delhi) App	100,000+
Thiruvananthapuram	3,301,427	Smart Thiruvananthapuram	50,000+
Lucknow	2,817,105	Lucknow-One	50,000+
Kolkata	4496,694	My City Kolkata	1,000+
Ahmedabad	5,577,940	Ahmedabad AMC	10,000+
Surat	4,466,826	Surat Municipal Corporation	500,000+
Pune	3,124,458	PMC (Pune Municipal Corporation) Care	50,000+
Jaipur	3,046,163	Jaipur Samadhan	1,000+
Indore	1,994,397	311 App	5,00,000+

Source: Authors' own, using data from Census of India 2011 and Google Play.

The Madhya Pradesh government has assessed Indore's 311 App, compiling quantitative usage data from the Indore Smart City Development Ltd, the Indore Municipal Corporation, and the 311 App control room. This was followed up with primary surveys using a sample of 2 percent of the complaints lodged on the app from randomly selected municipal zones. It also collected qualitative data from three focus group discussions with citizens to understand the problems they faced while using the app and prepared detailed case studies to supplement the survey findings. Of a sample of

132 app users, 87 percent were found to be male while 93 percent were graduates and 75 percent were non-slum residents. Most app users were between the ages of 20 and 49.[10] Overall, the survey indicated that 38 percent of citizens were 'not satisfied' with their experience, as shown in Figure 1.

Figure 1: User Satisfaction with Various Aspects of the Indore 311 App



Source: Assessment Report on Citizen Reporting System in Indore city.[11]

It is seen that public engagement with municipal apps in most cities is low. There is lack of awareness of these apps, especially among people from low-income groups and other vulnerable sections of the urban population. Departmental response time once a complaint is filed and subsequent expeditious action impacts user satisfaction.[12] An examination of online grievance redressal in several cities indicates slow response time and sluggish action, denting the trust of citizens in local governments.[13] For example,

media reports from Chennai reveal that nearly 40 percent of online complaints about garbage collection, streetlights, poor roads, and stray dogs were considered 'closed' even without a resolution.[14] Pune's PMC Care has similarly faced criticism for its 'sluggishness.'[15]

The Missing Back-End

Citizens lodging complaints against deficiencies in urban services is not new; apps have only shifted the system from 'physical' complaint filing and follow-up to virtual platforms. While this transition offers convenience, it falls short of improving citizen engagement or promoting participatory governance. Meaningful citizen engagement demands active participation, dialogue, and collaboration between citizens and local governments. Additionally, efficient online complaint resolution requires a well-coordinated municipal governance system with a two-way communication channel at the back-end.

Without these essential elements, online redressal mechanisms are only a superficial upgrade. Improper or delayed complaint resolution or their arbitrary closure creates mistrust and increases doubts about municipal work culture and practices.[16,17]

The lack of a streamlined back-end response system and feedback mechanism is a primary reason for the public perception of sluggishness. An active feedback mechanism can facilitate more robust citizen engagement. However, a study of innovative projects under the Smart Cities Mission[18] revealed that while an Integrated Command and Control Centre has been established in all the 100 cities selected by the mission, their complaint redressal system does not include an in-built two-way feedback mechanism. Complaints can be unilaterally closed by ULBs without any explanation. Even subsequent action taken on a complaint need not be communicated to the complainant, which leads to citizens repeatedly filing complaints about the same issues. Ideally, only the complainant should have the option to close a complaint, which would lead to increased accountability. Online platforms will be effective only if they offer transparent, two-way communication and feedback mechanisms.

To be sure, some government studies have lauded municipal apps for enhancing public trust in the city administration, increasing public confidence in local governance systems, and paving the way for higher levels of citizen engagement.[19] For example, a nationwide DARPG survey of 368,425 citizens found 92 percent of the respondents rating online municipal grievance redressal mechanisms as "very good" or "excellent".[20]

Complaint Redressal in Smaller Cities

The scale of municipal service delivery is relatively small and less complex in smaller cities. However, many of these cities, which are yet to publish their citizens' charters, struggle with even the conventional registering of offline complaints due to lack of well-formed procedures and the absence of standardisation in complaint registration.[21] Most of them are neither technically equipped nor have the capacity to manage online platforms. With the increasing pace of urbanisation, many of them, currently governed by municipal councils, are poised to grow into municipal corporations. Such cities must prioritise streamlining their existing complaint redressal mechanisms before any hasty and ill-prepared transition to online modes.

Citizens of smaller cities rely more on their elected representatives to resolve day-to-day issues with civic services. Often, such reliance results in municipal councillors being occupied with cumbersome administrative matters instead of focusing on their primary duty of working on the long-term development aspects of their jurisdiction. Poor technical knowledge about the provisions of specific municipal services also leads to tussles with municipal employees. Lack of accurate city-wide and zone-wide data further hampers administrative ability to deal promptly and effectively with complaints. Many smaller cities are thus trapped in a vicious circle of improperly managed municipal services, low citizen trust in their ULB, and low civic sense.

Conclusion

An online complaint filing mechanism is an initial step toward fostering citizen engagement but is far from achieving the objectives of citizen engagement envisioned by the 74th Amendment. While it has increased customer convenience of filing complaints in the larger cities, it will require a more robust and strategic technical back-end, trained human resources, two-way communication channels, and transparent feedback mechanisms to ensure prompt response and fulfil the promises of the ULB citizen charter.

Smaller towns which are poised to expand into cities must ensure well-defined, structured, and streamlined conventional complaint redressal procedures for a seamless and scalable transition to online mechanisms.

As the pace of urbanisation accelerates, the challenge of providing services and infrastructure to the growing population will only heighten. The consequences of climate change will add to the complexities. Active citizen engagement will be a key to improving the liveability of cities through sustainable, equitable, and inclusive development.

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Locality as Frontier: Recognising the Potential of the Neighbourhood

Rahul Srivastava and Matias Echanove

During every election season, national and regional parties establish multiple local offices to achieve widespread reach. However, this reach remains periodic and connected to the electoral calendar. The remaining time, these small offices function as less efficient versions, with formal governance undertaken by the larger bureaucratic institution. It is important to address why local governance becomes connected to the regional or national scale, seemingly serving as an outpost for the larger imagination. Why do local needs become subsumed by bureaucratic administrative processes that are extra-local, i.e., managed from elsewhere?

This disconnect may have multiple reasons, the most plausible being speed. Decentralisation has been viewed as an obstacle to the speedy implementation of schemes. It is presumed that too many decision-makers create too many disagreements, thus slowing the implementation of projects. In reality, the scheme itself may have been conceptualised elsewhere, usually at the top of the decision-making ladder, and may be unsuitable for grassroots implementation. Local contexts with a diverse population make the unsuitability of the scheme more pronounced. Typically, schemes are created based on data that may have been collected locally but are transformed through statistical aggregation for the sake of standardisation; standardised schemes are considered to be easier to implement in larger contexts. This approach has its merits when implementing specific national and regional policies, such as those related to health and education, which rely on more technocratic and universal practices in which the development of statistical profiles based on aggregated data has a greater degree of reliability.

The Centrality of 'Local' and Decentralisation Duplicity

In urban governance, the local is the final frontier. Disregarding local factors distorts the scheme. Nevertheless, such distortions happen all the time—not just because national or regional power centres are suspicious of local power brokers or because they view themselves as neutral bureaucrats managing conflicting local interests from the top, but because of a deeper belief system that the local is not important in the larger scheme of things. While the government may pay lip service to the decentralisation of governance in a tokenistic concession to democratic processes, absolute power is rarely dispersed. The suspicion towards the local is more deep-rooted and may exist at an epistemological level.

Localities have been theorised out of the governing imagination, being minimised in scope and substituted by larger imaginaries at all levels, including as sites for knowledge, experience, and resources. These larger imaginaries have appropriated the local in both the material and the abstract. Materially, contemporary

economic practices treat local physical resources—whether inhabited land or natural assets—as the property of the extra-local. Much conflict arises because inhabitants of local spaces resist these attempts by trying to maintain control of their surrounding natural environments, which is often their resource for sustenance and livelihood.[1,2] Such material appropriation is also aided by an abstract appropriation—that of local belonging, which is absorbed into larger, more abstract identities such as regional, national, or global identities. Ultimately, the assertion of local belonging itself is seen as fundamentally problematic, parochial, and backward.

In this scenario, how can the decentralisation of governance be anything but tokenistic—a mere tool to implement the goals and objectives of larger imaginaries, which continues to deny the untapped potential and agency of local neighbourhoods in the larger urban governance framework?

Those who are directly involved in urban governance, administration, and management of any civic activity—from garbage management to spatial evaluation of real estate—are aware of a fracture between their goals and the disempowered reality that surrounds them. Progress is not possible without local support.

However, there are spaces in India where local imagination is mobilised for political support and which exercise a high degree of agency. These spaces include the many unplanned neighbourhoods that have emerged due to the demographic, economic, and migratory exigencies of urbanisation and have not been absorbed into the bureaucratic infrastructure.

Political parties are quick to set up active cells in these neighbourhoods to fill in the gaps that the bureaucracy has not been able to respond to. We contend that the convergence of political mobilisation, local management, and civic issues can lead to a model for effective local governance, provided the local itself is recognised as a resource.

An unregulated, unplanned neighbourhood can serve as an exemplar of good and responsive management, often led by local community leaders. However, in order to achieve its full potential, bureaucracy needs to overcome its fear of direct engagement with the people living in these constituencies. This can only happen by developing greater trust in the ability of people to make rational choices and overcoming the assumption that people will be governed by parochial interests or be shaped by familial and community needs alone.

For those involved in urban practice, a higher degree of immersion in these unplanned, unregulated neighbourhoods can be a major trust-building exercise.

Learnings from Dharavi

During the pandemic, Dharavi highlighted how a partnership between local actors and municipal workers could help address what could otherwise have been a much larger disaster in such a dense environment.[3,4]

As an urban practice, *urbz*[a] has located itself in Koliwada, Dharavi, where it has worked for more than 15 years.[5] The dominant community in the neighbourhood are the Kolis, although non-Kolis are a significantly higher demographic. A complex and co-dependent ecosystem has emerged in which the traditional rights of earlier residents and the contemporary rights of subsequent waves of migrant groups, landlords, and tenants find a way to relate to each other's needs. These networks involve conflict, negotiation, and resolution on an everyday basis. Local community-based elections have their internal dynamics, which minimise the tendency to make narrow-minded, ethnocentric choices.[6] Similarly, a migrant community garners political support due to its demographics and strengthens its powers of negotiation.

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[a] The authors are affiliated with *urbz*.

What ultimately binds these contradictions is the overwhelming presence of local market-based networks and relationships, which go beyond administrative power alone. Most of these networks are built around the need for skilled and unskilled physical labour as well as knowledge, expertise, or simply a neighbourhood market for local produce and services.[7] This overlap also creates a template for working together to address everyday civic issues.

An immersion in these neighbourhoods and local exchange networks reveals that there is rarely any lack of talent within a locality, especially to contribute to local governance. What prevents their effective participation is the inability or discomfort of the bureaucracy to accommodate them. Community-led transformation, with some external stimulus and guidance, can break such perception siloes.

In 2017, *urbz* became part of the informal networks within Koliwada to help the local community build the Koli Jamat Community Hall. With a diverse group of stakeholders and community interests, the building took shape organically, with the involvement of *urbz* limited to necessary guidance and adjustments. Meetings and discussions with the community and contractors shaped the design, with responsibilities distributed equally among users, architects, builders, and financiers. Consequently, ownership of the project was shared throughout the project life cycle, making it a self-sustaining, community-based, and community-led project.

Figure 1: The Construction of the Koli Jamat Community Hall at Koliwada, Dharavi

The vision. *The construction.* *The creation.*

Source: urbz[8]

Both bureaucratic discomfort and the perceptions of urban practitioners result in a lack of acknowledgement of the vast resources that exist within communities for building, planning, and designing locally. This perception contradicts our observations; over the years, self-taught groups of masons, labourers, artisans, and builders have produced an invaluable body of work[9] that needs to be recognised, validated, and acknowledged. In the process of engaging with them, we have also encountered effective community leaders, administrators, and negotiators.

Conclusion

There are epistemological gaps in the understanding of local processes among professionals in the field of urban practice—from architects and planners, to activists and economists. Only by filling these gaps can urban governance go beyond paying lip service and start taking concrete steps into real decentralisation. In the meantime, the only beneficiaries of these gaps will be political players, who will continue to harness the power embedded in local reality and use it for political gain.

Rahul Srivastava is co-founder of urbz and The Institute of Urbanology.

Matias Echanove is co-founder of urbz.

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Mainstreaming Urban e-Governance for People's Participation

Milind Mhaske

The UN-Habitat World Cities Report 2022 estimates that 43.2 percent of Indians will be living in urban settlements by 2035,[1] with 100 percent of the National Capital Region's population expected to be "urban", while states like Kerala, Tamil Nadu, Gujarat, and Maharashtra are slated to have an urban population of more than 50 percent.[2] City governments, including municipal corporations, municipal councils, and Nagar Panchayats, are primarily responsible for delivering services to their constituents. As the closest governance units to communities, city governments are uniquely placed to recognise and address local needs. With the expected population surge, this engagement is vital to enhance the overall quality of life for city residents.

The collective wisdom, concerns, and ideas of citizens can be beneficial for city governments. Engaging with citizens can provide insights into local dynamics as well as empower governments to take executive actions that align with citizens' needs. This participatory approach has the potential to transform city governments into institutions of direct and inclusive democracy, integrating diverse perspectives to shape urban landscapes in accordance with the collective community vision and expectations.

The 74th Constitutional Amendment Act, 1992 constitutionalised the framework of city governments in India. It envisioned city governments as participatory forms of democracy where citizens become stakeholders in making decisions regarding local administration and development.[3] The Act's institutional directives to form Ward Sabhas[4] and Area Sabhas,[5] as mandated by the Jawaharlal Nehru Urban Renewal Mission in 2005, are envisioned as participatory platforms that enable citizens to contribute to the decision-making processes of issues that affect their lives.

A Ward Committee is a hyperlocal form of governance[6] that is headed by local elected representatives and other members, including ward residents, who work towards expediting developmental works and maintaining service delivery efficiency. The Ward Committee is mandated to sanction developmental works and make financial provisions for the ward from the municipal budget. Meanwhile, Area Sabhas serve as avenues for conducting discussions and exchanging ideas among citizens from a particular ward, allowing them to share their views on local development and monitor works by local councillors and administration.

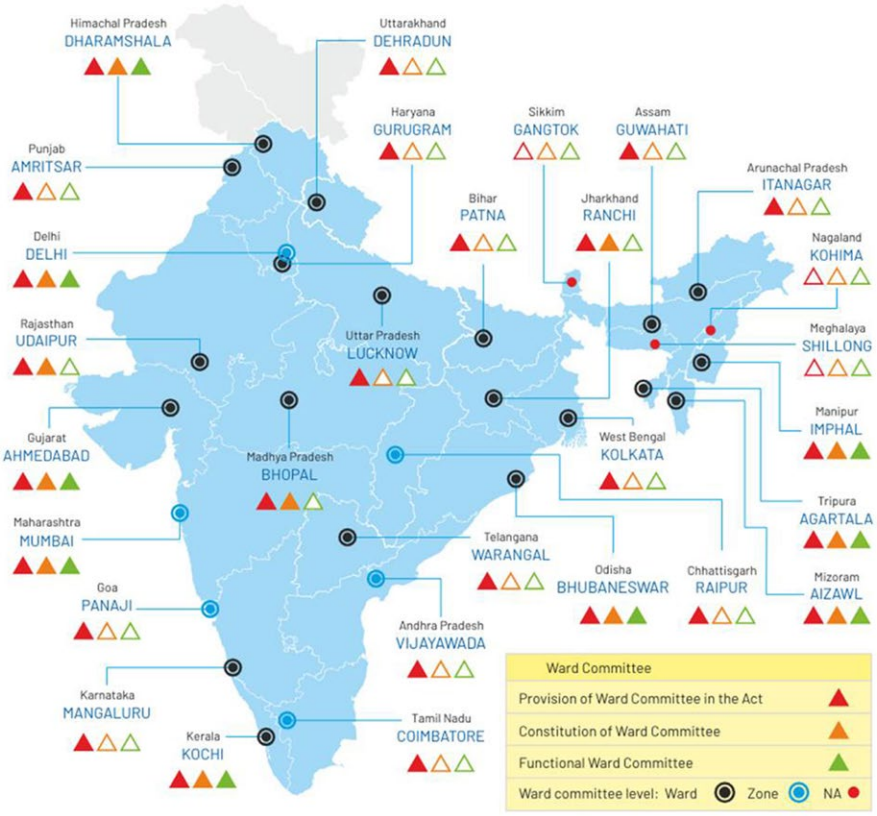
In 2020, Praja[a] launched the Urban Governance Index (UGI), which undertook a study of 29 cities across India to understand the on-ground operations of Ward Committees.[7] The UGI conducted a detailed examination of the administrative frameworks of 28

[a] The author is affiliated with Praja, a non-partisan organisation working towards enabling accountable governance since 1997.

states and the National Capital Territory. It also evaluated the provisions of the Municipal Acts of individual states.[b] The study was supplemented by interviews with local elected representatives, civic officials, and citizens to verify the findings as well as gather insights through personal anecdotes.

The study findings revealed that, while 26 of the 29 cities make provisions for Ward Committees in their respective Municipal Acts, three cities are yet to make similar provisions. Despite making a statutory provision, only 12 cities out of the 26 have formed Ward Committees.[8] However, even out of these 12 cities, only nine have "functional" Ward Committees. Figure 1 provides an overview of the functioning of Ward Committees across India.

Figure 1: Status of Ward Committees in Indian Cities

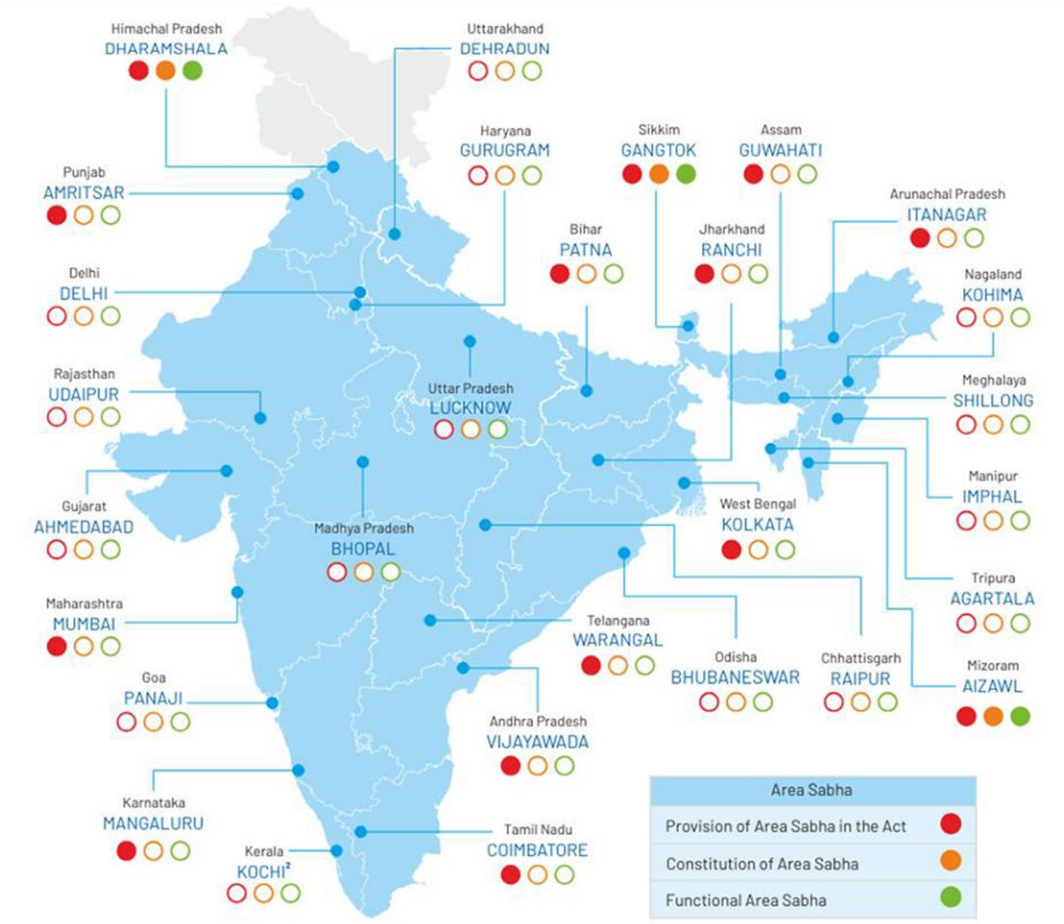


Source: Praja's Urban Governance Index 2020.[9]

[b] The Municipal Act of each state defines the local model that governs Ward Committees and Area Sabhas. These legislative frameworks serve as the guiding principles for the structures, functions, and operations of the diverse approaches adopted by different regions.

Findings from a study of the functioning of Area Sabhas indicate that, of the 29 cities studied, 15 have no provision for Area Sabhas under the state's Municipal Act. Of the 14 cities that have such a statutory provision, ten have not constituted Area Sabhas. Only three cities have functional Area Sabhas.[10] Figure 2 provides an overview of the functioning of Area Sabhas across Indian cities.

Figure 2: Status of Areas Sabhas in Indian Cities



Source: Praja's Urban Governance Index 2020.[11]

Challenges

Insights from the UGI necessitate a critical re-evaluation of the activation of hyperlocal governance structures across India. Addressing the current inactive state of citizen participation platforms requires concerted efforts from the central, state, and city governments. However, they need to effectively engage every citizen in the governance process. In urban areas, especially in megacities like Mumbai and Bengaluru, a typical ward has a substantial resident population, from a few thousand to several lakhs. The population itself is a challenge; an Area Sabha, even if designed for participatory governance, faces spatial constraints that severely limit its capacity to accommodate all residents.

Another challenge is posed by time constraints, which prevent citizens from sharing their suggestions during Sabha sessions. Additionally, not all interested residents may be able to participate due to inconvenient convening times. Given these challenges, especially with the increasing populations in cities and the ongoing urbanisation in semi-urban regions, a pragmatic approach would require exploring innovative solutions that ensure accessibility and convenience for citizens.

Therefore, harnessing the power of technological advancements, especially digital platforms, would offer a valuable avenue for establishing consistent communication between citizens and the government. Digital platforms can streamline the process by which citizens can express their needs and requirements. They can also allow citizens to stay informed about ongoing initiatives in their areas without demanding their physical presence. Digital platforms can also enable citizens to participate in governance by sharing feedback on various government projects, such as by providing insights into service delivery or offering suggestions for infrastructure improvements. This participatory feedback loop not only enhances the quality of governance but also strengthens the relationship between citizens and government.

Citizen participation through proactive e-governance can be augmented through integrating three digital tools into official municipal websites:

- **Government Data Dashboard:** Dashboards can ensure that citizens have easy access to comprehensive information through a user-friendly interface that makes complex datasets understandable. They can also serve as centralised data hubs, providing a unified platform for citizens to access and navigate up-to-date data and receive real-time data updates. Such information is critical to empowering citizens and allowing them to stay informed about ongoing developments in their areas.

- **Public Grievance Redressal Management:** Establishing single touchpoints for grievance redressal will simplify the citizen feedback process, ensuring efficiency and ease of use. This tool can introduce measurable outcome indicators to hold authorities accountable for resolving public complaints. Through a feedback mechanism, citizens can actively contribute to refining government work.

- **Citizen Participation Forum:** This forum would allow citizens to express their needs and aspirations directly to the local government. By facilitating ongoing dialogue and collaboration, the forum can ensure that citizens play a central role in shaping their wards as well as the larger city.

The online Centralised Complaint Registration System (CCRS) developed by the Brihanmumbai Municipal Corporation (BMC) illustrates how city governments can facilitate people's participation through e-governance.[12] The CCRS model has a dedicated institutional setup that is equipped to handle citizen grievances through multiple channels such as a mobile app, helpline, and WhatsApp chatbot. The model also has Escalation Metrics that can be used to escalate complaints to the highest level of authority. CCRS was also integral to Mumbai's COVID-19

mitigation efforts, resulting in global accolades for the BMC, including from the World Health Organization and the World Bank.[13]

Beyond the redressal of citizens' grievances, the government must leverage e-governance platforms to invite citizens to communicate their needs and aspirations. Input from citizens will help the administration adopt a citizen-centric approach to planning and better monitor service delivery and infrastructure provisions. To this end, in 2023, the Srinagar Municipal Corporation (SMC) launched the 'My City My Ideas' portal on its official website, with knowledge support from Praja.[14] The portal empowers citizens to express their needs and wants to the Municipal Ward. The platform enables officials to ensure the efficient management and implementation of citizen-driven projects. Replication of similar e-governance models would instil a strong sense of custodianship amongst citizens towards their cities, strengthening democracy at the grassroots level.

As the three constituents of governance, a symbiotic relationship between the administration, elected representatives, and citizens is necessary to support the rapid urbanisation in India. Tripartite collaboration through e-governance will also set the stage for a prototype of smart governance, where technology becomes the catalyst for a more transparent, inclusive, and responsive urban governance framework.

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Community-Led Efforts in Sustainable Mobility: The Story of Bengaluru

Reashma P. S.

Urban development needs a governance system that prioritises people. As cities grapple with myriad challenges, from infrastructural deficits to environmental sustainability, there is growing recognition of the need to empower citizens and foster collaboration among different stakeholders.

The Constitution (74th Amendment) Act of 1992 was a significant step towards this goal. It granted municipalities constitutional powers and aimed at establishing ward committees to enable citizen participation in decision-making.[1] Similarly, the Jawaharlal Nehru National Urban Renewal Mission (JNNURM)[2] of 2005 sought to institutionalise citizen engagement through community participation laws (CPLs) and area *sabhas* (neighbourhood committees),

emphasising transparency and accountability. Despite these efforts, the implementation of laws and policies for citizen participation has been slow and inadequate.

Bengaluru may be an exception. This city in the state of Karnataka has embarked on a journey towards participatory governance, leveraging innovative methods of citizen engagement and the empowerment of local communities. This is evident in the way it has tackled issues relating to water and lake conservation, mobility and transportation, and waste management. This article delves into the pivotal role of citizen engagement in driving sustainable urban transport solutions in Bengaluru.

Mobility Challenges

Bengaluru, known for its pleasant climate, rich culture, and thriving IT sector, has seen a remarkable rise in its motor vehicle population, which exceeded 10.8 million in 2022-2023.[3] The city grapples with massive challenges in maintaining a robust urban mobility infrastructure, and is ranked the world's second most traffic-congested city after London.[4]

Citizens endure polluted air, unsafe footpaths, and protracted commutes worsened by traffic congestion. Vital concerns in city mobility include the urgent need for eco-friendly options, such as walking and cycling, and the promotion of low-carbon transport solutions. Improving public transportation and last-mile connectivity to the city metro is also required. Yet Bengaluru's urban transport landscape does not have any single agency with the overall responsibility for tackling these challenges. Citizens, as primary users, bear the brunt of the city's unplanned transport infrastructure development.

Citizen-Led Initiatives

The first of the means that Bengaluru's citizens have used to make themselves heard is mass protest. A prominent example was the mobilisation in late 2016 against the steel flyover project,[5] planned

to reduce travel time to the airport. It was opposed by citizens due to its environmental cost—the felling of 2,000 trees—other than the steep expenditure pegged at INR 20 billion. The state government scrapped the project in March 2017.

Other significant movements include *Chuku Buku Beku*[6] in end-2016, which sought the revival and expansion of the city's suburban rail, the protests against the 'elevated corridor tender' (Raddu Madi), in the first half of 2019,[7] and the mobilisation for improved bus services *(Bus Bhagya Beku)*[8] in March 2017. Though these saw mixed results, they reflect a surge of citizen activism seeking sustainable urban mobility.

A remarkable citizen-driven initiative to encourage sustainable mobility in Bengaluru is Cycle Day,[9] led by the Bengaluru Coalition for Open Streets, a partnership between various non-government organisations (NGOs) and the state government's Directorate of Urban Land Transport (DULT). Started in October 2013, it designates the first half of one Sunday every month as 'Cycle Day' during which the movement of motorised vehicles in specified localities is heavily restricted. Events include offering bicycles free of rental charge, organising short-distance cycling events and other activities on the streets such as exercise classes and games for children. It also seeks to improve the infrastructure for safe cycling. Over time, it has become extremely popular, with more than 50 neighbourhoods participating in the most recent iteration.[10] A vital aspect has been its emphasis on partnership and community engagement.

The popularity of Cycle Day has seen the initiative evolve into the Sustainable Mobility Accords (SuMA), which started in September 2020, once again supported by DULT, and which promotes a gamut of area-level initiatives such as the following:[11]

- Facilitating feeder buses
- Enhancing last-mile connectivity to the metro
- Advocating for pedestrian-friendly neighbourhoods
- Analysing travel patterns across households.

Another notable effort was the Neighbourhood Improvement Plan (NIP), where NGOs and consulting agencies collaborated with resident welfare associations (RWAs), organising meetings to understand the vision and aspirations of the community for their neighbourhoods. The civic administration did not institutionally recognise it, however, and it failed to deliver solutions.

A noteworthy endeavour launched by the state government, in which citizens' groups are also playing a prominent role, is the 'Brand Bengaluru' campaign started in June 2023,[12] which seeks to transform and modernise the city's infrastructure and urban environment. It has eight themes: 'Agile Mobility (Sugama Sanchara) Bengaluru'; 'Healthy Bengaluru'; 'Education, Bengaluru'; 'Green Bengaluru'; 'Clean Bengaluru'; 'Vibrant Bengaluru' (whose projects include setting up a futuristic sky deck); 'Water Secure Bengaluru'; and 'Tech Bengaluru'. It envisions involving citizens' groups in both the planning and monitoring of projects. The city's municipal corporation has held multiple public consultations to gather inputs and has received feedback from more than 70,000 people.[13]

Enhancing Citizen Engagement

Recent experiences indicate a promising trajectory of active citizen engagement in Bengaluru. Lessons from these have played a pivotal role in shaping the city and yielding positive outcomes. Diverse citizens' groups advocating for measures like citizen participation bills and proposing initiatives such as cycle-friendly streets and feeder bus systems exemplify this encouraging trend. Challenges persist, however, in effectively implementing and sustaining these initiatives.

While participatory culture lays a solid foundation for citizen engagement, it must be bolstered by political support to achieve substantive impact. Bridging the gap between different social classes and their varied interests calls for not only grassroots involvement but also endorsement from political leaders, government authorities, and the civic administration.

If political backing is inadequate, it could impede citizens' efforts. It is imperative for elected representatives and government officials to strategically plan and actively champion citizen-led initiatives.

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Cities for All: Participatory Insights from India's Urban Governance

Anusha Kesarkar-Gavankar

French Philosopher Henri Lefebvre's theory of urban development posits that urban spaces both shape and are shaped by social interactions, collective struggles, and daily life.[1] His 'right to the city'[2] (RTC) concept promotes the achievement of spatial justice by empowering citizens to influence urban development. Lefebvre argued against the dominance of economic and political forces in city governance, advocating instead for citizen-driven shaping and governance. Despite criticism,[3] citizens' role in creating meaningful public spaces through their attitudes, experiences, aspirations, and claims has been increasingly recognised.[4,5] This also reinforces how neighbourhoods hold emotional significance and serve as spaces of communal memory.

The global discourse on RTC or 'cities for all' is growing,[6] as emphasised in the United Nations New Urban Agenda (NUA) as a means to achieve specific targets of the Sustainable Development Goals (SDGs) aligned with the Habitat Agenda.[7,8] RTC encompasses civil, political, economic, social, cultural, and environmental rights, representing a collective claim in the area of human rights. Despite facing criticism,[9] including opposition from India due to concerns about non-legally recognised inhabitants, RTC highlights the importance of city governments in promoting public participation to create inclusive built environments.

As cities continue to grow, reaching an estimated 6.3 billion inhabitants by 2050,[10] it is crucial to recognise and incorporate participatory development into urban governance to ensure that cities benefit all their citizens. However, challenges are particularly pronounced in Global South[11] countries such as India, where rapid urbanisation prioritises meeting basic needs over long-term planning. In these contexts, the question is how master plans can adopt alternative frameworks to rethink and reshape cities. How can effective models promote bottom-up approaches that benefit both present and future citizens? How can India demonstrate and promote sustainable and inclusive urban development?

Rethinking Urban Paradigms for Public Participation

SDG 11 of the 2030 Agenda urges cities to become more inclusive, safe, resilient, and sustainable, with target 11.3 emphasising[12] the importance of participatory and integrated human settlement planning worldwide. The NUA reinforces equity, inclusivity, and sustainability, viewing urbanisation as a positive transformative force.[13] UN-Habitat provides a comprehensive toolkit to support local governments and urban actors in participatory planning efforts to implement the NUA and SDGs.[14] The World Bank, too, has acknowledged the significance of community-driven approaches for urban inclusion across spatial, social, and economic dimensions.[15]

Given their non-binding nature, the demands of daily governance often overshadow these provisions for participatory development. While some countries have experimented with participatory processes, their inclusivity remains unproven.[16] In the face of rapid urbanisation and complex challenges, particularly in the Global South,[17] effective governance is crucial for promoting inclusive growth, resilience, and liveability.

Concerns may include limited citizen awareness, socio-cultural biases, inter- and intra-group conflicts, rigid master plans, power imbalances, and unequal resource distribution.[18] These issues result in inadequate feedback mechanisms, communication gaps, lack of trust, and bureaucratic barriers.[19] Interaction with multiple actors adds complexity, making impact evaluation and ensuring accountability difficult tasks. Staying updated on developments like Digital Participatory Platforms is critical.[20] However, a people-centred vision of cities ensures a decent quality of life for all and empowers communities to shape their future.

Looking Bottom-Up

Citizen engagement must transition from traditional grievance mechanisms to community decision-making, incorporating input from multiple stakeholders. Arnstein's ladder of citizen participation[21] serves as a model governance framework, employing the 'staircase strategy' to achieve a balanced allocation of power and responsibility. Innovative models[22] have also successfully promoted effective participation by integrating transparency, representation, and accountability, thereby bridging the gap between citizens and administration.

Global and national forums[23] provide platforms for dialogue, primarily among governments and civil society. At the local and city levels, urban local bodies (ULBs) and community-based organisations can support involvement anchored in rich local knowledge for better engagement. These can range from community meetings, public consultations, and advisory committees to citizen feedback channels for ideas and the

assessment of various issues such as infrastructure projects, city budgeting, and public service delivery.

A participatory budgeting mechanism[24] in Porto Alegre, Brazil, allows all citizens to engage in municipal budget allocation, ensuring the inclusion of marginalised communities. Malawi's Community Score Card[25] encourages citizens to assess public-service quality and accessibility. In Kibera, Kenya, community-led mapping[26] initiatives involve residents in designing master plans to address specific needs. Cities such as Singapore, London, Seoul, and Kigali also have successful participatory development models.[27] While not all frameworks may directly apply to urban India, analysing such templates[28] can guide progression and adaptability.

Learnings from India

India's urban population is expected to grow from 483 million in 2020 to 675 million in 2035.[29] Enhancing the neighbourhood-level quality of life within cities is therefore essential to shaping India's urban development. Its urban-centric development agenda will have to correspond to the diversity of its people. Efforts to institutionalise participatory processes in urban planning and governance in India have been undertaken through various initiatives. Departing from top-down approaches, the Constitutional (74th Amendment) Act (CAA)[30] aimed to empower municipalities for self-governance. This legislation meant the devolution of powers and finances to ULBs towards empowering citizens and locally elected representatives. Further, the Jawaharlal Nehru National Urban Renewal Mission's (JNNURM) Community Participation Law (CPL) provided for stakeholder consultations in the preparation of city development plans in 2007.[31]

The Smart Cities Mission[32] launched in 2015 and version 2.0 of the Atal Mission for Rejuvenation and Urban Transformation (AMRUT)[33] in 2021 enhanced participation through citizen engagement frameworks. The National Heritage City Development

and Augmentation Yojana,[34] Pradhan Mantri Awas Yojana-Urban,[35] and Swachh Bharat Mission[36] also incorporate participatory initiatives. The growing focus on public participation and citizens' aspirations is evident in the structural and programmatic changes occurring at various levels. However, despite these efforts, a significant gap remains, with ULBs still facing constraints in devolving powers and finances.

ULBs grapple with constrained autonomy, financial limitations, and political interference from the state government compounded by understaffing and weak capacity.[37,38] India's diverse economic, social, and environmental challenges defy one-size-fits-all governance policies.[39,40] Public participation in India also faces hurdles due to inadequate platforms, tokenistic efforts, accountability gaps, data collection deficiencies, and unequal resource allocation. Transparency issues and insufficient civil society representation exacerbate citizens' limited influence in decision-making.

Some models in India treat citizens as partners, granting them direct control through ward-level engagement or digital technology and e-governance—for example, Kerala's People's Campaign for Decentralised Planning of 1996, which promotes grassroots participation in local development planning.[41] Through ward-level planning committees, citizens actively engage in decision-making, prioritising and implementing projects according to local needs.[42] City mayors wield executive powers, and municipal corporations operate without municipal commissioners. Additionally, women's self-help groups under the state-wide Kudumbashree Mission play a significant role in service delivery.

Delhi's Resident Welfare Associations (RWAs) actively contribute to city planning and service enhancement.[43] The 2003 Bhagidari system,[44] initiated by the Delhi government, fosters collaboration between civic officials and RWAs. This system enables regular interactions of local citizens, traders, and other stakeholders with urban officials. Despite criticisms of elitism,[45] RWAs have influenced inputs to Delhi's Master Plan 2041 through the

public engagement portal facilitated by the Delhi Development Authority (DDA).

Since 2007, Pune's participatory budgeting system has enabled citizens to make suggestions to municipal budget allocations via an online platform.[46,47,48] India's Bharat Survekshan,[49] launched in 2016 under the Swachh Bharat Mission, surveys approximately 4,242 urban centres with extensive citizen participation.[50] In 2023, Indore retained its title as the cleanest city for the seventh consecutive year, with all stakeholders sharing responsibility for its cleanliness.[51]

Another example is India's National Urban Learning Platform (NULP), launched in 2020[52] as a nationwide programme that digitally consolidates skills and knowledge for urban stakeholders, providing access through various channels. Emphasising citizen participation and civic engagement as fundamental to good governance, this platform fosters two-way participation, idea exchange, and conversations.[53]

Examples also include Ahmedabad's Slum Networking Project,[54] which empowers slum dwellers to plan and execute infrastructure projects like water supply and sanitation. Karnataka's Sustainable Mobility Accords (SuMA)[55] by the Directorate of Urban Land Transport encourage citizen interventions for sustainable neighbourhoods. Mumbai's Development Plan 2034 highlights public participation to address local needs.[56] Lessons from the Society for Participatory Research in Asia, which promoted participatory town planning in Chhattisgarh,[57] offer the potential for broader application. Although there are limitations,[58] these frameworks illustrate that cities can become truly inclusive and sustainable[59] by involving locals in decision-making to meet their aspirations and needs.

Future Cities for All

It is essential to place citizens and communities at the heart of urban planning endeavours to drive systemic and

lasting changes. The above templates highlight innovative multi-stakeholder collaborations, fostering trust among city governments, private entities, civic groups, and citizens to address needs and allocate resources. Enabled by the genuine empowerment of ULBs, local-level initiatives can lead to broader sustainability actions.[60] This underscores the importance of social impact assessments, integrating social aspects[61] into technological and infrastructural innovations to humanise cities.

Prioritising quality of life is crucial for policymakers in creating compassionate spaces with access to basic services and opportunities. Continuous public engagement is necessary for building trust and encouraging participation, but citizens also need to take responsibility to stay informed and actively participate[62] in decision-making. Master plans should be contextually deep and adaptable to evolving needs and realities. Apportioning funds and building capacities of local institutions in specific areas as first responders is vital.

David Harvey's interpretation of Lefebvre's RTC[63] highlights how collective power can reshape urbanisation processes for individual and shared well-being, empowering residents to influence urban development policies. If harnessed effectively, participatory planning can truly offer collaborative solutions for creating just and equitable future cities.

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Strengthening Democracy in Municipal Governance

Dhaval Desai

Elections are regarded as a pillar of democracy—the primary mechanism through which the will of the people is expressed. They empower the citizens to choose their leaders, shape governance, and hold their representatives accountable. Elections, at least in theory, promote transparency, encourage political pluralism, and ensure that the government reflects the diverse views and interests of the population. In a federal democracy such as India, the democratic principle of "of, for, and by the people" is especially important in municipal governance, where local bodies govern and manage crucial issues that directly affect citizens' daily lives.

Although considered the third tier of government in India's federal system, municipal bodies provide the first-mile governance to the citizens.

Due to their proximity to the people, the mandate of elected representatives to the Urban Local Bodies (ULBs) differs from those elected to the Legislative Assemblies and the Lok Sabha. They directly oversee 18 key governance functions,[1] including planning, roads and transport infrastructure, street lighting, water supply, drainage and sanitation, and maintenance of public amenities.

Empowering Municipal Governance in India

For the first time after independence, the 74th Constitution (Amendment) Act (CAA) 1992 brought attention to governance in India's cities. With decentralisation and empowerment as its core objectives, the CAA granted constitutional status to ULBs. It also mandated the creation of "ward committees" to foster participatory governance, allowing citizens to have a direct say in civic matters that affect their daily lives.[2] Additionally, the CAA introduced Article 243U to the Constitution of India, according the ULBs constitutional status, mandating their elections be held before the end of their five-year terms, and preventing their arbitrary dissolution by the states.[3] The CAA was notified in 1993 and was formally adopted by all states and union territories in May 1994 after they enacted the necessary conformity legislations.[4]

Post-1994 central government urban schemes and programmes strengthened the commitment to citizen engagement. The Jawaharlal Nehru National Urban Renewal Mission (2005),[5] for example, mandated states to enact their individual Community Participation Laws to institutionalise citizens' participation through area *sabhas* (committees) in the planning, design, and execution of all urban infrastructure projects. The Deendayal Antyodaya Yojana-National Urban Livelihoods Mission (DAY-NULM)[6] in 2013, the Swachh Bharat Mission (SBM)[7] in 2014, and the Heritage City Development and Augmentation Yojana (HRIDAY)[8] and the Atal Mission for Rejuvenation and Urban Transformation (AMRUT)[9] in 2015 all emphasised community engagement.

Despite policy, legislative and constitutional emphasis on citizens' participation, India has yet to establish global benchmarks in participatory local governance. Instead, states have ignored the CAA's statement of objects and reasons, which highlights "failure to hold regular elections, prolonged supersession and inadequate devolution of powers and functions" as the main obstacles preventing ULBs from functioning "effectively as vibrant democratic units of self-government."[10] The repeated neglect of ULB elections has undermined the CAA's core purpose of promoting "empowered" cities through 'decentralised' governance while confining the idea of 'participatory urban governance' to ineffective legislations and notional central government project guidelines.

The Curious Case of Municipal Elections

The terms for the municipal corporations of Ahmednagar and Dhule, the last two ULBs with elected councillors in Maharashtra, ended in December 2023.[11] Today, Maharashtra has no elected ULBs in its 27 municipal corporations, including the country's richest, the Brihanmumbai Municipal Corporation, which governs the area of Greater Mumbai with an annual budget of nearly INR 60 billion.[12] The combined annual budget for these 27 municipal corporations is INR 1.81 trillion.[a] For the past several years, this budget has been managed solely by state government appointed administrators or municipal commissioners, without any oversight from mayors or municipal councillors.

The terms of the elected bodies in Maharashtra's municipal corporations began ending in early 2020, but elections were postponed due to the COVID-19 pandemic. Political upheavals, including the breakup of the Shiv Sena-BJP alliance and the fall of the short-lived Uddhav Thackeray-led Maharashtra Vikas

[a] Calculated by the author from Maharashtra's municipal corporation budgets 2024-25.

Aghadi government—caused by split in the Shiv Sena led by the current chief minister Eknath Shinde—further delayed the ULB elections.

The situation worsened with a Supreme Court case concerning the MVA government's decision to restructure Greater Mumbai's electoral wards and increase the number of councillors from 227 to 236. This decision was overturned by Eknath Shinde after he assumed the chief minister's office in 2022. Additionally, rival political parties have challenged the issue of reservations for Other Backward Classes (OBCs) in local bodies in the Supreme Court. As a result, elections for other ULBs, including Municipal Councils and Zilla Parishads, have also been delayed indefinitely.[14]

Several major cities in India are also under indirect state rule, having no elected representatives. In Karnataka's capital city, Bengaluru,[15] there have been no elected representatives in the Bruhat Bengaluru Mahanagar Palike for the past four years, leading to citywide citizen-led agitations and social media campaigns demanding early elections. In Chennai,[16] no municipal corporation elections were held for its 200 municipal councillor seats for six years from 2016 to 2022. In the past, other state capitals, including Delhi, Kolkata, Guwahati, and Hyderabad, have also missed their scheduled municipal elections.

A nationwide study of 679 municipal corporation elections from 1994 and May 2023 reported by a national daily, revealed significant neglect and state apathy toward ULBs.[17] The analysis found that 60 percent of ULB elections have been delayed since 1994.[18] Cities in Andhra Pradesh were neglected the most, with 97 percent of the state's ULBs experiencing delayed elections.

The correlation analysis found indiscriminate delays across India, with no indicative regional, geographical, political or economic patterns.

Table 1: Indian Municipal App Downloads

State	ULBs recording delayed elections
Andhra Pradesh	97%
Karnataka	96%
Haryana	90%
Punjab	89%
Telangana	84%
Uttar Pradesh	77%
Odisha	73%
Gujarat	63%
Madhya Pradesh	63%
Jharkhand	50%

Source: Rishivanjas Raghavan and Dhruva Panyam.[19]

The 2023 Annual Survey of India's City-Systems (ASICS) report by Janaagraha revealed that as of September 2023, over one-third of India's total ULBs (1,484 cities) did not have elected ULBs.[20] Table 2 gives the state- and UT-wise details.

Table 2: Indian Municipal App Downloads

State	Total ULBs	ULBs without elected bodies
Andaman & Nicobar	1	1
Andhra Pradesh	120	31
Arunachal Pradesh	19	-
Assam	102	102
Bihar	249	-
Chandigarh	1	-
Chhatisgarh	169	20
Dadra & Nagar Haveli, Daman & Diu	3	-
Delhi	4	-
Goa	14	8
Gujarat	165	3
Haryana	92	75
Himachal Pradesh	61	-
Jammu & Kashmir	78	-
Jharkhand	50	8
Karnataka	338	207
Kerala	93	-
Ladakh	2	-
Madhya Pradesh	409	16
Maharashtra	399	397
Manipur	27	27

Meghalaya	11	11
Mizoram	23	-
Nagaland	39	39
Odisha	114	114
Puducherry	5	5
Punjab	163	-
Rajasthan	213	-
Sikkim	7	-
Tamil Nadu	664	664
Telangana	142	-
Tripura	20	20
Uttar Pradesh	750	-
Uttarakhand	93	7
West Bengal	126	126
Total	4,766	1,484

Source: Author's own, using Janaagraha's ASICS 2023 report.[21]

A 2022 performance audit on the CAA's implementation across 17 states found that timely elections to municipal bodies were not held in 1,586 municipalities. Tamil Nadu was the biggest laggard, with 664 ULB elections suffering delays,[22] followed by Madhya Pradesh (347),[23] Karnataka (210),[24] Punjab (129)[25] and Odisha (112).[26] The delays ranged from 41 days to 3,252 days.

In some cities where municipal elections are held on time, the election of mayors and deputy mayors, the constitution of city councils, and elections to other statutory arms of the local government, including the Standing, Improvements, Health and

Education Committees, are not conducted promptly.[27,28] For instance, Karnataka's 11 municipal corporations failed to have a constituted body of councillors, and crucial positions, such as the Chairpersons of the statutory committees, remained vacant for years after the completion of the ULB elections.[29]

The Sorry State of State Election Commissions

The CAA mandated the institution of State Election Commissions (SECs) to oversee ULB elections. However, the SECs have become mere administrative bodies, with important decisions like delimitation of electoral wards and seat reservation left solely to state governments.[30] Unlike the Delimitation Commission of India, which redraws parliamentary constituency boundaries, and the Election Commission of India (ECI), which manages Union and State elections as an independent and non-partisan body, the SECs lack such authority. This imbalance of power leads to biased delimitation processes and contested reservations for marginalised groups, often resulting in lengthy legal battles.

Several reports have highlighted the politically sensitive issues like delimitation of wards, reservation, and expansion of the civic boundaries by merging peripheral areas into municipal corporations significantly delay ULB elections.[31,32] Even if the delimitations and reservations are finalised, they can only be notified or implemented by SECs after their endorsement by the state governments. Although the CAA prohibits states from arbitrarily dissolving ULBs and the Supreme Court ruled that the SECs should have the same autonomy and authority as the ECI to conduct elections, no enforcement mechanisms are in place.

SECs also face undue influence from the state governments. In 2008, the Maharashtra legislative assembly jailed the State Election Commissioner for taking a firm stance against the questionable delimitation of the Latur assembly constituency as a 'breach of privilege'.[33] Although this incident has not been repeated, it reflects the dismissive attitude of the political class and state governments toward this constitutional body.

Upholding Democracy at the First Mile of Governance

City councillors are the first point of contact for seeking help with municipal service related issues, weather about roads, street lighting, water and sanitation, drainage, solid waste management, fire services, or public amenities. They also act as the "eyes and ears" of the people, overseeing the administration and service delivery of ULBs.

Unfortunately, state apathy toward ULB elections in India undermines the essence of democracy at the core of the country's federal system. Ensuring full autonomy, independence and sufficient financial and human resources to the SECs by appointing independent State Election Commissioners is the first step in addressing this issue. The Supreme Court of India has often emphasised the need for such reforms and equated the status of SECs with that of ECI, but the states have repeatedly found ways to sidestep such directives.[34]

Until all states have empowered SECs, the Government of India should give the ECI the additional mandate to conduct ULB elections and support the SECs in building their administrative and organisational capacities. Continued neglect of ULB elections does not augur well for a country that takes pride in its vast and diverse federal democracy.

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