TOWARDS SUSTAINABLE FUTURES

Future of Cities

Planning, Infrastructure, and Development

Edited by Ashok Kumar and D.S. Meshram

ROUTLEDGE

FUTURE OF CITIES

This book critically analyses the existing condition of cities in developing countries with special reference to planning and infrastructure networks in India. It provides an overview of the nature of opportunities presented by cities; major challenges that cities would face in future; and codifies the ways and means to transcend the challenges of contemporary urban growth and quality of urbanisation. It discusses key themes such as architecture of density, transformation of land-use zones to development zones, development of railway infrastructure, planning and design guidelines for bus rapid transit, and urban water planning and universal access to housing to create an enabling environment for deliberations and a better future for cities in the developing world.

The book integrates insights from governance, planning, and design and highlights implications of spatial integration. It brings together current issues in Indian urbanisation, smart technologies used in building smart cities and high-rises, and urban and regional governance to explore forms of sustainable development planning that factor human needs.

Accessible and topical, this book will be useful to scholars and researchers of urban studies, urban and city planning, development studies, sociology, public policy and administration, political sociology, anthropology, architecture, geography, and economics, as well as to professionals, planners, policymakers, and non-governmental organisations.

Ashok Kumar is Professor of Physical Planning and Dean (Academics and Student Affairs), School of Planning and Architecture, New Delhi, India.

D.S. Meshram is President, Institute of Town Planners, India, a trained architect, and a spatial planner.

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Routledge
Taylor & Francis Group
LONDON AND NEW YORK

First published 2022
by Routledge
4 Park Square, Milton Park, Abingdon, Oxon OX14 4RN

and by Routledge
605 Third Avenue, New York, NY 10158

Routledge is an imprint of the Taylor & Francis Group, an informa business

British Library Cataloguing-in-Publication Data
A catalogue record for this book is available from the British Library

Library of Congress Cataloging-in-Publication Data
A catalog record for this book has been requested

ISBN: 978-0-367-14243-8 (hbk)
ISBN: 978-1-032-28299-2 (pbk)
ISBN: 978-1-003-29621-8 (ebk)

DOI: 10.4324/9781003296218

Typeset in Bembo
by Apex CoVantage, LLC

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CONTRIBUTORS

Vinayak Bharne is Principal and Director of Design at Moule and Polyzoides Architects and Urbanists in Los Angeles and Adjunct Associate Professor of Urbanism at the University of Southern California, USA. His edited books include *The Emerging Asian City: Concomitant Urbanities and Urbanisms* (Routledge, 2013) and (with Shyam Khandekar) *Affordable Housing, Inclusive Cities* (ORO Editions, 2019).

Pranjali Deshpande-Agashe is Programme Director of the Institute of Transportation and Development Policy, a global organisation that helps the government formulate with sustainable transport policies. She is an experienced program and project management professional with a demonstrated history of working in the public policy and industry.

Shreya Gadepalli is South Asia Director at the Institute for Transportation and Development Policy (ITDP). She currently leads ITDP's South Asia team in guiding public agencies on the implementation of sustainable transport and urban planning best practices, reform of urban transport policy and capacity building of public officials and practitioners. She has guided the planning of bus rapid transit (BRT) in many cities across India, including Ahmedabad's Janmarg – India's first high-quality BRT system.

Mathew Idiculla is a lawyer and urban policy specialist. Currently, he works as a research consultant at the Centre for Law and Policy Research, Bangalore, India. He works in the interstices of urban local government, urban studies, and law. He regularly writes for the *Economic and Political Weekly* and *The Hindu* newspapers.

Aseem Inam is Professor and Chair in Urban Design at Cardiff University, U.K., and Director of TRULAB: Laboratory for Designing Urban Transformation. He has the distinction of working with the architect and urbanist Joseph Stein on the India Habitat Centre project in Delhi. He has published two books: *Designing Urban Transformation and Planning for the Unplanned: Recovering from Crisis in Megacities* (Routledge, 2005) and *Designing Urban Transformation* (Routledge, 2013).

Christopher Kost is Africa Programme Director at the Institute for Transportation and Development Policy. In Cape Town, Accra, and Johannesburg, he assessed the impacts of proposed bus rapid transit (BRT) systems on greenhouse gas emissions. More recently, Chris has been involved in projects in the Indian states of Tamil Nadu, Maharashtra, Gujarat, and Jharkhand, covering areas such as BRT, street design, parking management, and transit-oriented development.

Ashok Kumar is Professor of Physical Planning and Dean (Academic) at the School of Planning and Architecture, New Delhi, India. Trained as a human geographer and spatial planner in India and the U.K., he is interested in planning that reduces spatial injustices and links spatial planning with broader political and economic processes. He focuses on collaborative planning that are participatory and pragmatic. His most recent edited books include (with D.S. Meshram and Krishne Gowda) *Urban and Regional Planning Education – Learning for India* (Springer, 2016) and (with Poonam Prakash) *Public Participation in Planning in India* (Cambridge Scholars, 2016), as well as an authored book (with Sanjeev Vidyarthi and Poonam Prakash) *City Planning in India, 1947–2017* (Routledge, 2020). Another edited book (with D.S. Meshram) *Sustainable Development Goals and Indian Cities: Inclusion, Diversity and Citizen Rights* (Routledge, 2021).

D.S. Meshram is President of the Institute of Town Planners, India. He is a trained architect and a spatial planner. A spatial planning practitioner, he has held several top planning positions in India. He has served as Chief Planner, Town and Country Planning Organisation, Government of India for over 12 years. He was Adviser, Urban Development to the Government of Uttarakhand. He has been a member of Delhi Development Authority and New Delhi Municipal Council. He was responsible for the preparation of Urban Development Plan Formulation and Implementation adopted by the Ministry of Urban Development and Poverty Alleviation, Government of India in 1996. He was the Chairman of the All India Board of Town and Country Planning Education of the All India Council of Technical Education, Ministry of Human Resource Development, Government of India. He was also appointed the Devraj Urs Chair Professor by the University of Mysore, Karnataka.

Swati Meshram is Planning Manager at the City of Buena Park, California, U.S. She is responsible for establishing goals of her division and monitoring day-to-day division-wide activities including budget, staffing, and projects. She

also works to revamp planning application processes to make them web-based to serve the community efficiently. She has over 12 years of experience in public and private sector in the areas of urban and environmental planning.

Prasanna K. Mohanty is Chair Professor of Economics at the University of Hyderabad, India. He earned his MA and PhD in Economics from Boston University. He superannuated as an officer of the Indian Administrative Services of 1979 batch. He served as Chief Secretary to the Government of Andhra Pradesh and Additional Secretary in the Ministry of Housing and Urban Poverty Alleviation, Government of India. His latest books include *Cities and Public Policy: An Urban Agenda for India* (SAGE Publications, 2014) and *Financing Cities in India: Municipal Reforms, Fiscal Accountability and Urban Infrastructure* (SAGE Publications, 2016).

Poonam Prakash is Professor of Physical Planning and Head, Department of Physical Planning at the School of Planning and Architecture, New Delhi, India, an institute of national importance. She has a doctoral degree in housing from the School of Planning and Architecture, New Delhi. Her research interests relate to low-income housing, participatory planning and decision-making processes in planning, and planning pedagogy. She has a book (with Ashok Kumar and Sanjeev Vidyarthi) titled *City Planning in India, 1947–2017* (Routledge, 2020).

James L. Wescoat, Jr. is Aga Khan Professor of landscape architecture and geography in the Aga Khan Programme for Islamic Architecture at the Massachusetts Institute of Technology, USA. He co-directs the Norman B. Leventhal Centre for Advanced Urbanism. Jim earned a Bachelor of Landscape Architecture from Louisiana State University and practised landscape architecture in the U.S. and Middle East before returning to graduate study in geography at the University of Chicago with an emphasis on water resources. He has several publications to his credit.

ACKNOWLEDGEMENTS

In the 21st century, being the century of the city, cities are expected to dominate most aspects of our lives; most innovation and wealth creation will be created in the cities. Indian cities stand to gain from economic growth. However, city dwellers and diverse activities being carried out in cities will also profoundly affect city environments, making cities spaces of opportunities, conflicts, and challenges. There is no doubt that the modern city civilisation will continue to develop in cities depending on how citizens, planners, policymakers, development managers, entrepreneurs, governments, and the third sector join up and work collectively. Spatial diversity based on caste, religion, class, race, ethnicity, region, and other such identities will mediate economic growth. We have to be mindful of the fact that totalitarian regimes and conflict-ridden zones do not foster economic growth and become spaces unattractive to private investment. A peaceful city is intrinsically valuable. Even from a utilitarian perspective, peace creates economic opportunities and contributes to social harmony. Except for occasional conflicts, largely, the Indian city appears to be at peace with itself.

A majority of Indians will live in cities by 2050, which is another motivation for a democratically elected regime. If citizens are appropriately educated, fed, clothed, and cared for, this staggering population figure could be converted into great opportunities resulting in high economic growth, political stability, and social cohesion. Harmonious, peaceful, economically buoyant, and socially cohesive cities could be produced if built environments are created through fair decision-making processes, an equal distribution of resources and sustainable production and consumption processes. To address these and other related issues, the Institute of Town Planners, India organised a two-day international conference during 27–28 July 2017 at Vigyan Bhavan, New Delhi, on the theme 'Future of Cities: Opportunities and Challenges', focusing on the great opportunities without ignoring critical risks facing city planners and other decision-makers.

This book finds its origins in this international conference on 'Future of Cities: Opportunities and Challenges' wherein not only established global scholars of urban studies and city planning presented papers but also eminent practising planners were invited to present papers. These chapters critically investigated major global challenges facing cities and rural areas in India and looked at the likely challenges to be faced by Indian cities in the future. The scholarship presented in this two-volume book has emerged from decades of research conducted by world-acclaimed scholars and professionals.

The Indian city is the focus of the book because India is on the 'brink of urban revolution' since the population in cities and towns is expected to reach 600 million by 2031. Over the last two decades, the population of India increased from 217 million to 377 million and is destined to reach 600 million or 40 per cent by 2031. This volume is focused on the 'Future of the Indian Cities: Planning, Infrastructure and Development'; the companion volume takes the discussion beyond the material to the ethical world. The volume titled *Sustainable Development Goals and the Indian Cities: Inclusion, Diversity and Citizen Rights* (Routledge 2021) investigates the present urban challenges as enunciated in the Sustainable Development Goals along with the New Urban Agenda, and the Paris Agreement on Climate Change by building on the city challenges discussed in this volume. Both volumes present critical analyses concerning Indian cities and attempt to make a case for their better future by providing some planning and policy suggestions.

Writing and editing this two-volume book was not possible without the generous support of the Institute of Town Planners, India (ITPI). The ITPI set up the International Committee of the global scholars to invite papers for this international conference on 'Future of Cities: Opportunities and Challenges'. Scholars from the U.K., the U.S., Canada, Northern Ireland, Sri Lanka, Ghana, Kenya, Russia, and various parts of India presented papers at the conference. Nearly 500 delegates participated in this conference from all over the world.

We were able to garner support of the Government of India; the opening ceremony of the conference was graced by two central ministers, and the valedictory session of the conference was graced by Lt. Governor of the National Capital Territory, Delhi. The president and secretary general of the Commonwealth Association of Planners also graced the occasion by their presence and participated in the technical discussions on both days. The conference greatly benefitted from these eminent personalities through their valuable suggestions and feedback.

Ashok Kumar would like to thank the School of Planning and Architecture, New Delhi, for permitting him to coordinate the conference as well as edit the two volumes. He cannot thank enough his parents; wife, Bimla, and son, Rahul, for their unwavering support in times of struggle and long hours of work. His students, who provide the dynamism and energy required to work harder and do better, also should be acknowledged.

D.S. Meshram expresses his deep gratitude and sincere thanks to the Council, ITPI, and, specifically, Mr Pradeep Kapoor, Secretary General, ITPI, for extending their whole-hearted support in organising the international conference and publication of those papers in two volumes. Furthermore, a few papers were added to these volumes, which were presented at the national conference of ITPI, being relevant to the theme. We are thankful to all the contributing authors for devoting their time and extending their full cooperation and support in the publication of these two volumes.

Apart from the Council of the ITPI, numerous people and organisations have contributed to the success of the conference and the publication of the book, and thanking everyone by name would not be possible. However, some individuals have made special contributions. The contribution made by Ms Niharika Singh, Research Associate, for assisting the ITPI in successfully organising the conference is highly appreciated by the editors and contributors of this book.

Ashok Kumar
D.S. Meshram
New Delhi

1

AN INTRODUCTION – FUTURE OF CITIES

Planning, Infrastructure, and Development

Ashok Kumar

Introduction: Economic Reforms and the City

Indian cities and towns have experienced major transformations since the economic reforms of July 1991. Large-scale investments have been made to build global quality infrastructural elements, such as metro systems, international airports, seaports, highway road networks, and rail-centred corridor developments, among others. Today's middle classes have abundant opportunities to make housing choices within urban areas and their peripheries. Indian cities are increasingly characterised by modern shopping and entertainment spaces where the consuming classes lavishly spend their earnings. A world-class, private sector–led health system has been developed, which treats Indian, as well as foreign, patients who can afford the luxury of expensive health care. In a few decades, Indian cities have become places of modern living for the aspiring and elite classes, and as Hindol Sengupta[1] argues, 'India is being recast, remoulded and redefined' for the enterprising middle classes. As Indian cities are being recast, urban residents are breaking free, benefitting from new opportunities, as well as creating their own. Thus, urban India is transforming itself into a beacon of hope for the country's large aspiring middle class, which has always desired to compete with its global peers. Hope has replaced despondency.

All of this has been made possible by a long-lasting economic boom that began three decades ago, when the Indian economy was gradually freed from state constraints with increasing private-sector participation in almost all areas. The aforementioned reforms resulted in the speedy growth of the gross domestic product (GDP) and radically changed India's economic position in the world. As Sadiq Ahmed and Ashutosh Varshney[2] note,

> [r]apid growth since [the] 1980s transformed India from the world's 50th ranked economy in nominal US dollars to the 11th largest in 2009. When

DOI: 10.4324/9781003296218-1

> income is measured with regard to purchasing power parity, India's economy occupies fourth place, after the United States, Japan and China.[3]

Emboldened by the sustained upturn, the current prime minister has predicted that the Indian economy to reach US$5 trillion by 2024 – although this boisterous projection was announced prior to the crippling onset of COVID-19. Given that the global pandemic has struck India, its real GDP is predicted to contract by 3.2 per cent in 2020, which would be a decline of 7.4 per cent from 2019.[4] However, from 2021, the Indian economy is expected to begin growing again, albeit at a low rate.

Cities have played a prominent role in the Indian economic growth story, and they will continue to serve as the chief nodes of productive investment for the near future. A number of studies have highlighted the supremacy of the urban sector as a predominant contributor to India's GDP. The Indian government specified that in 1999–2000, cities contributed 52 per cent to the Indian GDP growth, and this figure increased to 63 per cent in 2009–2010.[5] According to another estimate, the urban sector currently contributes 66 per cent to the Indian GDP, and this figure is expected to rise to 75 per cent by 2031.[6] Furthermore, the economic future of the Indian cities looks bright, as all of the global top 10 fastest growing cities by GDP are located in India[7] (also see Table 1.1). As indicated earlier, Indian cities are also places of the great consuming classes.[8] A recent report by the McKenzie Global Institute shows that India's 54 metropolitan districts accounted for 45 per cent of consuming class households in 2012, and this figure is likely to increase to 50 per cent of households in 69 metropolitan districts by 2025.[9] Without a doubt, the Indian city has become the seedbed of economic growth, and urban pre-eminence will likely only increase over time.

TABLE 1.1 Top 10 Fastest Growing Cities in the World, 2019–2035

Rank	*Growth (% Y/Y)*	*City*	*GDP 2018 US$ Billion, 2018 Constant Prices*	*GDP 2035 US$ Billion, 2018 Constant Prices*
1	9.17	Surat	28.5	126.8
2	8.58	Agra	3.9	15.6
3	8.50	Bengaluru	70.8	283.3
4	8.47	Hyderabad	50.6	201.4
5	8.41	Nagpur	12.3	48.6
6	8.36	Tiruppur	4.3	17.0
7	8.33	Rajkot	6.8	26.7
8	8.29	Tiruchirappalli	4.9	19.0
9	8.17	Chennai	36.0	136.8
10	8.16	Vijayawada	5.6	21.3

Source: Wood (2018).

Note: GDP = gross domestic product.

Making and sustaining the economic growth of Indian cities depends on various factors, which this introductory chapter perceives as challenges to be overcome. Major hindrances to more widespread growth and prosperity include inadequate housing because of unemployment or low income; lack of access to water and sanitation; inefficient management of solid wastes; underdeveloped transport infrastructure; inefficient urban governance and a lack of authority and capacity; environmental vulnerabilities; social, economic, and political exclusion of marginalised groups; unaccountable and non-participatory city planning; and rent-seeking land markets.[10]

As is common in any capitalist system, the economic geography of India is characterised by a deep concentration of productive activities in only a few states. From an economic perspective, India can be divided into four groups of states, which range from very high performing to high performing to performing and low performing. McKinsey Global Institute estimates that by 2025, the first two groups, which comprise a total of 12 states, will generate nearly 60 per cent of India's GDP and host 57 per cent of the consuming class. The top four very high-performing states of Delhi, Chandigarh, Goa, and Puducherry (all of which evince a very high level of urbanisation) are expected to generate double the country's average per capita GDP. Spread across 794,000 km2, eight high-performing states – Gujarat, Haryana, Maharashtra, Himachal Pradesh, Kerala, Uttarakhand, Tamil Nadu, Andhra Pradesh, and Telangana – will also generate high per capita GDP ranging from 1.2 to 2 times the national average.[11] Here, the relevant question is why the highest productivity (per capita GDP) is concentrated in these 12 states. The answer lies in the agglomeration economies reflected in better housing, physical, and social infrastructure; concentration of financial institutions; the presence of high-level government decision-making bodies; and highly skilled human resources, which are unavailable elsewhere in the country. Moreover, in addition to a high literacy rate, an urban settlement with a 'higher ratio of employment in manufacturing to that in services causes increases in the city's non-primary output. Finally, good public services such as population coverage with primary schools also increase non-primary output per capita'.[12]

Following a brief account of the Indian city's role in the past three decades of economic reforms and growth, the second part of this chapter analyses urban challenges. The third includes a review of book chapters, after which we divide the last part into two sections, the first of which summarises major conclusions and the second of which critically considers the future of the Indian city and recommends ways to resolve some of the major urban challenges.

Challenges of Urban India

In our view, urban challenges refer to absences, hindrances, inadequacies, insufficiencies, and incompleteness in planning and managing cities, which result in inefficiencies, inequalities, and inequities. Urban challenges differentially affect businesses, population groups, and individuals. For example, a lack of infrastructural

elements, such as roads and rail links, power, and water, may adversely affect inward urban investment, thereby slowing down industrial development, services, and other productive activities. Inadequate infrastructure may affect the locational decisions of entrepreneurs, who may only opt for certain urban areas and states. City residents may face inequitable resource distribution because of inefficient governance, and low income may reduce some individuals' quality of life relative to others. Unfair policies and decision-making processes may reduce equal opportunities for individuals belonging to certain racial, ethnic, and religious or caste groups. Urban challenges most brutally affect the urban poor, who normally are either unemployed or have low-paying jobs. In either case, they suffer from a lack of access to basic services and affordable housing and are compelled to live in slums and squatter settlements, ill-maintained night shelters, or even footpaths and streets.

However, before we discuss specific major urban challenges, determining which issues to highlight poses an additional difficulty. The inclusion and exclusion of challenges largely depend on who is making that list. For example, global funding agencies may prepare a very different set of urban challenges than scholarship produced by political economists and more recently by political ecologists. The following account is this author's perspective on urban challenges, which we optimistically comprehend as 'curable city disabilities'. Without being reductionist, for us, urban governance and finance are the most significant issues because these elements predominantly influence other challenges.

Deepening Local Governance?

The year 1992 marks the beginning of fundamental changes in the governance and financing of urban settlements in India. With the singular purpose of devolution of powers and finances to urban local bodies, the Constitution of India was amended to establish a uniform three-tier system of urban local bodies, thereby producing three types of municipalities, namely, municipal corporations for large urban areas, municipal councils for comparatively smaller urban areas, and *nagar panchayats* (city councils) for areas transitioning from rural to urban status. States used population size as a criterion to determine the largeness or smallness of urban areas. Other important provisions of this constitutional amendment included the formation of municipal-level ward committees, as well as district and metropolitan planning committees. Another critical provision was that each state would set up a state finance commission for financial devolution.

To deepen democracy, a provision of regular elections at all levels within and for municipalities was implemented, the responsibility for which was attributed to state election commissions. However, not all states have held regular elections. For example, the five-year term of elected municipalities ended on 29 September 2010 in Andhra Pradesh; however, in a complete violation of the constitutional provisions, fresh municipal elections were not completed until 12 May 2014. Municipal elections were also delayed in Odisha because several candidates fielded by the ruling political party lost assembly elections in urban

constituencies. In Andhra Pradesh and Odisha, municipal elections were delayed primarily because of political manoeuvring involving drawn-out litigation in various courts and the state governments' inability to delimit constituencies and reserve seats in time. Furthermore, in progressive states like Karnataka, the Bruhat Bengaluru Mahanagar Palika (BBMP; Bengaluru's municipality) was administered without conducting elections from 2008 to 2010.[13]

Scholars argue that the constitutional configuration of the Indian state hinders decentralisation. According to globally renowned economist Pranab Bardhan, India is

> a 'holding together' federation, where the states comprising the Indian union are constructs of the very union they constitute. As India is not a 'coming together' federation, where once independent and sovereign states consent to transform themselves into subnational units and devolve upward some of their powers to the national federal government. Indian federation has strong centralising overtones.[14]

Furthermore, in the era of free market–led economic restructuring, the primary purpose of decentralisation in India has been to insulate urban local bodies from politics, which are presumed to delay the working of free markets.[15] Thus, the prevention of a deeper electoral democracy at the municipal level is the first challenge of local governance.

The Indian federation's centralising tendencies are evinced in Article 243Q (1) of its constitution, which presents a loophole that prevents the devolution of political power to urban local bodies such that a state governor can create an industrial township that may not be an elected body in the sense of a municipality. However, industrial townships can perform all the functions of a municipality. Article 243Q (1) of the Constitution of India states the following:

> Provided that a Municipality under this clause may not be constituted in such urban area or part thereof as the Governor may, having regard to the size of the area and the municipal services being provided or proposed to be provided by an industrial establishment in that area and such other factors as he may deem fit, by public notification, specify to be an industrial township.

The South Indian states of Karnataka and Andhra Pradesh have extensively used Article 243Q (1) and established industrial townships in Bengaluru and Hyderabad. The economic and political context of these two cities and their states explain why these states took the lead to set up industrial townships – both were ruled by neoliberal enthusiast chief ministers who wanted to unleash the animal spirits of private capital. The government further perpetuates centralisation by establishing industrial townships in special economic zones (SEZs).[16] Under the Smart Cities Mission 2015–2020, 100 special-purpose vehicles have been set up for the

implementation of projects and plans under the Companies Act 2013. Industrial townships and special-purpose vehicles completely deviate from the concept of devolution of powers to urban local governments. In this context, some scholars argue that 'private governance' should be viewed as a proxy for 'corporate urbanism', whereby private enclaves, such as SEZs and industrial estates, are governed by corporate interests and corporate urbanism is managed by unelected bodies, such as industrial township boards and special-purpose vehicles.[17]

Second, only a few states have set up metropolitan planning committees as mandated in the 74th Amendment to the Constitution of India. In the first of these, the Kolkata Metropolitan Planning Committee was established in 2001 under the West Bengal Metropolitan Planning Committee Act, 1994. Other states took even longer time to establish metropolitan planning committees, even under pressure from the courts. Thus, the state of Maharashtra established metropolitan planning committees in 2008 for the metropolitan regions of Mumbai, Pune, and Nagpur under the Maharashtra Metropolitan Planning Committees (Constitution and Functions) Act, 1999.[18] In the same year, the state of Gujarat set up metropolitan planning committees in Ahmedabad, Surat, Vadodara, and Rajkot under the Gujarat Metropolitan Planning Committees Act, 2008. Several other states are at various stages of metropolitan planning committee formation; however, the majority are yet to do so.

Third, setting up ward committees is critical to fully devolve power to the people; however, they have only established ward committees in the states of West Bengal, Kerala, and Karnataka. Even in these cases, the committees include several wards and large geographical areas, which undermine their devolutionary mandate. The effective working of ward committees is further hindered by a lack of allocation of reasonable funding and an absence of rules to secure feedback on grounded policies, plans and budgets.[19]

Fourth, unlike the central and state governments, urban local governments do not have the power to legislate. For example, Articles 243W and 243X of the constitution do not mandate that state governments bestow law-making and taxing powers to urban local bodies, although the Supreme Court of India held these articles as 'enabling provisions' in *Shanti G Patel versus State of Maharashtra* (2006).[20] Vesting taxing and law-making powers with urban local bodies (ULBs) requires creating a distinct list in the Seventh Schedule of the constitution, similar to the lists of subjects under the jurisdiction of central and state authorities. Alternatively, another concurrent list comprising subjects shared between ULBs and state governments could be created under the Seventh Schedule.[21]

Fifth, the constitutional mandate of full involvement of women and marginalised social groups in the governance of urban areas is not taken seriously. Despite the fact that women comprise half the urban population, their representation in ULBs is limited to 33 per cent. Furthermore, although a large number of women, *Dalits* and tribal representatives are elected to municipalities every five years, their impact on programme implementation appears to be minimal, as they are mostly regarded as being peripheral to actual decision-making processes.

Sixth, ULBs are inadequately funded and lack sustainable financial resources in the form of buoyant taxes. There appears to be reluctance on the part of state governments to propose new and innovative tax measures, such as a predetermined share of goods and services tax, at the municipal level. Other taxes, such as a share of tax on urban lands and property registrations, could be shared between states and ULBs.[22] This condition of financially starved municipalities evinces a 'problem of "unfunded mandates", whereby local bodies are given functions for which no corresponding resources are provided'.[23] Efficient local governance and sufficient local finances are central to the effective management of ever-increasing levels of urbanisation in Indian cities; however, this review of the municipal governance scholarship suggests that the implementation of the 74th Amendment to the Constitution of India remains unfinished. Forming and making metropolitan planning committees, district planning committees, and ward committees throughout urban India could prove to be a major devolutionary step in this direction, and city planning could greatly benefit from such restructuring.

City and Regional Planning Practices

Structural changes in the economic sphere have left very little untouched, and city and regional planning is no exception; city and regional planning are situated at the core of these reforms. First, and expectedly, large-scale transformations in town and country planning have occurred over the last two decades. Most notably, central government policies and funds have changed the nature of spatial planning practice from a plan-led system to a programme-led regime. Enfolded in the political rhetoric of making India a global economic power, programme-led planning and development initiatives have taken the form of urban missions with a principal purpose to achieve efficiency. For the first time, the Government of India speedily and concurrently undertook massive urban and regional infrastructural development and poverty alleviation missions, although greater emphasis has clearly been placed on the former. The most prominently funded missions are the Jawaharlal Nehru National Urban Renewal Mission (JNNURM), which was implemented from 2005 to 2014, and the ongoing Smart Cities Mission of 2015–2020. Other significant missions include the Atal Mission for Rejuvenation and Urban Transformation (AMRUT), the Heritage City Development and Augmentation Yojana (HRIDAY), and the recently implemented Swachh Bharat Mission. As Table 1.2 elucidates, one common element shared by these missions is that they are steered by central government policy and funding; state governments and local bodies contribute a certain percentage of funding, and ULBs largely play the role of implementers.

Second, urban missions are largely project-based, such as the Smart Cities Mission, which seeks to prepare sectoral smart city proposals. Furthermore, the AMRUT seeks to implement infrastructural elements, such as water supply and sewerage systems through service-level improvement plans. Similarly, the Swachh Bharat Mission is also concentrated on sanitation. However, in 2016, the Ministry

TABLE 1.2 Main Features of Urban Missions under the National Democratic Alliance Government, 2014–2024

Mission	*Intent*	*Coverage and Total Central Financial Outlay*	*Scope*	*Implementing Agencies*
Atal Mission for Rejuvenation and Urban Transformation, 2015	To make cities clean and green to achieve the reduction of environmental pollution.	• 500 cities with populations ≥100,000 and having municipalities; all state capital cities; cities located along rivers with a population ranging between 75,000–100,000 plus 10 hilly urban settlements. • INR 500 billion with some grant in aid.	Provision of water and sewerage systems as top priorities alongside the development of public transport and greening cities.	Urban local bodies (ULBs) in close collaboration with central and state governments.
Smart Cities Mission, 2015	To provide core infrastructure for giving a decent quality of life to citizens along with the development of sustainable environments through the application of smart solutions.	• 100 cities selected by the central government. • All cities to implement area-based and city-level projects through strategies such as retrofitting, redevelopment and greenfield development. • INR 48,000 crore for five years, 2015–2020.	Water, sanitation, energy, mobility, housing for the poor, information technology (IT) and IT-enabled Services, safety through citizen engagement and developing e-governance through city development proposals.	ULBs and special-purpose vehicles.
Pradhan Mantri Awas Yojana, 2015	To address housing requirements of the urban poor through slum rehabilitation, affordable housing for weaker sections, affordable housing in partnership with public and private sectors, and subsidies for beneficiary-led individual house construction.	• Covers all 4,041 statutory towns with an initial focus on 500 class I cities. • Funding through low-interest loans. • An investment of INR 439.22 billion approved by the Government of India.	Providing dwelling units of 30-m2 carpet area to urban poor with water, and toilet and electricity through convergence.	Diverse partnerships among states, union territories and ULBs through their agencies or in partnership with the private sector, including industries, through Housing for All Plans of Action.

Heritage City Development and Augmentation Yojana, 2015	To undertake the strategic development of heritage cities for improving the overall quality of life with a specific emphasis on sanitation, security, tourism, heritage revitalisation, livelihood development, and retention of urban cultural identity.	• 12 cities, namely, Ajmer, Amravati, Amritsar, Badami, Dwarka, Gaya, Kanchipuram, Mathura, Puri, Varanasi, Velankanni, and Warangal. • Cent-per-cent funding to be provided by the Government of India.	These 12 cities to prepare City HRIDAY Plans for the city and develop detailed project reports for selected projects. The idea is to build basic civic infrastructure around heritage sites, tourism places, religious and cultural spaces, etc.	Urban local bodies after a tripartite agreement among ULBs, states and the Ministry of Urban Development is signed.
Swachh Bharat Mission, 2014	To ensure hygiene in urban areas by providing sanitation facilities, solid and liquid waste management and preventing open defecation.	• All eligible urban households. • Central assistance of INR 4,000 for building a toilet in identified beneficiary households. • Central assistance of 40 per cent for building community and public toilets.		ULBs through the implementation of city sanitation plans resulting in the state sanitation strategy conforming to the National Urban Sanitation Policy, 2008.

Source: Compiled from various mission documents by the author (2020).

of Rural Development launched an innovative programme, appropriately titled Rurban, in rural areas and urban–rural interstices. Based on the principle of convergence – that is, the pooling of funds from all relevant development sectors allocated by all government levels for selected clusters – this mission is the only programme being popularly implemented through spatial development plans, which are known as Integrated Cluster Action Plans and prepared at the scale of 1:4,000.

Spatial planning witnessed the third critical transformation when massive mission programmes were launched purely to achieve economic outcomes. Under the SEZ Act 2005, the ongoing SEZs programme was aggressively initiated to promote export-led industrial development, a central pillar of the July 1991 economic policy regime. The Ministry of Commerce and Industry was tasked to design the programme, and special economic enclaves were developed in cities and regions throughout the country to attract valuable foreign exchange in return for the export of value-added goods and services. The private sector developed several hundred SEZs throughout the country, including export and trade promoting infrastructure such as ports. The highly successful Mundra SEZ became the largest private seaport.

Fourth, a notable transformation in spatial planning has been the development of various corridors connecting prominent cities, such as the Delhi – Mumbai Industrial Corridor, Bengaluru – Mumbai Economic Corridor, Chennai – Bengaluru Industrial Corridor, Vizag – Chennai Industrial Corridor, and the Amritsar – Kolkata Industrial Corridor. Additionally, India is developing the 2,500-km-long East Coast Economic Corridor with financial assistance from the Asian Development Bank. However, we should be mindful that the phenomenon of corridor development is part of a broader pattern of neoliberal globalisation, and with investments from China and the U.S., the two major competing economic powers on the world stage, similar corridors are being developed in Asia, Africa, South America, and the Middle East.[24] The Ministry of Railways and Ministry of Tourism is also engaged in similar development activities in India.

Fifth, the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013, which was enforced in India, is a fairly egalitarian piece of legislation compared with the colonial-era Land Acquisition Act, 1894. Because the 2013 act includes several radical provisions, such as enhancing the scope and amount of compensation, state governments have shown little interest in acquiring land, and the central government has passed several ordinances to dilute its fair and equitable provisions. In a recent trend, states are increasingly using land procurement policies rather than land acquisition policies. The most recent state to join the bandwagon is Delhi, which formulated a statutory land pooling policy in 2013. Delhi used the old policy until 2013, and the capital was built on land acquired under the colonial act.

Based on these critical spatial twists and turns, we can identify two parallel developments in spatial planning. First, these changes clearly include non-plan-based spatial planning practices with a specific focus on economic aspects in a globally connected market-led environment. Three programmes can be grouped in this

category, namely, the JNNURM, the SEZs, and the Smart Cities Mission. We consider this turn to be part of the country's larger *aspirational agenda*, which is being pursued through *growth-centric spatial planning practices*. This agenda largely has a neoliberal stripe, whereby the private sector's prominent role stands out along with the state actively creating enabling institutions. The second development is antithetical to the first, as it clings to historically developed institutional arrangements, such as state, town, and country planning organisations by feeding and supporting the existing system of spatial planning practices with planning guidelines. The Urban Development Plans Formulation and Implementation Guidelines, 1996, Urban and Regional Development Plans Formulation and Implementation Guidelines, 2015 and RADPFI (Rural Area Development Plan Formulation Implementation) 2016 Guidelines fall under this category. Like the unsettling neoliberal agenda, the second development promotes the *status quo* in terms of spatial plans. Significantly, the second trend is also neoliberal in nature because of its heavy reliance on global and local private sectors for making development plans, building infrastructure, and delivering services. Both trends sharply hinder the deep devolution for which the country aspired through the 73rd and 74th Amendments to the Constitution of India.

Equitable and Efficient Infrastructure

Infrastructure is the backbone of a city. Like efficient local and regional governance systems, infrastructure plays a decisive role in urban economic development. Global organisations, India's five-year plans, and high-powered committees, as well as public and private think tanks, repeatedly underline the significance of infrastructure to propel economic growth.[25] Efficient public transport enables workers to easily reach their workplaces, and well-functioning water, sewerage, and solid waste management systems help build environmentally sustainable, clean, and hygienic cities. The widespread availability of power, water and sanitation services improves the health of city residents, thereby contributing to the reproduction of a healthy labour force, and high-quality learning institutions – for basic as well as higher education – continually reproduce highly skilled labour to enhance productivity, innovation and ultimately wealth. Health services are also critical to India's ever-growing city populations. If a city's economic development is dependent on the provision of high-quality physical and social infrastructure, then inadequate supplies could be the chief reason for poor economic conditions and decline.[26]

Currently, the efficient provision and delivery of urban infrastructure sit at the heart of the debate in India's neoliberal economic environment. Almost all global and Indian institutions have identified a massive gap between the investments needed to build the required infrastructure and those that are actually being made. For example,

> [t]he Global Infrastructure Hub – a not for profit private organisation – predicts that, by 2040, there will be an annual gap of $800 billion between

> what is being invested and what needs to be invested to deliver the adequate amount of global infrastructure in line with the Sustainable Development Goals.[27]

India's High Powered Committee (HPC) estimated that the country's total investment requirement at the exchange rate in 2009–2010 would be 'US$ 827 billion . . . to bridge the urban infrastructure deficit over the period 2012–31'.[28] Prior to the establishment of the HPC, another committee on infrastructure was established under the prime minister's chairmanship to generate a future action agenda, and its report concluded that a 6 per cent (of GDP) increase in total investment was required 'to accelerate growth from 7% to 9%', of which 'about half should be [made] in infrastructure'.[29] The government's resolve to make a massive investment in infrastructure was manifested in the Eleventh Five Year Plan, 2007–2012 by committing 9 per cent of the GDP by the end of the plan period to achieve 9 per cent growth.[30]

However, the utilitarian focus on infrastructure has overshadowed the equity and equality dimensions. Equity in the delivery and management of water, power, and sanitation is only mentioned in passing in the aforementioned reports, and the amount of funding allocated to achieve equity is much smaller compared with those for improving efficiency in building and delivering infrastructure. The deceptively titled 'Towards Faster and More Inclusive Growth: An Approach to the Eleventh Five Year Plan' of 2006 and the Eleventh Five Year Plan: Inclusive Growth approved in 2008 limited their references to equity to issues related to education, health, and gender equality.

In marked contrast to the five-year plans and policy papers of the Planning Commission and the NITI Ayog – a central agency that replaced the Planning Commission – we treat equity and efficiency as two sides of the same coin; neither can be achieved without accomplishing the other. The inequitable allocation of critical infrastructure reduces gains achieved through efficiency. For instance, in most urban areas, middle- and higher income groups have access to water through networks and their houses are also connected to sewerage networks; however, households that are unconnected to the network may steal water, or households drawing water from public taps may waste it, as public water taps are persistently kept open. Citing the Ministry of Urban Development report, Isher Judge Ahluwalia highlights the following:

> Only about 62% of the urban population has access to treated tap water and only 53% is directly connected to piped water connections (Ministry of Urban Development, Government of India, 2012). The average duration of water supply is approximately 2 h per day across the cities and towns of India. Only 33% of the urban population is connected to a sewerage network; close to 40% is dependent on septic tanks, and 13% still defecate in the open. The capacity to treat sewage or wastewater is only 37% of the total need, and actual treatment capacity is even less; that is, 30%.[31]

The majority of the urban poor are not connected to these networks but rather draw their water from diverse sources, including groundwater, public taps, public and private tankers, bottled water, and others. These supplies are expensive, uncertain, of low quality, and sometimes carry outright polluted water. Studies have shown that the job of procuring drinking water is generally performed by females, which imposes an extra burden on their time. The urban poor may spend up to two to four hours procuring water from these sources, thereby diverting from more productive endeavours and reducing efficiency gains. To promote Indian cities as global hubs of economic growth and wellsprings of human well-being, equal emphasis must be placed on equity and efficiency dimensions.

Housing for the Urban Poor

Housing is critical to dignified human existence. Because of its overarching significance in human life, housing has been treated as a human right in the United Nations' International Bill of Rights since 1948. Furthermore, Sustainable Development Goal (SDG) 11.1 makes a clear reference to housing, asserting that, 'by 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums'. UN-Habitat similarly elaborates on the right to adequate housing as freedoms, entitlements, built environment, and protections. Freedoms involve protections from forcible evictions, non-interference and respect for households' privacy, and the right to purchase a house in any place. *Entitlements* refer to the security of tenure; the restitution of housing, land, and property; non-discriminatory access to housing; and participation in housing-related decision-making processes. In view of the right to adequate housing, the built environment includes security of tenure; the provision of services (water, sanitation, etc.); affordable, habitable, and accessible housing; and the location of housing near workplaces and places of entertainment, education, and other amenities. Protections involve limitations on forced evictions and adequate safeguards if evictions are unavoidable.[32] The Government of India also treats housing as a human right. The right to shelter is established as a constitutional right under Article 21: Right to Life and Personal Liberty, and in *Francis Coralie versus Union Territory of Delhi* (1981), the Supreme Court of India observed that

> [t]he right to live includes the right to live with human dignity and all that goes along with it, viz., the bare necessities of life such as adequate nutrition, clothing and shelter over the head and facilities for reading writing and expressing oneself in diverse forms, freely moving about and mixing and mingling with fellow human beings and must include the right to basic necessities the basic necessities of life and also the right to carry on functions and activities as constitute the bare minimum expression of human self.
>
> *(1981 AIR 746, 1981 SCR (2) 516)*

Several court verdicts over the last three decades have expanded Article 21 and reinforced the sentiments expressed in the aforementioned court observations. Nonetheless, housing shortages in urban settlements remain among the most critical problems of Indian cities, as nearly 20 per cent of the urban population still reside in slums. Several organisations and scholars have estimated that the urban housing shortage in India ranges from nearly 19 to 30 million dwelling units (Ministry of Housing and Urban Poverty Alleviation Poverty Alleviation, 2007; Planning Commission, 2008). These wide-ranging estimates indicate that most of the housing shortage is experienced by low-income groups and economically weaker sections.[33]

Why are the central and state governments unable to resolve the housing question in urban India? At least four factors can be cited to answer this question. First, the government's approach to resolving this problem is not based on analyses of the existing situation on the ground. For example, the National Urban Housing and Habitat Policy 2007 stated that most of the housing shortages of 24.7 million dwelling units pertain to low-income groups (LIGs) and economically weaker sections (EWSs). This policy recommended the allocation of 10 to 15 per cent of land for public–private partnership projects or a 20 to 25 per cent floor area ration, whichever is less, for the LIG and EWS populations, which is apparently insufficient. The policy further aimed at solving the housing question through public–private partnership arrangements. We regard that public problems such as building nearly 25 million houses by 2024 are clearly an impossible task for the private sector to accomplish. India's private sector has produced an excess of houses in higher income brackets because high profits over a shorter period are assured by real estate markets, in contrast to the low-income housing segment, where turnovers are low. Launched on 25 June 2015, a newer housing policy called Pradhan Mantri Awas Yojana (Urban), which intends to provide housing to the entire population of the country by 2022, is equally detached from real-world conditions. It is because of the nature of the housing policy focussed on loans and subsidies that we will not be able to achieve the target.

The second and perhaps the most important hindrance to resolving the housing shortage is the very low production rate of housing. After taking into account all flagship housing projects and policies, up to 2017, the Government of India only approved 3.5 million dwelling units to meet the total urban housing shortage of 18.8 million dwelling units, and only 51 per cent of those were actually built. At the current rate, it may take several decades to build nearly 19 million dwelling units.

Third, despite the lack of adequate affordable housing for LIG, large-scale forcible evictions are commonly undertaken. Two prominent illustrations of forced evictions involved approximately 137,000 families settled alongside rivers such as Yamuna in Delhi and Sabarmati in Ahmedabad, and only some of those families were resettled. In Chennai, 100,000 families were evicted. All of this happened over a period of less than a decade.[34] Apart from the loss of livelihoods, the disrupted access to services and children remaining absent from school for

long periods, reasonably decent housing stock is destroyed through evictions, thereby exacerbating the housing shortage.

Social Inclusion and Diversity

India is a demographically diverse land, and the Constitution of India makes a number of provisions for the protection of social identities in Part III: Fundamental Rights. For our purposes, several articles are highly significant, including the constitutional guarantees of 'equality before law' (Article 14), prohibition of discrimination on the basis of 'religion, race, caste, sex or place of birth' (Article 15, sections 1 and 2), equality of opportunity in matters of public employment (Article 16), the abolition of untouchability (Article 17), and the right to freedom with reasonable restrictions (Article 19). Although this is an impressively comprehensive list, the implementation of the fundamental rights is at best partial in any electoral democracy.[35]

Hundreds of sub-castes and communities are encompassed within the Indian caste system of four Varnas, including 6,000 *jatis* or castes.44 In addition to caste, other identities include religion, gender, language, ethnicity, income class, and region. Religion, gender, and caste appear to be the most impactful and least discussed social descriptors in urban and regional planning, even as these social markers are the most discussed issues in the development discourse for distributional justice.

Be that as it may, the spatial identification of castes and religions in Indian cities is a relatively easy matter because similar castes and religious groups live together in large congregations, thereby creating concentrations of unique, socially constructed places. The majority Hindu community enclaves itself based on class, language, region, food habits, and professional groupings, and the process of ghettoisation is particularly pronounced in the case of lower castes and religious minorities. Gender appears to be the only secular social marker, as men and women live everywhere in the city.

Whatever the empirical reality, it is clear that no single particular social marker crafts these unique places. Rather, these places are produced at the intersectionality of diverse identities of caste, religion, region, language, class, and so on.[36] Whereas the middle classes largely reside in planned areas, lower socio-economic groups, such as the EWSs, predominantly live in slums, which are defined by a lack of everything. Those who do not live in slums reside in transitory places such as streets, footpaths, construction sites, night shelters, and care homes. Largely ill-maintained social welfare departments are responsible for providing the latter two forms of housing.

In the Indian city, planning decision-makers do not like to dwell on caste but are happy to engage with the comparatively less contentious idea of economic class. Planning policies, norms, and standards are largely class-based except for the distribution of a certain percentage of land and built-up spaces for scheduled castes and tribes. However, development discourse is caste-based. A special narrative is built whereby it is argued that caste is a matter of politics and sociology

and therefore divorced from city planning. Thus, development plans are devoid of any discussion on caste, ignoring the fact that caste and class largely correspond to each other: lower income classes are also lower castes, and middle-income classes are comparatively high on the caste ladder; as Shaikh (2014: 494) notes, 'the quality of the built environment . . . revealed the caste rank of the people who occupied it'.[37] In a similar vein, the World Cities Report 2016 highlights that the 'high correlation between caste and poverty in India is a case in point, with minorities accounting for 10 to 15 percent of an urban population, which makes up close to half the slum dwellers'.[38] In contrast, little literature on caste and city planning exists in India, and very little scholarship is produced exploring links between religion and city planning. Limited literature is now becoming available on gender and city planning.[39]

In this context, it is imperative to first discuss reasons for expanding the scope of city planning in India by including critical scholarship on caste, religion, gender, region, language, ethnicity, and related issues, as they all fold into one another and transform each other in complex ways as they influence the nature of city planning. City planners may continue to overlook these overlapping social markers; however, the future of the Indian city cannot be founded on universalist principles alone; planning proposals can never be value-neutral because social factors certainly enter development plans and projects.

Unlike class-centric practices, planning theory openly deals with social diversity. For instance, Sanyal et al. present four planning themes as planning orthodoxies: 'the liveability of places, the management of territoriality at various spatial scales, the distribution of responsibility among key actors – state, market and the civil society – for governance, and the efficacy and proper exercise of professional authority'.[40] These ideas are then respectively grouped into four categories, namely, liveability, territoriality, governance, and reflective practice. Expanding on planning ideas that matter, Robert Fishman presents a synthesis of the ideas of Jane Jacobs and Ebenezer Howard and argues that diversity of people and mixture of different land uses, incomes, and public spaces are the essence of making a city liveable.[41]

In this work, diversity is regarded as the motor force of a liveable city. Here, Simone Abram's account on culture in planning is very helpful. Abram (2011: 1)[42] identifies three ways in which the concept of culture is used in planning: (1) *planning of culture*, that is, civil, social, and artistic activities involving music, visual arts, media, and sports; (2) *cultures of planning*, which refer to how 'different institutions have different ways of doing planning', and (3) *cultures in planning*, which denotes social exclusion and issues of ethnicity. Another dimension, *cultural practices of planning*, could be added by including the socio-cultural diversity of staff in planning offices, schools, universities, and other academic institutions primarily dealing with issues pertaining to the built environment.[43] From these accounts, it becomes apparent that planning theory has been focused on *cultures in planning* and only recently has begun to pay attention to *cultures of planning* and *cultural practices of planning*.[44] Therefore, this theoretical scholarship is highly relevant for planning practice and education in India. Future research on planning

and culture may open new and radical avenues for undertaking socially relevant city planning.

Racial and ethnic diversity has been part of planning theory discourse since the mid-1960s with the publication of lawyer-turned-planner Paul Davidoff's (1965)[45] seminal article 'Advocacy and Pluralism in Planning'. A core argument of this classic paper is that values cannot be separated from decision-making processes; in other words, the decisions taken by planners are inseparable from the values held by decision-makers. At about the same time, John Friedmann (1967)[46] began researching planning culture in the Latin American context. Friedman viewed culture as a medium laced with meanings through which planning decisions must pass and, in the process, necessarily acquire some of those values and attitudes. He proposed a model for the analysis of planning behaviour[47] comprising three components. First, 'non-bounded rationality' refers to ideological and utopian aspects of decision-making in opposition to 'bounded rationality' or a formal structure of planning laws, rules, and regulations. Non-bounded rationalities include values such as equity and sustainability in the goals and objectives of a plan or planning agency. Friedman also developed another dimension of culture called 'extra-rational thoughts', which include traditions, intuitions and wisdom.[48] Friedmann also emphasised the significance of 'experiential knowledge' – non-codified knowledge premised on values and traditions.[49] Four years later, Leonie Sandercock (1997) forcefully stressed the importance of multiplicity of knowledges in her now globally known book, *Towards Cosmopolis: Planning for Multicultural Cities*.[50]

In the late 1980s and early 1990s, postmodern planning theorists began the much-needed task of displacing high modern theory centred on the rational planning model.[51] This period also saw a major area of theorisation develop in planning and urban studies, which could be loosely termed as gender studies.[52] Overall, over the last five-and-a-half decades, planning theorists have been trying to include culture in planning theory by working on different strands, such as race, colour, ethnicity, gender, and sexuality, among others.

Despite this long and successful journey of planning theory, many theorists still regard human coexistence as one of the major challenges of planning theory. As Howitt and Lunkapis (2010: 109) stated,

> one of the key challenges for planning theory, then, is to acknowledge and address the coexistence of peoples with very different sorts of claims to, relationships with and understandings of place – and each other – and its implications for just, equitable and sustainable decision-making in planning systems.[53]

Urbanisation of Mega Urban Settlements

Why is urbanisation presented as a challenge? The first argument addressing this question is presented in three parts, namely, (a) a large percentage of the Indian population (50 per cent by 2050) is likely to live in cities in the near future,

(b) some of the top mega-cities in terms of population size will be located in India, and (c) the number of urban settlements will also increase. Population agglomeration in urban areas and increases in the population size and number of urban settlements present a daunting challenge for the building and provisioning of housing, mobility, infrastructure, and services to a large number of residents. The second argument begins by emphasising that cities are the driving force of economic growth, and India's urban areas are likely to generate nearly two-thirds of the country's GDP in the near future, an increase of 15 per cent from today's contribution. To continue to attract investments for further increase in the contribution of cities to the GDP, efficient urban governance, best infrastructure and services, high-quality road and rail networks offering the best public transport, top-class health and education facilities, and strategically located housing for the aspiring classes are essential. The third argument is that if we are able to do this right – for example, saving on energy by using renewable energy – we may be able to even manage global challenges like climate change.[54] Proponents advancing these three arguments emphasise that the potential demographic, economic and environmental gains make it critical that we devise ways to effectively manage urbanisation.

It seems inevitable that India's nearly 8,000 urban settlements will grow to 10,000 by 2021. According to the Census of India,[55] of the total population of 1.2 billion, 387 million people reside in cities. Most estimates project that by 2030, India's total urban population will exceed 600 million and another 275 million may be added by 2050, such that a majority of Indians will be living in urban areas. The United Nations predicts that of the top 25 mega-cities with populations over 10 million, India will host five mega-cities, including Delhi, Bombay, Calcutta, Bangalore, and Madras. Furthermore, Delhi will top the list of the world's mega-cities, with a population of more than 43 million. In 2035, these five cities will collectively house a population of 123.69 million, representing more than 20 per cent of urban India.

The 21st century is, in fact, the century of the city. Cities will dominate most aspects of our lives; most innovation and wealth creation will happen in cities, and city dwellers and diverse activities being carried out in cities will profoundly affect urban environments. Looking at the future, if citizens are appropriately educated, fed, clothed, and cared for, these staggering urban population figures can be converted into great opportunities resulting in high economic growth, political stability, and social cohesion. The human race could harness *demographic dividends* by creating equal opportunities for housing, employment, health care, education, and recreation for all. Inclusive politics remains the centrepiece of such policy and planning efforts. However, if city dwellers are ignored to singularly propel already swelling stocks of capital into few hands, the presence of so many in large cities are equally likely to violently disrupt the economies and societies of developing countries, thereby leading to global risks, such as climate change, hunger, homelessness, and public unrest. Harmonious, peaceful, economically buoyant, and socially cohesive cities could be produced if built

environments are created through fair decision-making processes, a reasonably equal distribution of resources, such as land and housing and sustainable production and consumption processes and patterns.

An Overview of the Book Chapters

No doubt, the future of humankind is centred on cities; cities are the places where human civilisation will either flourish or perish. It appears that most opportunities, conflicts, and challenges will manifest in urban environments. Modern civilisation will be sustained in cities depending on how citizens, planners, policymakers, development managers, entrepreneurs, governments, and the third sector join up and collectively work for planning and regulating the future.

In this book, each author seeks to identify major urban challenges before providing new directions in the form of insights for the better future of Indian cities. This work intends to critically analyse the existing conditions of India's cities with the hope of providing scholarly insights for building better cities in the near future. The editors and authors would like to concentrate on great opportunities without ignoring the critical risks facing city planners and other decision-makers. In this book, the future of cities is viewed as a strategically crucial part of urban planning and development. The orderly development of cities for better housing and work opportunities for urban dwellers is imperative; not looking into the future now would be perilous and iniquitous. Through insightful analyses, global scholars have written these chapters with the aim of prompting decision-makers to improve the quality of life for the people in India. We are hopeful that current inequalities and inequities in cities are surmountable, and with this in mind, this book seeks to create an enabling environment for deliberations and discussions regarding the development of a better future for Indian cities. Thus, the objectives of the book are as follows:

- To critically examine the nature of opportunities presented by Indian cities.
- To analyse and identify major urban challenges that cities in India are currently facing.
- To recommend policy interventions for a better future of the Indian city and codify ways and means to overcome major urban challenges.

We envisage that physical infrastructure, social services, housing, and transportation underpin the economic growth of cities anywhere in the world. The provision of physical and social infrastructure; housing for LIG; safe and affordable mobility of people and goods through road, rail, air, and water links; and easy availability of information technology and information technology–enabled services forms the heart of the economic, social, and political well-being of cities and regions. Inadequate financial resources and ineffective governance – the story of urban local governments in India – obstruct, slow down and make the provision and maintenance of public services costly because of high rent-seeking

costs and inefficient delivery processes. Financial resources are highly significant in delivering public services; however, it is even more important that governance structures be accountable to the public and that people working in these organisations undertake a collective responsibility to deliver public services. As K. C. Sivaramakrishnan argues,

> [a]ccountability about the outcome of these services is not based entirely on quantitative data or statistics purveyed in speeches or websites and it cannot be limited to a technician or a service manager. No service system can be held truly accountable unless it has a clear element of institutional ownership, not merely an individual responsibility.[56]

Taking a comprehensive and critical gaze, in the second chapter of this book, P. K. Mohanty argues that several factors have impaired the governance of India's cities and regions. Mohanty also argues for the integration of spatial planning and economic planning. A view appears to be emerging on the pivotal role that city planning could play even in the times of neoliberal policy dominance.[57] While setting aside secluded and cloistered decision-making processes, Mohanty makes eight recommendations to achieve effective urban governance.

Chapters 3 and 4 provide expansive space for illuminating various ideas about urban governance in India. In Chapter 3, Mathew Idiculla examines the constitutional provisions of local government and suggests a new multi-tier governance framework. The introductory chapter by Kumar (2020 in this volume) complements the analysis presented in the third chapter. City planning and urban studies scholarship is full of critical analyses of urban public policies.[58] The fourth chapter contributes to this growing literature, as D. S. Meshram and Swati Meshram focus on one of the central government's most prominent urban policies – the Smart Cities Mission.

Chapters 5 and 6 engage with water as one of the most significant challenges to urban development, which cuts across several critical areas like climate change, sustainable development, and, most important, the basic survival of humankind. Chapter 5 by Ashok Kumar focuses on water governance in Delhi. Illuminating the roles played by public, private, the third sector, and communities, he argues that water governance is both a technical and political endeavour, involving power relations among several actors. In Chapter 6, James L. Wescoat, Jr. asserts that universal access to safe drinking water is in principle a reachable goal for the world's population, including the broad range of rural, rurban, peri-urban, and urban settlements in India. After analysing emerging approaches to planning for universal access to drinking water in rurban settlements, Wescoat presents case studies of district-, block-, and *gram panchayat*–level drinking water planning in Maharashtra and Gujarat that highlight different paths towards universal access.

The next three chapters concentrate on the issue of the diverse needs of increasing populations possessing variegated social, geographical, and economic

identities (also see Colin McFarlane).[59] The critical question is how city planners and communities can accommodate more people in a limited space. In Chapter 7, Poonam Prakash seeks to answer this question by examining zoning. Prakash provides a critical overview of changes in zoning regimes and underscores their implications for the future of cities and urban planning, proposing to improve city design by replacing the existing regime of zoning.

In Chapter 8, Vinayak Bharne examines skyscrapers, an iconic and common feature of large cities in developed and developing countries. A central question this chapter seeks to answer is how high-rise urbanism can be empowered to foster a rich urban life without compromising the ambitions and aspirations of its builders. In Chapter 9, Aseem Inam advocates for a collaborative learning-based communicative urban practice. Inam argues that learning by doing and being there on the ground sets in motion a reflective urban practice. Comparative analyses across the global South and global North are conducted through a dynamic process, whereby research strategies of urban practice feed into each other to harness the vast and untapped potential of informal urbanisms. Thus, informal urbanism is not merely valorised but also analytically comprehended.

Mobility forms the core of the tenth chapter of this volume, in which Shreya Gadepalli, Christopher Kost and Pranjali Deshpande-Agashe focus their gaze on bus rapid transit (BRT) systems in Indian cities. The chief argument of the chapter is that the BRT should not be viewed as a solution to resolve urban traffic congestion issues but rather implemented as an effective option to travel rapidly, safely, and comfortably. Chapter 11 comprehensively explicates conclusions and critical insights made by all the authors. Chapter 11 also revisits the idea of spatial integration, which is embedded in all the chapters.

Conclusion

The Indian city has a multidimensional materiality and imagination; it is simultaneously an inevitable aspect of human existence and an illusion. It is a place of leisure and enjoyment for a few but an arena of uneven developments and inequitable resource distributions for a large majority of others. Just as the present city is dependent on multiple factors, the future of cities is not contingent on any single influence. Even if planners can effectively implement urban development plans, control mechanisms, and enforce planning statutes, and if people obeyed planning norms, the city still remains influenced by an array of impacts such as efficient and equitable governance and infrastructure delivery. What makes the city less comprehensible is that variegated organisations are responsible for urban governance, the production, supply, and maintenance of infrastructure. The present and future development of cities is characterised by a dynamic complexity that places them beyond the full comprehension of humans. As Helga Leitner and Eric Sheppard argue, no 'single theory suffices to account for the variegated nature of urbanisation and cities across the world, without asserting the necessity of distinct theories for different contexts'.[60] The unquestioning reliance on

markets and the private sector without adequate care for vulnerable populations could place the future of the Indian city at risk.

Cities in India are growing, and this is a welcome development. In economic terms, cities greatly contribute to the country's GDP and underpin economic growth to a large extent. In demographic terms, Indian cities house a large number of people and are the world's largest urban spaces. In physical terms, these geographical areas are rapidly expanding to encompass a variety of productive, residential, commercial, industrial, and other activities, thereby making peripheral locations as more attractive to investors and people who want to live away from the hustle and bustle of crowded cities. These growth aspects of cities are commonly discussed, and their linkages and consequences are also well established in the urban planning scholarship. Efficiency-based demand side service provisions and infrastructure development for attracting private investment are critical for economic growth. Equally important is the provision of basic services like water, sanitation, basic health and education, public transport, and housing for the urban poor. The predominant neoliberal narrative needs to move towards the centre, if not further left, and certain services should be kept out of the ambit of the private sector. It is in this sense that cities in India are also growing in unwelcome ways. Widening social divisions have caused severance among people of variegated identities to approach a breaking point. Periodic city rioting has become common, leading to a loss of life and property. Planners have increasingly ignored these social divisions while producing purely land use–centric development plans. However, planning theory is producing expansive scholarship in which social identities are being spatialised, which has contributed to a comparatively better understanding of gender, ethnicity, and religion than region and language, among other aspects. Similar discourses should become commonplace in planning practice, however unsettling they may be to the aspiring middle classes and the elite of India, who view slums as infectious breeding grounds of risks and disease that downgrade the image of the Indian city, thereby making slum populations appropriate candidates for displacement via redevelopment, resettlement, and rehabilitation policies.

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PART I

Governance of Cities

2

PLANNING FOR URBANISATION AND ECONOMIC GROWTH

Addressing Urban and Regional Governance Issues in India

Prasanna K. Mohanty

Introduction: The Importance of City Regions

Primarily driven by market forces, economic growth does not occur everywhere but rather tends to localise in city regions, in particular, metropolitan areas. These regions compete nationally and internationally to attract engines of economic growth such as technology, capital, entrepreneurs, and highly skilled workers. The world's top 750 cities accounted for 57 per cent of global gross domestic product (GDP), and their share is projected to rise to 61 per cent by 2030.[1] In 2016, the world's 300 largest metropolitan economies contained 24 per cent of the global population but contributed nearly 50 per cent to the global GDP. These economies, which included nine from India, concentrated and accelerated global economic growth between 2014 and 2016, contributing 67 per cent of real GDP growth and 36 per cent of employment growth while accounting for 22 per cent of the increase in population. Furthermore, during the same period, these 300 largest metropolitan areas witnessed a fast-paced economic expansion relative to the global economy, including a compounded annual growth of 3.3 per cent in real GDP versus 2.6 per cent globally and annual GDP per capita growth of 2.2 per cent compared with 1.5 per cent worldwide.[2] Thus, we can say that metropolitan regions are critical to global economic growth and prosperity. As metropolitan regions house large infrastructure networks, transportation networks, large-scale housing, information technology (IT), and information technology–enabled services (ITES) networks, among others, without effective governance, economic activities, and social and cultural routines would grind to halt.

Globally, urban areas occupy about 3 per cent of the land, contain 55 per cent of the population, and generate more than 80 per cent of GDP. Research reveals that as a country's level of urbanisation increases by 10 per cent, its per capita output rises by 30 per cent. Per capita incomes are four times higher in

DOI: 10.4324/9781003296218-3

countries where the majority of the population lives in cities than those where the majority resides in rural areas.[3] Studies of Organisation for Economic Co-operation and Development countries reveal that the doubling of the city population is associated with an increase of 2 to 5 per cent in productivity.[4] Within the United States, workers in metropolitan areas containing large cities earn 30 per cent more than workers in non-metropolitan areas. Individuals in metropolitan regions with a population exceeding one million are, on average, over 50 per cent more productive than those in smaller metro areas. These relationships do not alter even after correcting for heterogeneity concerning education, experience, intelligence quotient, and the presence or absence of industrial workers. The urban productivity–economic growth relationship is much stronger in developing than developed countries. The contribution of urban regions to GDP in India, which is estimated at more than 60 per cent at present, is projected to increase to 75 per cent by 2031.

The importance of cities in the 'development transition' of a country derives from their externalities, which catalyse growth. Occurring on the supply side, agglomeration externalities owe their existence to the clustering of firms, households, and institutions. Arising on the demand side, network externalities are connected with the use, integration and merger of networks, including transportation, communication, supply chain, knowledge, and the like. These externalities are instrumental in reducing the costs of moving goods, people, information, ideas, and knowledge. They create economies of learning, sharing, and matching to firms and households, thereby engendering what Glaeser calls the 'collaborative brilliance' of cities. Vibrant cities nurture skills, act as nurseries of new ideas, provide business services, reduce transaction costs, attract creative workers and entrepreneurs, support formal and informal employment, and generate tax bases for all governments. Small market towns create scale economies in the marketing and distribution of agricultural inputs and outputs. Medium-sized cities lead to the localisation of economies of manufacturing and specialisation. Large cities offer urbanised economies linked to market size, diversity, and innovation. Metropolitan regions combine the benefits of specialisation, diversity, competition, networking, and collaboration. They are economic powerhouses in the era of globalisation and knowledge-based production.

Although external economies are among the primary reasons why cities develop, such benefits are not without limits. External diseconomies begin to emerge when the concentration of economic activities is not accompanied by adequate spatial planning and investment in core infrastructure, particularly public transport. Haphazard urbanisation leads to adverse physical, socio-economic, and environmental consequences, including incongruity between the demand for and supply of floor space and public services, which results in sprawl, incompatible land uses, congestion, air and water pollution, destruction of the natural habitat, slums, poverty, inequality, vulnerability to disasters, and other ills. More than a billion urban residents in the world – including a large chunk of people in India's cities – live in slums, where they are deprived of affordable housing

and basic amenities. Furthermore, as hubs of fossil-fuel activity and unsustainable energy consumption, cities are at the forefront of global warming. Cities consume nearly two-thirds of energy and account for more than 70 per cent of greenhouse gas (GHG) emissions globally. Thus, the governance of cities and their regions, especially metropolitan areas, is important not only for economic growth but also for sustainable development.

The role of externalities in growth and environmental outcomes makes the governance of city-regions inherently challenging. Spatial planning and financial investment in infrastructure are the key instruments to address such externalities. However, city-regions in India have long neglected such instruments, particularly investments in the public transport infrastructure, which has adversely impacted the capacity of urban regions to support productive economic activities and mitigate the adverse consequences of negative externalities. Additionally, the largest metropolitan cities of India are already subject to severe environmental degradation. Pollution in Delhi is reaching life-threatening levels, and the devastating floods of Hyderabad in August 2000, Chennai in November 2015, Bengaluru in July 2016, and Mumbai in July 2005 and August 2017 reveal that both spatial planning and infrastructure systems (drainage systems) have failed to keep pace with urbanisation. More crucially, they highlight the neglect of urban and regional governance in India's development planning.

With much urbanisation yet to occur, India must address some key issues of regional and urban planning and management. When properly planned and managed, the city-regions contribute to enhancing productivity, catalyse growth, generate employment for urban residents and rural–urban commuters, mobilise public finance, and act as agents of both urban and rural development. If neglected, they will create disastrous consequences for the environment, including climate change. On the positive side, the McKinsey Global Institute (2010) projects that Indian cities will generate 70 per cent of all new jobs and 85 per cent of the government's tax revenues by 2030.[5] However, this requires huge investments in infrastructure and affordable housing – amounting to Rs. 9.74 million crores at 2008 prices over the 2010–2030 period. India needs to build 700 to 900 million square metres of residential and commercial spaces annually and get 2.5 billion square metres of roads paved along with 7,400 km of metros and subways constructed by 2030. The High Powered Expert Committee (2014)[6] projects that the investment requirement of core urban infrastructure sectors in India for 2012 to 2031 based on 2009–2010 prices stood at Rs. 3.1 million crores, including Rs. 2.3 million crores for roads, transport, and traffic-related infrastructure.

Urbanisation Trends and Prospects

Globally, the level of urbanisation is expected to increase from 55 per cent in 2018 to 68 per cent in 2050, adding 2.5 billion people in cities and towns. Approximately 90 per cent of this increase would be in Asia and Africa. Three countries – India, China, and Nigeria – would account for 35 per cent of global urban population

growth from 2018 to 2050. India is expected to add 416 million, China 255 million and Nigeria 189 million people. Table 2.1[7] provides salient data on urbanisation in the world in 2018, and Table 2.2[8] presents trends and projections of the urban population to 2050.

Table 2.3[9] depicts some demographic trends and projections for India covering the 1950–2050 period. The urban population in the country, which increased by 365 million over the 65 years from 1950 to 2015, is likely to rise by 448 million between 2015 and 2050. Although these numbers are mind-boggling, some researchers contend that the level of urbanisation in India as reported by official documents is an underestimate that does not capture the 'hidden' urbanisation

TABLE 2.1 Population of Urban and Rural Areas at Midyear and Urban Percentage, 2018

Region or Country	*Urban (million)*	*Rural (million)*	*Total (million)*	*Percentage Urban*
World	4,219.8	3,413.0	7,632.8	55.3
More Developed Regions	993.8	269.4	1,263.2	78.7
Less Developed Regions	3,226.0	3,143.6	6,369.6	50.6
India	460.8	893.3	1,354.1	34.0
China	837.0	578.0	1,415.0	59.2
Nigeria	98.6	97.3	195.9	50.3

Source: United Nations (2018).

TABLE 2.2 Population of Urban Areas at Midyear, 1950–2050

Region or Country	*1950*	*2015*	*2035*	*2050*
	Percentage			
World	29.6	53.9	62.5	68.4
More Developed Regions	54.8	78.1	82.7	86.6
Less Developed Regions	17.7	49.0	59.0	65.6
India	17.0	32.8	43.2	52.8
China	11.8	55.5	73.9	80.0
Nigeria	9.4	47.8	62.2	69.9

Source: United Nations (2018).

TABLE 2.3 India: Demographic Trends and Projections, 1950–2050

Population	*1950*	*2015*	*2035*	*2050*
Total Population (million)	376.32	1,309.05	1,564.57	1658.98
Urban Population (million)	64.13	429.07	675.46	876.61
Per Cent Urban Population	17.00	32.80	43.20	52.80
Rural Population (million)	312.19	879.98	889.11	782.36
Per Cent Rural Population	83.00	67.20	56.80	47.20

Source: United Nations (2018).

occurring in the peripheries of large cities. Using the concept of an 'agglomeration index', a globally applicable alternative measure of urban concentration, a World Bank study estimated the share of India's population living in areas with 'urban-like' features in 2010 at 55.3 per cent.[10]

A notable feature of India's urbanisation is its top-heavy structure with an increasing concentration of urban population in metropolitan regions. The number of metropolitan agglomerations having populations of 1 million or more increased from one in 1901 to nine in 1971, 35 in 2001 and 53 in 2011, and their share of the urban population grew from 6 per cent in 1901 to 38 per cent in 2001 and 43 per cent in 2011. The largest five urban agglomerations and their populations in 2011 show their dominance – Greater Mumbai (18.4 million), Delhi (16.3 million), Kolkata (14.1 million), Chennai (8.7 million), and Bengaluru (8.5 million). In 1950, only two Indian cities figured on the list of the world's 30 largest urban agglomerations – Kolkata with 5 million at ninth and Mumbai with 3 million at 15th compared with New York–Newark with 12 million first. By 2015, the number of such agglomerations in India had swollen to four, including Delhi with 26 million (2nd), Mumbai with 19 million (6th), Kolkata with 14 million (13th), and Bengaluru with 10 million (29th), compared to Tokyo with 37 million (1st). Delhi is projected to be the world's largest urban agglomeration in 2035 with a likely population of 43 million. Five other Indian cities, including Mumbai, Kolkata, Bengaluru, Chennai, and Hyderabad would then be amongst the 30 largest urban agglomerations of the world.[11]

Economic Census of India revealed that metropolitan regions consisting of metropolitan cities, their peripheries and suburban villages are witnessing a phenomenal concentration of economic activity. Population densities in and around the largest metropolitan areas are extremely high, including an average of 2,450 persons per km^2 in the 50-km vicinity of the seven largest metropolitan areas with a population of more than 4 million in 2001. A third of India's new towns were born within a 50-km radius of existing metropolitan cities.[12] However, central cities in these regions are witnessing premature industrial suburbanisation. Exorbitant land prices, traffic congestion, environmental pollution, shortage of infrastructure, and poor civic services are prompting manufacturing firms to move away from central cities to suburban locations even before exploiting the potential of external economies. Metropolitan regions in India are subject to overall stagnation owing to a lack of policies and investments to facilitate residential and commercial development with adequate infrastructure and services such as public transport, water supply, drainage, sewerage, parks, playgrounds, and social amenities. In other words, they suffer from a governance deficit.

The trends and prospects of urbanisation in India suggest that a sizeable part of its urban challenges will entail transforming land use and expanding infrastructure in existing and emerging metropolitan regions. Asian Development Bank (2017)[13] projects that by 2025, India will have 69 cities with populations of more than 1 million, and approximately 77 per cent of India's economic growth

from 2012 to 2025 will arise from 49 clusters of districts with metropolitan cities at their nucleus. The country has to enable existing and emerging metropolitan clusters to drive growth and cater to the employment, housing and civic services needed by firms and households. However, the institutional structures for metropolitan plan preparation, financing and implementation are highly fragmented, as is the case with other regional functions such as traffic and transportation and environmental conservation. For example, the authorities involved in planning and development of the national capital region include Delhi Development Authority, Delhi Metro Rail Corporation, Delhi Urban Art Commission, New Delhi Municipal Committee, three Municipal Corporations, Delhi Jal Board, Delhi Urban Shelter Improvement Board, Government of National Capital Territory of Delhi, National Capital Region Planning Board, and Ministries of Government of India, particularly, Housing and Urban Affairs, Home and Railways. Coordination between these authorities is difficult owing to political, institutional, and bureaucratic factors.[14] The country needs to address substantial concerns of urban and regional governance.

Urban and Regional Governance

Key problems of urban and regional governance in developing countries like India include the unclear and overlapping assignment of functions to various tiers of government, a lack of clarity regarding the responsibilities of local governments, revenue assignments not commensurate with expenditures, inadequate intergovernmental transfers, insufficient systemic and human resource capacities, the absence of performance management and accountability frameworks, and a lack of community participation in service delivery. Fragmented governance structures, the absence of a robust institutional framework for regional planning, the abysmal state of finances, and the lack of coordination among authorities in planning, plan financing and implementation are conspicuous in metro regions. These factors hinder their functioning as catalysts of economic growth. India needs to reform the current systems of urban and regional governance with a comprehensive approach that integrates spatial and economic development planning. Isolated or haphazard attempts will not deliver results. Reforms must particularly focus on strengthening regional and local government institutions, organisations, and personnel to perform their mandates. In this context, Kenneth Davey presents an interesting comparison:

> The performance of a car owes much both to its driver and to the driving conditions – that is, the state of the road, the traffic, the weather. But its inherent characteristics, engine power, road holding, fuel efficiency, and so on – constitute a third party to the equation. Just so, the institutional characteristics of urban government play a part in determining its effectiveness, along with the people who run it and the environment within which it operates.[15]

I identify the following three key sets of elements to achieve service delivery and development outcomes in city-regions:

(a) Intergovernmental frameworks

- Clear assignment of powers, functions and activities between levels of government – central, state and local – covering all key aspects such as policymaking, strategic planning, infrastructure development, operations and maintenance, service delivery, etc.
- Putting in place structures, systems, processes, and mechanisms for the allocation of resources to local governments (e.g. municipal corporations) and regional institutions (e.g. metropolitan planning committees in India, etc.), including taxes, charges, fees, and transfers to enable them to discharge their responsibilities.
- Clarity concerning political, administrative, and fiscal aspects of governance, specifying the relationships among and within different levels of government and the structures of accountability in delivering results.

(b) Regional and local institutions[16]

- Adequate development of systemic and human resource capacity in regional institutions and local governments, including political leadership and management expertise to undertake tasks such as integrated land-use transportation planning, mobilising resources, developing infrastructure, providing services, etc.
- Strong public financial management systems based on prudent fiscal principles and practices concerning revenues, expenditures, assets, liabilities, debt, internal and external audits, disclosure of financial statements, credit rating, etc.
- Proper information management systems that support prompt decision-making and real-time management of resource mobilisation, service delivery, grievances disposal, etc.

(c) Incentives for service delivery

- Robust service delivery mechanisms, adequate human resources, and civil service management capacity are conducive to good governance, including performance orientation.
- Appropriate systems of regulatory oversight and vigilance over the functioning of institutions along with anti-corruption arrangements to prevent leakages and mismatch between resources and results.
- Channels for citizens, including taxpayers to communicate preferences and get their voices heard in service delivery processes along with mechanisms to hold elected representatives and appointed officers accountable.

Institutions comprise the central core of governance. The concept of governance extends beyond the narrow definition of *government*. 'Government' represents

instrumentalities for the application of a nation's sovereign power to manage its affairs, whereas 'governance' focuses on institutions, organisations, and processes to achieve development and welfare outcomes. Well-functioning regional institutions and local governments can play key roles in sustainable development. This is particularly so in the case of a large federal country like India with 1.3 billion people spread over 3.29 million km2 of area. India has 278,974 local bodies comprising 253,098 *panchayati raj* institutions (PRIs), 13,964 traditional bodies, and 4,545 urban local governments (ULGs).[17] The PRIs include 654 *panchayats* at the district level, 6,713 *panchayats* at the block or intermediate level, and 253,098 *panchayats* at the village level. The ULGs include 221 municipal corporations established for larger cities as well as municipalities for smaller cities and towns and *nagar panchayats* for areas in rural–urban transition. These local governments are expected to function as democratic institutions delivering public services and infrastructure with efficiency, accountability, and transparency. When empowered by democratic decentralisation, the ULGs can support growth with the creation of adequate floor space and infrastructure to run productive activities.

The process of democratic decentralisation was initiated in India in 1992 with the enactment of the Constitution (73rd Amendment) Act relating to the *panchayats* or rural local governments and the Constitution (74th Amendment) Act relating to the municipalities or ULGs. These acts aim at according a legitimate space to elected local governments in the preparation and implementation of plans for social and economic development. They recognise India as a three-tier federation and provide a framework of participatory regional and urban planning. The 74th Amendment Act prescribes a legal–institutional framework for effective local self-government in cities and towns. However, despite more than 25 years of implementation, the country has not harnessed the power of decentralisation to make cities the agents of socio-economic transformations.

Twenty-Five Years of the 74th Amendment to the Constitution

India is a union of states under the constitution, and municipalities are formed under state laws. Prior to the 74th Amendment Act, there was only implicit mention of municipalities in the Constitution of India. Under Entry 5 of the State List, the subject of local government was assigned to states. Owing to constitutional provisions for the protection of democracy, the parliament, and the state legislatures flourished as democratic institutions. However, this was not the case with ULGs. In the absence of constitutional status, these institutions were frequently superseded by state governments. Thus, local governments became weak and were unable to meet people's aspirations. In this background, the 74th Amendment was enacted to empower local self-government in cities and towns. The act prescribed several mandatory institutions to act as pillars of grassroots democracy:

- State Election Commission (Article 243K);
- Municipalities: Municipal Corporations, Municipal Councils and Nagar Panchayats (Article 243Q);

- Wards Committees and other committees (Article 243R);
- State Finance Commission (Article 243I);
- Central Finance Commission (Article 280 – (3) (c));
- District Planning Committee (Article 243ZD); and
- Metropolitan Planning Committee (Article 243ZE).

The mandates of various institutions as prescribed by the 74th Amendment Act are as follows:

- State Election Commission to superintend, direct and control the preparation of electoral rolls and regularly conduct of elections to local bodies;
- Municipalities to function as institutions of local self-government – preparing 'plans for economic development and social justice' and implementing functions and schemes as entrusted by State Government, including those related to the Twelfth Schedule;
- Wards Committees and special committees to make local government responsive and bring it closer to people and carry out the responsibilities conferred upon them, including those related to the Twelfth Schedule;
- State Finance Commission to review the financial position of local bodies and make recommendations regarding the 'principles' of devolution of resources from the state to them and the 'measures' needed to improve their finances and functioning;
- Central Finance Commission to recommend 'measures' to augment each state's Consolidated Funds to supplement the resources of municipalities based on recommendations made by the State Finance Commission;
- District Planning Committee to 'consolidate' the plans prepared by *panchayats* and municipalities in the district and prepare a draft development plan for the district as a whole; and
- Metropolitan Planning Committee to prepare a draft development plan for the metropolitan area as a whole.

The Constitution (74th Amendment) Act, 1992 aimed at bringing 'power to the people' to foster good governance. However, progress in the devolution of functions, finances and functionaries to the third tier remains far from satisfactory. The inadequate capacity for spatial–economic planning and financing of regional and urban infrastructure in tune with the demands of economic growth is most obvious in India's metropolitan regions. Ironically, the 74th Amendment Act presents an 'incomplete' design of decentralisation. It does not incorporate some fundamental requirements of good urban governance, for example clear municipal functions, municipal finances that are commensurate with municipal functions, empowered elected councils and mayors, municipalities being able to discharge spatial planning, economic development, environmental conservation and poverty alleviation functions, district and metropolitan planning committees able to promote a robust regime of regional planning, and so on. Even the act is 'partially' implemented as some mandatory provisions are yet to be adopted by the states.

The 74th Amendment Act left the assignment of functions, finances and functionaries to local governments and the structure of local governance to states, which has resulted in overlapping functions between municipalities, state government departments and parastatals. The finances of ULGs in India, with municipal revenue–GDP ratios stagnating at about 1 per cent for decades, are in an abysmal state. There is a gross mismatch between municipal responsibilities and resources, and the fiscal dependency of ULGs on the state and central governments has increased over the years. The system of financing urban infrastructure to support economic growth is ad hoc. The human resources and technical capacities needed to discharge municipal functions are inadequate. Some conspicuous lacunae in the design and implementation of the 74th Amendment Act follow:

- Although the 74th Amendment mandates regular elections to ULGs every five years to preserve local democracy, some states have not followed the constitutional provisions and preferred to litigate on some pretext or other. Interestingly, when the Gujarat government postponed the elections to Ahmedabad Municipal Corporation in 2005, the constitutional bench of the Supreme Court of India held that under no circumstances can such postponement be allowed.
- The Twelfth Schedule presents a list of 18 functions belonging to the legitimate domain of ULGs; however, the list is illustrative, and the assignment of functions to ULGs and the activities to be included thereunder is left to states. Considerable overlaps exist between the responsibilities of ULGs, development authorities, other parastatals, and state departments.
- Finance follows functions. However, the 74th Amendment Act does not provide for a municipal finance list corresponding to the municipal functions list in the Twelfth Schedule. The act leaves the assignment of revenues to ULGs to state governments. Ironically, no state has taken action to empower ULGs with adequate 'own' revenues. Paradoxically, the resource base and fiscal autonomy of ULGs have declined over the years despite the increasing contribution of urban areas to the GDP. Property tax remains the only major municipal tax.
- The 74th Amendment Act leaves the determination of the governance structure of municipalities, including mayoral powers, to the state governments. However, unlike many countries, mayors in India do not have executive powers, which are often exercised by bureaucrats deputed by the state government to ULGs. These officers are de facto accountable to state governments. There are also limitations to the powers of municipal councils, which lack the authority to make regulations and spend money beyond certain limits.
- The 74th Amendment Act prescribes two channels to address the mismatch between the functions and finances of local bodies, namely the State Finance Commission (SFC) and the Central Finance Commission (CFC). Amendment to Article 280 of the Constitution mandates the CFC to make recommendations to augment states' consolidated funds to improve the finances

of local bodies based on recommendations from the SFC. In practice, this provision has been impossible to implement because of a mismatch between the periods covered by SFCs and CFCs.

- District Planning Committees and Metropolitan Planning Committees are, respectively, mandated to prepare draft District Development Plans and Metropolitan Development Plans and forward these to state governments for approval. However, the 74th Amendment Act does not clarify who approves the draft plans and how the plans are to be financed, implemented, and monitored. It does not also provide for mechanisms to effect mid-course changes in the development plans in response to economic dynamics.

Planning for Urbanisation and Economic Growth

The imperatives of economic growth call for addressing, among other things, the concerns of urban and regional policy and planning in India. The world's great cities are products not only of market forces but also governmental policies and actions that magnify the beneficial effects of externalities while minimising their negative consequences. The enduring contribution of these cities to the development of their nations can be traced to innovations adopted by governments at crucial stages of urban transition. For example, the Rebuilding Acts of 1667 and 1670 passed following the Great Fire of London, the renovation of Paris from 1853 to 1870 overseen by Baron Haussmann, Manhattan's 'grid plan' of 1811, New York City's comprehensive zoning ordinance in 1916, and the Standard State Zoning Enabling Act issued by the United States Department of Commerce in 1922 laid solid foundations for the orderly development of cities spanning over a long period. During the 19th century, the built-up area of Manhattan increased seven-fold based on the 1811 grid plan, which, along with major transportation investments, enabled New York City to rise to commanding heights. Spatial planning and timely infrastructural development were the key instruments that shaped the structure and functions of the world's great cities. In particular, transport land-use integration created a congenial environment for creative entrepreneurs and skilled workers to engage in value-generating activities by reducing the costs of connecting, interacting, networking, organising, producing, transacting, transporting, consuming, learning, and innovating. India needs to plan city-regions to be public transport–led rather than land use–driven. The building of metro systems in several metropolitan cities has begun to realise this objective.

Five major policy challenges need to be addressed to facilitate the desired spatial and structural transformations in India: making serviced land and floor space available for productive activities in tune with the demand for growth; integrating transportation and land-use planning; land assembly without relying on the compulsory acquisition of land; incorporating the urban poor's space needs for living, working and vending; and routing the strategy of financing urban and regional infrastructure in a paradigm of planned urban development that leads

to windfall benefits for many. These challenges warrant a restructuring of the current planning model. Land-use planning, transportation planning and economic development planning must go together. Furthermore, planning systems need to be flexible to respond to major drivers of economic growth, including new technology, investments in critical transportation infrastructure such as ring roads, metro transit or high-speed rail, large land development and affordable housing projects, and investments aimed at leap-frogged growth. This section discusses eight directions for reforming the planning, financing, and governance of city-regions in India.

Restructuring Master Planning

Indian cities are underplanned, underfunded, undermanaged, and overregulated. They lack realistic plans to guide economic development and are obsessed with physical control of land markets rather than enabling them to work for inclusive growth and sustainable development. The master planning model, which was borrowed from the U.K.'s Town and Country Planning Act 1947, is not suitable for Indian conditions, as it is technocratic rather than people-driven. Ironically, the model has undergone several changes in the U.K. in response to domestic social and economic needs, with increased importance accorded to community participation and localism. However, the model remains largely unchanged in most of India's cities.

The Indian model of master planning has three major flaws. First, it aims at artificially confining urban areas to predetermined, rigid, and utopian built forms. It pays scant attention to what the great urbanist Jane Jacobs calls the 'organized complexity' that makes cities inherently dynamic. Such complexity results from 'dealing simultaneously with a sizable number of factors which are interrelated into an organic whole'.[18] Master plans adopt a physical view of the city and disregard its economic dynamics. They do not integrate the economics of land, transport, and cities with spatial planning, and they ignore determinants of location, such as the benefits of clustering, scale economies, agglomeration economies, and transport costs, and factors such as market access, backward and forward linkages, land prices, housing rents, availability of amenities, access to technology, and learning opportunity. They treat transportation as a residual rather than a leading force and neglect conservation. Master planning has resulted in an utter scarcity of serviced land and floor space for value-creating economic activities such as affordable housing. Second, although most individuals living in Indian cities belong to the poor and low-income groups, master plans rely on the space norms of average middle-class households. These plans are not in sync with the population composition and income distribution structure of urban regions. As a result, they have squeezed the urban poor out of formal land markets. The informal economies of cities, which engage the bulk of their residents, do not find a place in formal urban plans. Third, by neglecting externalities that capitalise on governmental tax bases, urban fails to incorporate benefit taxation,

congestion charging and value capture financing (VCF) principles into planned urban development strategy.

Integrating Economics into Planning

Cities evolve because of the actions, interactions, initiatives, and enterprise of numerous firms, households, developers, and builders. These agents choose locations and make decisions based on appraisals of benefits and costs. Dense, diverse, and dynamic cities lead to productivity benefits and reduced costs, and they catalyse innovation and growth. However, they are also subject to the diseconomies of clustering. Regional and urban planning plays a key role in maximising the positive effects of density while minimising the negative consequences of congestion. From this perspective, there is a need to incorporate principles of land, transport, and urban economics into planning. India needs to move from a prescriptive, technocratic, rigid, and land use-based master planning approach to a responsive, people-centric, flexible, transport-led, and strategic planning paradigm. Overriding considerations of environmental sustainability and social equity indicate that spatial planning in India must adopt a public transportation-led and transit-oriented development strategy. A two-tier approach may be considered that encompasses regional plans in the form of structure plans focused on conservation and public transportation and local area plans aimed at transport land-use integration, social inclusion, and infrastructure development as a resource. This approach can be accompanied by reforms in urban public finance to sustain investments in infrastructure, liberalised floor space index (FSI) and land-use regimes, strategic densification of city centres and sub-centres, land assembly with farmers as partners based on land pooling, new townships combining transit-oriented development (TOD) and incentives for industrial location, inclusionary zoning, and a combination of benefit taxation, congestion pricing, and value increment financing-partnerships to increase resources.

Leading Role of Transportation

Transportation is the backbone of a city. It connects households to opportunities and firms to prosperity. Along with land use, transportation shapes city form and functions. A successful urban form is one in which the negative consequences of urbanisation are outweighed by its positive effects because of factors such as spatial planning, 'just-in-time' investment in infrastructure and land management. Transport infrastructure, including arterial and radial roads, public transit and commuter rail, influence economic growth by facilitating external economies and investment multipliers; however, it is expensive. In particular, mass rapid transit (MRT) and high-speed rail (HSR) are considerably costly. Paradoxically, the ambitious master plans in India long neglected the planning and financing of public transport. From the urban economist's perspective, land-use planning vision and transportation planning strategy are not integrated. This misalignment

is conspicuous in metropolitan regions, which suffer from a lack of connectivity infrastructure, resulting in their inability to exploit the economies of density, accessibility, and networking. They suffer from gross under-investment in transportation infrastructure owing to the failure of urban planning to present a coherent strategy for development plan financing.

Although transportation makes or mars a city, master planning in India has been accorded a subsidiary role to transport. This is based on the view that transportation should follow land use rather than guide spatial structure, which is not suitable for developing countries like India, where a majority of urban residents belong to poor and low-income groups. Furthermore, transport projects play a key role in leading development by generating externality-induced benefits to locations. The impacts of public transport on environmental conservation, labour market expansion, the mobility of the poor, and an increase in land values that can be captured to finance infrastructure constitute other reasons why public transport should receive the utmost attention from policymakers in India. Major public transport investments are required in anticipation of growth to achieve the long-term goals of efficient, inclusive, and sustainable cities. A public transport–led and TOD strategy will enable harnessing the benefits of accessibility, density, networking, mixed land use, and VCF. The key guiding principles are access to public transport within a 15-minute walk and a maximum of one-hour commuting time to work. National and state highways passing through large cities can be converted to mass transit corridors with TOD by developing bypasses and regional ring roads.

The eminent planner Angel (2012)[19] presents four simple measures that cities in developing countries can adopt to expand their areas to meet population growth in the future. First, project the population and necessary land area. Second, secure new municipal boundaries that include feasible areas for urban expansion. Third, acquire the right of way for a grid of arterial roads in the expansion area to connect the city's existing arterial roads network. Arterial roads are those that will carry trunk infrastructure lines like water and sewer mains, stormwater drains, telecommunication networks, and so on, as well as cater to public transport services. Finally, cities should acquire land for public open spaces in the expansion area in advance of development. Angel suggests that arterial roads should be about 30 m wide to support designated bus lanes, bike paths and medians apart from regular traffic. Such roads should be located approximately 1 km apart to ensure that no individual lives more than 10 to 15 minutes of walking distance from the public and private transportation services that will make use of the arterial roads.

Angel's approach enables cities to inexpensively add infrastructure on a 'just-in-time' basis as their urban footprint expands, and it does not rely on a top-down master planning approach that makes elaborate prescriptions about land use, density and FSI. The model is non-intrusive and suggests that land development between arterial roads should be market-driven and produce structural and spatial diversities, which contribute to the vitality of cities. In addition to

arterial roads, land needed for radial roads and future MRT and HSR networks must also be reserved. Strong incentives need to be put in place to encourage development near arterial and radial roads as well as rail transit corridors, and efforts are required to procure land for such projects through the town planning scheme (TPS). The Sardar Patel Ring Road developed by the Ahmedabad Urban Development Authority with land secured free of cost through a TPS presents an exemplary initiative for wider replication.

Addressing Land Market Constraints

The effective functioning of urban land markets is needed to meet the demands of economic growth for serviced land and floor space. Policymakers need to recognise the peculiar attributes of urban land, including horizontal and vertical dimensions, differential access to infrastructure and services and linkage to externalities. Five major factors influence land supply and spatial demand in cities: agglomeration and networking economies due to the clustering of activities; locational choices of firms, households, and developers based on an appraisal of benefits and costs; building technologies and FSI that permit developers to substitute capital for land; transport technologies that expand labour markets; and government policies that influence location, land use, housing, infrastructure, services, taxation and growth. Urbanisation in India will be propelled by market forces and public policies rather than spatial planning alone. Making urban land markets work for all without adverse social and environmental consequences ought to be the key objective of any policy.

Present constraints to the supply of serviced land and floor space in Indian cities are rooted in the command-and-control approach of master planning, which has imposed stringent controls on land use and FSI. The lack of financing strategy for plan implementation has also led to gross under-investment in infrastructure. The shortcomings of the planning model are obvious in the presence of difficulties in the acquisition of land to implement master plans. All aspects of the New Land Acquisition Act 2013 and the constraints imposed by outdated regulations such as FSI and rent control must be addressed. Ironically, the number of FSIs in Indian cities (generally up to 3) is far below that in most countries (8 to 25). Indian cities need to follow strategic densification regimes with an increase in FSI linked to the economic potential of nodes and major transportation investment programmes. A shift from a prescriptive and rigid land-use planning regime to responsive and flexibly regulated spatial planning that considers density and accessibility as resources for planned urbanisation.

Inclusionary Zoning and Housing

The master planning model is exclusionary rather than based on the income distribution structure of Indian cities, and it ignores the informal economy that engages the bulk of the urban poor. These segments suffer from an acute scarcity

of space for living, working, and vending. To be close to work, they seek shelter in slums. A quarter of India's urban population is thus deprived of legal spaces. Not only markets but also master plans have failed the poor, depriving them of the right to the city. A fundamental role of cities is to create employment; however, this cannot be discharged without incorporating the needs of the poor and low-income groups for wage employment and self-employment, including home-based work and street vending.

Stringent restrictions on urban land and housing markets in India due to unrealistic space norms and development control regulations have led to artificial scarcities of floor space for both lower income groups and the middle class. These need to be relaxed with strategic densification schemes accompanied by public transport investment programmes. Cities must also explore the instruments of inclusionary zoning (IZ) and inclusionary housing adopted by developed countries and Gujarat. This suggestion is based on the principle that growth must mitigate its impacts, including the need for affordable housing. Furthermore, it is the poor who make cities work. There is a need to allocate land to lower income groups in the planning process, as planners in Gujarat do through TPS. Furthermore, the planning model must provide for high-density residential developments for these groups around public transit nodes and corridors. TOD provides an enormous opportunity to reengineer cities and reconnect the poor to economic opportunities.

Effective Land Assembly

Land assembly to make serviced land and floor space available in tune with the demands of urbanisation and economic growth is the key urban issue in India. The model of compulsory land acquisition for planned urban development is not going to operate smoothly under the new land acquisition law. Moreover, one cannot justify why the farmers contributing land for value creation in cities should not be partners in the city development process. Along with the liberalisation of FSI and land-use norms, city-regions need to explore a combination of options for land assembly, including the strategic densification of growth nodes; renewal of derelict areas and infill development guided by TOD; planned urban expansion based on land pooling; development of ring towns and satellite towns connected to large cities by limited access expressways, regional transit, and HSR taken up in a phased manner; and the promotion of new towns on emerging industrial growth corridors with fast connectivity to regional cities and incentives for industrial location. The urban land assembly needs to be guided by the overriding priority of conservation and transportation, public transport–led and transit-oriented development, IZ and housing, pricing of development rights, and value increment partnerships. Some best practices for replication include the TPS in Gujarat, the land pooling scheme with farmers as partners in Magarpatta City, Pune in Maharashtra, the removal of FSI restrictions and incentives-linked road widening scheme in Hyderabad, and the

integrated transportation–land-use planning in Copenhagen (finger plan) and Curitiba (transit-oriented development). Auctioning of development rights in urban nodes with high economic potential following the model of Certificate for Additional Construction (CEPAC) in Brazil can also be considered.

Financing Development Plans

Public finance theory suggests that borrowing is the most appropriate means to finance lumpy infrastructure projects whose benefits are spread over generations and jurisdictions. However, whether executed, the debt incurred for such projects has to be repaid. In this vein, the tax increment financing (TIF) approach followed by developed countries is worth adopting.[20] TIF aims at escrowing future revenue increments to repay the debt incurred to finance. Within this context, economists highlight the importance of benefit taxation, congestion charging, and dedicated funds. They suggest that spatial planning and infrastructure development provide opportunities to raise resources through 'users pay', 'beneficiaries pay', 'congesters pay', 'exacerbates pay', and 'growth pay' principles. In particular, land-based taxes are ideal sources to fund urban and regional infrastructure; they capitalise on land values due to enhanced accessibility and increased developmental intensity, which are often facilitated by favourable changes in land use and building regulations or up-zoning.

A value-creating partnership between local, state, and central governmental authorities is warranted to finance major urban projects in the spirit of cooperative federalism. Such a relationship can lead to a win–win–win situation when urban external economies are vibrant. The repayment of debt for these projects may be linked to land taxation, impact fees, betterment levies, congestion charges, and earmarked funds based on the benefit principle of public finance. The sources of earmarked funds may include instruments such as the fuel tax in the United States, the transport tax in France and dedicated transfers from higher levels of government. A city share in the goods and services tax (GST), which has subsumed local taxes such as Octroi and the entry tax, will be useful for sustained funding of bus rapid transit, MRT, HSR, and other major projects in metropolitan city-regions. Mumbai lost Rs. 7,000 crore from Octroi annually when the tax was abolished following the introduction of a new GST regime.

Building Governance Capacity

Institutional resources, human resources and technical capacity for spatial planning and service delivery in Indian cities are severely constrained. The institutional structure for metropolitan governance in India is highly fragmented. The country should explore a strong mayoral system such as those in New York, London, and several other cities. Planners and policymakers can study the regional and local governance structures of metropolitan regions such as London, New York, Tokyo, and Barcelona.

Unlike central, state and district administrations, there are no well-defined cadres in India's municipalities to discharge functions such as general administration, finance, accounts, public works, public health, parks and plantations, town and country planning, and poverty alleviation. Municipalities depend on state governments for the posting of chief executive officers and key personnel who are transferred at will by state governments. These officers often lack the professionalism needed to discharge mandates or regulate private–public partnerships. This issue is particularly conspicuous in areas such as transportation planning, transport land use integration, big data analytics, and new technology adoption, among others. Performance measurement and management, regulatory oversight, and social accountability systems to facilitate the effective functioning of local governments remain absent.

Expertise to plan for urban regions, districts, metropolitan agglomerations, cities, census towns, and large villages that are likely to become urban centres in India is severely limited by the lack of physical transportation and environmental, social and economic planners. With 7,935 cities and towns, including 53 metropolitan cities requiring metropolitan planning committees and more than 650 districts requiring district planning committees, India needs a multi-fold increase in the number of town and country planners from the current level of about 6,000. A report of the Expert Committee in Town Planning and Architecture for the preparation of 'Policy Guidelines to Energise Architecture and Town Planning Education' set up by the Ministry of Human Resource Development, Government of India in July 2011 estimated that India would need about 300,000 qualified town and country planners by 2031.[21] A total of 15,000 planners need to be trained every year, which represents a considerable increase over the present number of less than 800. This calls for strengthening planning education and creating a pool of town and country planners at all levels. India needs to make significant investments in regional and urban planning, which can be easily funded based on a value increment financing approach.

Conclusion

The critical importance of cities in developing countries like India derives from their central role in two fundamental processes of economic development, namely, structural and spatial transformation. If they were facilitated by spatial planning and infrastructure development, these processes would reinforce each other, thereby creating conditions for economic growth and resource generation to alleviate poverty. However, economic development planning and spatial planning in India have been pursued in isolation without tapping the synergy between the two processes. Even the Planning Commission of India did not have a spatial planning division during the long period of its existence. This chapter suggests that socio-economic planners and physical planners need to work together and understand each other's perspectives on urbanisation and

economic growth issues. Both groups are confronted with the same problem: how to accord a rightful place to the city in the socio-economic transformation of the nation. Urbanisation offers a unique opportunity to India, and it must be harnessed. Well-governed cities and metropolitan regions will present the clearest path to the country's prosperity. Policymakers, planners, and administrators in India must remember the profound observation made by the great urbanist, Jane Jacobs: 'Whenever and wherever societies have flourished and prospered rather than stagnated and decayed, creative and workable cities have been at the core of the phenomenon. Decaying cities, declining economies, and mounting social troubles travel together. The combination is not coincidental'.

Notes

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3

GOVERNING THE CITY-REGION

Rethinking Urban and Regional Governance in India

Mathew Idiculla

Indian cities are increasingly finding it difficult to respond to various urban crises or meet citizens' expectations regarding basic services. One of the underlying factors influencing such challenges is their political and institutional architecture. India's urban and regional governance is stricken by a weak and fragmented administrative structure in which elected municipal bodies operate with limited authority and autonomy. With the passage of the 73rd and 74th Constitutional Amendments in 1992, rural and urban local bodies became mandatory institutions of local government across the country. Despite these constitutional reforms, urban local governments continue to find themselves powerless to address much of the city's problems.

The passing of the 74th Amendment to the Indian Constitution was unprecedented. Local governments generally function within the powers delegated to them by higher levels of government, that is the state or provincial governments in federal states and the national government in a unitary state. For example, city governments in America are legally considered as 'creatures of the state', as they lack any inherent powers but merely exercise those delegated to them by the state government.[1] Cities and local governments are not mentioned under the division of powers in the United States Constitution. By contrast, with the 74th Amendment, the Constitution of India has given the city governments a definite space within the constitutional division of powers. However, our municipalities are yet to become 'institutions of self-government' as envisaged in the Constitution. Hence, it is important to examine the challenges that constrain municipalities and consider governance reforms that can overcome them.

As Indian cities experience rapid demographic and spatial growth, the existing municipal systems are finding it difficult to respond to the multiple challenges of urban and regional governance. India's urban local governments are powerless, as they do not have political autonomy from the state governments

DOI: 10.4324/9781003296218-4

or possess independent financial powers and rather operate among a set of other state-controlled parastatal agencies that carry out many civic functions. They are also often ineffective due to a weak mayoral system, a lack of local administrative capacity, and insufficient decentralisation of powers to lower units within the local government. In addition, the governance of India's megacities is hampered by the absence of an accountable metropolitan or regional level of government for the city-region.

Globally, governments are increasingly realising that strengthening the city councils is not sufficient to achieve effective urban governance, and there is rather a need to look at the governance of the city-region as a whole.[2] A city-region is the functional economic region of a city, has a common labour market and transport network, and typically includes the suburbs around the core city. The British government has sought to make city-regions a unit of governance by creating Combined Authorities (consisting of multiple city councils) after negotiating 'devolution deals' with the respective local authorities. Following the success of the Greater London Authority, devolution has become a key policy initiative to empower city-regions across the U.K.[3] Similar efforts to create metropolitan or regional governments are taking place in various parts of the world. Given the rapid spatial expansion of India's megacities, it is important to consider whether we need new institutional frameworks to enable the city-region as a unit of governance.

This chapter examines the challenges related to the institutional structure and functioning of urban and regional governance of Indian cities and considers how governance reforms with a focus on the city-region can overcome some of these problems. It discusses the reforms that the Expert Committee on BBMP (Bruhat Bengaluru Mahangar Palika) Restructuring attempted in Bangalore to show how a city-region approach with a multi-tier governance framework can break the gridlock between localism and regionalism by unbundling municipal functions across various levels.[4] The chapter argues that there is no single ideal scale for urban governance; instead, a new framework that recognises the need for multiple levels of governance needs to be adopted. The following sections of the chapter trace the constitutional history and provisions for local government, examine how local governments are rendered powerless by both state and central governments, analyse the need for a metropolitan level of government for city-regions, and suggest a new multi-tier governance framework for Indian cities.

Local Governments in the Indian Constitution

The Constitution of India did not originally provide local governments with any clear legal or political authority. India's Constituent Assembly adopted what is often called a 'quasi-federal' system of government in which powers are distributed between the union and the states, with the union being stronger because it retains residuary powers as well as possesses some emergency powers over the

state.[5] The only major critics of the centralised federal system that India adopted were some followers of Mahatma Gandhi.[6] Gandhi was sceptical of centralised governmental power and had long championed the cause of making the village the basic unit of governance. Inspired by Gandhi, some of the members of the Constituent Assembly tried to further the idea of local self-governance in the Indian Constitution.

Damodar Seth, a member from United Provinces, argued the following before the Constituent Assembly:

> The constitution of a free country should be based on 'local self government'. We see nothing of local self-government anywhere in this Constitution. This Constitution as a whole, instead of being evolved from our life and reared from the bottom upwards, is being imported from outside and built from above down-words.[7]

Seth proposed an interesting alternative of radical decentralisation: 'our Indian Republic should have been a Union – a Union of small autonomous republics. All those autonomous republics by joining together would have formed the bigger Republic of India'. He further argued that while centralisation was useful at times, it was important to remember Gandhi's warning on how 'too much centralization of power makes that power totalitarian and takes it towards fascist ideals. The only method of safeguarding against totalitarianism and fascism is that power should be decentralized to the greatest extent'.

However, the Gandhian view of local self-governance did not find much favour in the Constituent Assembly, which adopted a federal system with a centralising bias and no specific role for urban and rural local government. Dr B. R. Ambedkar, the chairman of the drafting committee of the Constituent Assembly, was the biggest public critic of the Gandhian view of 'village swaraj'. In his famous speech in the Constituent Assembly on 4 November 1948, Ambedkar remarked that although some critics wanted the new constitution to be 'raised and built upon village *Panchayats* and District *Panchayats*', there were also extreme critics who 'do not want any Central or Provincial Governments. They just want India to contain so many village Governments'.[8] He presented a scathing attack of the critics who supported the romantic idea of 'village swaraj':

> The love of the intellectual Indians for the village community is of course infinite if not pathetic (laughter). It is largely due to the fulsome praise bestowed upon it by Metcalfe who described them as little republics having nearly everything that they want within themselves, and almost independent of any foreign relations. The existence of these village communities each one forming a separate little State in itself has according to Metcalfe contributed more than any other cause to the preservation of the people of India.[9]

Ambedkar went on to quote a passage from Charles Metcalfe regarding how village communities survived conquests by different dynasties and offered a critique of this view:

> That they have survived through all vicissitudes may be a fact. But mere survival has no value. The question is on what plane they have survived. Surely on a low, on a selfish level. I hold that these village republics have been the ruination of India. I am therefore surprised that those who condemn provincialism and communalism should come forward as champions of the village. What is the village but a sink of localism, a den of ignorance, narrow-mindedness and communalism? I am glad that the Draft Constitution has discarded the village and adopted the individual as its unit.[10]

Hence, the Constituent Assembly adopted a federal system that allocates more powers to the centre and leaves no real space for local governments. To pacify the Gandhian faction, village *panchayats* found a place in the unenforceable Directive Principles of State Policy.[11] Article 40 stated the following:

> 'Organisation of village *panchayats*: The State shall take steps to organize village *panchayats* and endow them with such powers and authority as may be necessary to enable them to function as units of self-government'. However, there was no mention of municipalities or urban local governments in the constitution. The debates on local self-governance were also focused on *panchayats* and not on cities or municipalities, even though some of the most powerful members of the Constituent Assembly including Jawaharlal Nehru and Vallabhbhai Patel had previously held office in municipalities during colonial rule.[12]

The only mention of urban local government can be found in List II (State List) of the Seventh Schedule of the Indian Constitution. Item number five of List II reads 'Local government, that is to say, the constitution and powers of municipal corporations, improvement trusts, district boards, mining settlement authorities and other local authorities for the purpose of local self-government or village administration'. Hence, local governments are under the exclusive legislative jurisdiction of the states. The enactment of the 73rd and 74th Amendments of the constitution did not make any change to this fundamental feature of India's constitutional design.

Local governments did not receive much attention in the early years of India's independence. The reports of Balwant Rai Mehta Committee (1957)[13] and Ashok Mehta Committee (1978)[14] recommended the empowerment of *panchayats* but did not receive much political traction. It was during Rajiv Gandhi's tenure as prime minister in the mid-1980s that *panchayati raj* again became a talking point, and the 64th Constitutional Amendment to empower *panchayats* was prepared.[15] It was only at this point of time the question of having equivalent provisions for

municipalities was also raised. Hence, the 65th Amendment was prepared on similar lines to give formal recognition to urban local bodies.[16] However, both these amendment bills failed to pass in the parliament due to opposition in the Rajya Sabha, and it was only in 1992 that the proposals eventually materialised as the 73rd and 74th Constitutional Amendments. The Statement of Objects and Reasons to 74th Amendment Act identified the need for such an amendment:

> In many States, Local Bodies have become weak and ineffective on account of a variety of reasons, including the failure to hold regular elections, prolonged supersessions and inadequate devolution of powers and functions. As a result, Urban Local Bodies are not able to perform effectively as vibrant democratic units of self-government.[17]

By the passing of the 74th Amendment, which inserted PART IXA containing Article 243P to Article 243ZG, municipalities received constitutional recognition as legitimate units of government. The 73rd Constitutional Amendment mandates the creation of *panchayats* at three levels: village (*gram panchayat*); intermediate (block/*taluk panchayat*) and district (*zilla panchayat*).[18] The 74th Constitutional Amendment lays down three types of municipal bodies: the *nagar panchayat* for an area transitioning from rural to urban, the municipal council for smaller urban areas and the municipal corporation for larger urban areas.[19] Hence, while the 73rd Amendment created three distinct levels of rural local governments, the 74th Amendment does not have a similar multi-tiered governance framework but rather vests all local government power in a single municipal body. However, it provides for political bodies both below and above the level of the municipal government in the form of ward committees and district/metropolitan planning committees, respectively. The 73rd Amendment also provides for the creation of a *Gram Sabha*; however, an equivalent provision for a public assembly does not exist for municipalities.[20]

The 74th Amendment sought to empower city governments so that they function as 'units of self-government'. Article 243-W of the Constitution provides the following:

> Subject to the provisions of this Constitution, the Legislature of a State may, by law, endow the Municipalities with such powers and authority as may be necessary to enable them to function as institutions of self-government and such law may contain provisions for the devolution of powers and responsibilities upon Municipalities at the appropriate level, subject to such conditions as may be specified therein, with respect to –
>
> (a) the preparation of plans for economic development and social justice;
> (b) the implementation of schemes for economic development and social justice as may be entrusted to them including those in relation to the matters listed in the Twelfth Schedule.

The 74th Amendment hence provides that a state may by law endow municipalities with such powers necessary for them 'to function as institutions of self-government', including those functions listed in the Twelfth Schedule. The Twelfth Schedule, inserted into the Constitution by 74th Amendment, contains a list of 18 functions, including urban and town planning, regulation of land use and construction of buildings, planning for economic and social development, roads and bridges, water supply, public health, solid waste management, and other civic functions.[21]

The 74th Amendment also mandates the creation of a set of other institutions for urban governance. For integrated planning of larger areas, it mandates the creation of district planning committees (DPCs) for metropolitan areas with a population of over 1 million.[22] For all municipalities with a population of over 300,000, the 74th Amendment mandates the creation of ward committees for carrying out civic functions at the ward level.[23] The 74th Amendment also requires the creation of a State Election Commission[24] for regular and fair conduct of municipal elections and a State Finance Commission.[25]

The Powerlessness of Urban Local Governments

Despite the promise of democratic decentralisation brought about by the 74th Amendment, city governments in India still have not become vibrant institutions of self-government as envisaged by the Constitution.[26] Municipalities are yet to become city governments that exercise autonomous powers and continue to be politically, administratively and financially weak. This may be due to the inherent limitations of the 74th Amendment, the way it has been interpreted and implemented by the states, or due to the centre's interference in urban governance through national programmes.

Urban governance in India remains marred by the excessive influence of the state government over issues at the local level. The state exercises its powers over the city by not devolving functions, finances, and functionaries to the urban local governments and instead exercises these powers through parastatal agencies. One of the inherent textual limitations is that key provisions use the language of 'may' rather than 'shall', thereby giving the state discretion regarding devolution of powers.[27] Unlike the union and state governments, which have been allocated exclusive jurisdiction for matters listed, respectively, within List I and List II of the Seventh Schedule of the Constitution, local governments do not have any such exclusive legislative powers. The items listed under the Twelfth Schedule are functions that the state 'may' devolve to local governments and are hence not exclusive municipal functions.

Urban local governments still do not have decision-making authority over many civic functions. Quintessential local government functions such as urban transportation and housing are not listed within the 18 functions under the Twelfth Schedule.[28] Among the functions that are listed, many have still not been devolved, but rather are often performed by parastatal agencies with no

connection with the local government. According to an official review of the Jawaharlal Nehru Urban Renewal Mission, only eight states – and one union territory fully devolved all the 18 functions under the Twelfth Schedule.[29] The actual implementation of these functions on the ground is even less certain. As per the Janaagraha's ASICS 2017 report, across the 23 major cities under analysis, on average, only nine of the 18 functions have been effectively devolved.[30]

Although urban planning and regulation of land use are essential municipal functions, in most Indian megacities, municipal corporations exercise limited planning powers; rather, the ubiquitous development authority prepares the master plan.[31] Along with planning, other important civic functions such as water supply and sewerage are also held by parastatal agencies in some cities. For example, while the Bangalore Development Authority (BDA) and Bangalore Metropolitan Region Development Authority carry out planning functions, the Bangalore Water Supply and Sewerage Board is responsible for water supply and sewerage, the Karnataka Slum Clearance Board is responsible for slum development, the Bangalore Electricity Supply Company is responsible for electricity distribution, and the Bangalore Metropolitan Transport Corporation is responsible for bus-based transportation.[32] These parastatal agencies are not in any way accountable to the urban local government but only to specific departments in the state government.

One of the major shortcomings of the 74th Amendment is that it does not provide municipalities with an independent domain of taxation or provide any exclusive financial powers to local governments.[33] Most municipalities in India are vested with very limited taxation powers and revenue generation tools and hence continue to rely heavily on grants and loans from state and central governments. As per ASCIS (Annual Survey of India's City-Systems) Report 2017, of the 23 cities assessed in the study, local governments only generate 39 per cent of the funds they spend.[34] Furthermore, only four of these cities can borrow money from external sources without the sanction of the state government. Hence, even though cities are entrusted with many functions, they are not provided the necessary financial autonomy to function as institutions of self-government.

One of the core problems in urban governance design in India is that in most cities, the political head of the local government is not vested with significant powers. Because the 74th Constitutional Amendment does not prescribe any specific system of local government, each state is free to decide on the type of municipal government it wants. In most cities in India, mayors are indirectly elected by the municipal councillors; in many cases, the mayors serve terms of less than five years. In cities such as Bangalore and Delhi, the indirectly elected mayor's term is just one year. However, beyond the type of election and tenure of the mayor, what is fundamentally problematic about the mayoral system in Indian cities is the fact that in most state legislations, the executive powers of the local government are not vested with the mayor.[35]

Following the commissioner system of municipal administration that the British introduced in Bombay (now Mumbai), in most major cities in India,

the executive head of the corporation is a state government–appointed commissioner.[36] The mayor is merely the ceremonial head of the municipal corporation and does not enjoy any independent powers. In states such as West Bengal, which follows a cabinet-like mayor-in-council system, and Kerala, where the secretary is subservient to the mayor, the bureaucratic head is weaker than the political head. However, across all states in India, the appointment of commissioners and other officers of the municipal corporation is done by the state government rather than the local government. Hence, local governments' ability to act independently is restricted due to the administrative control of the state government.

In India, not only is the local government weakened with the state governments' tight grip over the city, but the domain of urban policy has also increasingly strengthened the central government's influence over the city. Urban development, housing, urban planning, and local government are state subjects under the Seventh Schedule of the Indian Constitution; however, the central government has always had one or two ministries dedicated to these issues. The centre's influence over cities was initially set under various sectoral initiatives in the five-year plans of the erstwhile Planning Commission.[37] However, it was in 2005 under the Manmohan Singh–led United Progressive Alliance (UPA) government that urban policy received focused attention from the central government with the introduction of the first major national urban programme in the form of the Jawaharlal Nehru National Urban Renewal Mission (JNNURM).

Under the JNNURM, it is mandatory for the state legislatures to pass specific reforms for the states to receive central funds under the programme.[38] These include the repeal of urban land ceiling acts, amendment of rent control laws, reductions of stamp duty, and laws facilitating the conversion of agricultural land to non-agricultural purposes. These are subjects under the State List in the Constitution, which prohibits the central government from making laws on these subjects.[39] What a programme like JNNURM does is make the states pass reforms that the centre is constitutionally prevented from doing with the use of funds tied up with conditionalities. The mission's one-size-fits-all model has also been criticised for straitjacketing different cities into following a uniform set of reforms and not respecting the highly diverse nature of Indian cities.[40]

After the UPA's JNNURM programme, the National Democratic Alliance government headed by Prime Minister Narendra Modi elected in 2014 further emphasised urban development with new programmes like the Smart Cities Mission. Although the push initially was for building 100 new cities as nodes of industrial corridors, it later became clear that the government was not creating new smart cities but rather only making a tiny portion of 100 existing cities 'smart'. As per the Smart Cities Mission Statement and Guidelines, each city is to intensively develop a compact area of a city through retrofitting, redevelopment, or city extension.[41] Unlike the JNNURM, which imposed uniform conditionalities across all cities, the Smart City Mission provides each city space far more flexibility and innovation. However, the empowerment of local governments is not a key aspect of the mission, as the body implementing smart city projects is

not the elected municipal government but rather a special-purpose vehicle (SPV) created under the Companies Act 2013.

The Smart Cities Mission Statement provides that SPVs will 'plan, appraise, approve, release funds, implement, manage, operate, monitor and evaluate the Smart City development projects'. SPVs are companies in which the state, local government and private sector can invest but will have 'operational independence and autonomy in decision making and mission implementation'. The Smart City Mission encourages the state and local governments to 'delegate the decision making powers' of the local government to the chief executive officer of the SPV. However, the CEO of a smart city SPV can only be removed with prior approval of the central government. Hence, the Smart Cities Mission is an instance of a central policy seeking to undermine local governments by circumventing laws passed by the state legislature.[42]

Local governments are also disempowered by the creation of new institutional mechanisms for governance in the form of special economic zones (SEZs) and industrial townships. Areas falling under industrial townships are the only places that have been given an exception to the constitutional requirement of local self-government under the 74th Amendment.[43] Article 243Q, which mandates the creation of elected municipal governments in all urban areas, includes a proviso that a municipality need not be created if the state government declares an area as an 'industrial township'.[44] Interestingly, as Sivaramakrishnan (2014), one of the chief architects of the amendment, pointed out, this proviso was not present in the previous versions of the bill and was only introduced at the time of its passing.[45] The SEZ Policy provides that states can 'declare SEZ as an Industrial Township and if necessary, relevant Acts would be amended so that SEZ can function as a governing and autonomous body as provided under Article 243(Q) of the Constitution'.[46] Many states have labelled SEZs as 'industrial townships' under Article 243Q of the Constitution in order to enable them to function autonomously.[47]

Absence of Metropolitan Governance at the City-Region Level

The challenges of urban governance are not restricted to concerns with the structure and functioning of municipalities. Across much of the world, there is a growing recognition of the need to empower regional or metropolitan-level institutions for the governance of the larger city-region. In the UK, combined authorities seek to overcome the issues faced by the fragmentation of authority through multiple municipalities in city-regions. Since the creation of the Greater London Authority (a layer of administration over 32 London boroughs) in 2000, combined authorities have been created for seven city-regions in the U.K.[48] Many parts of Europe are witnessing the creation of formal regional or metropolitan levels of government above level of city governments or municipalities.[49]

In United Nations forums and other global debates, the need to create an institutional vehicle to foster the overall development of the metropolitan area

is increasingly being recognised. The Montreal Declaration on Metropolitan Areas that emerged out of Habitat III, the 2016 UN Conference on Housing and Sustainable Urban Development in Quito, highlights that with increasing urbanisation, cities are often part of larger metropolitan areas with one or more central cities with high population densities, large job pools, and common transportation infrastructure. In this context, it states the following:[50]

> local governments must innovate in terms of democratic decision-making and supra-local governance and develop new inter-territorial coordination strategies and mechanisms, so that they can face metropolitan area-wide challenges and enhance inter- and intra-cooperation aimed towards achieving attractiveness, competitiveness and social inclusion and cohesion.[51]

The Montreal Declaration called for the adoption of 'an integrated and inclusive approach to metropolitan development and human settlements' and identified the need to have better metropolitan cooperation and governance systems to address issues extending beyond local boundaries for ensuring the cohesion of the entire metropolitan area. The Montreal Declaration further stated the following:[52]

> Metropolitan governance requires a clear legal and institutional framework, based on principles of democracy, respect for local autonomy and subsidiarity. This framework must be provided with appropriate funding, which involves coordination mechanisms and sectorial (infrastructure, economic development, environmental, social and cultural) policies. Cooperation at the metropolitan level should be based on the representation of all citizens and stakeholders, regardless of their different mobilization, resources and engagement capabilities.

Metropolitan or regional governance institutions are becoming popular because an authority at the scale of the city-region is likely to be more efficient in carrying out functions like planning, transportation, and strategic development, all of which have spill-over effects across the region.[53] A metropolitan governance framework at the level of the city-region is also better positioned to respond to the geographic outgrowth of cities, which would often be beyond the jurisdiction of the municipal government. This is especially true in India, where rapid growth is taking place in the urban peripheries.[54] However, India has given little attention to how power should be organised at the level of the city-region.

As per the 2011 census, India has 53 urban agglomerations (a continuous urban area with the city and its outgrowths) with a population of over 1 million. However, the metropolitan governance architecture in these city-regions remains weak or non-existent. Although urban and metropolitan region development authorities have been created for some of these areas, they operate as bureaucratic machines in the hands of the state government. According to the

74th Amendment, what such metropolitan areas spread across multiple local governments need is a metropolitan planning committee (MPC).[55] Despite MPCs being mandatory for all cities with a population of more than 1 million, most cities have yet to constitute an MPC during the last 25 years. Although many states have made legislative provisions for MPCs, other than the city of Kolkata, they have hardly been functional in other cities.

Hence, there is no metropolitan-level elected government in most megacities in India.[56] For the resolution of any matter in which there is a conflict or contestation between two or more local bodies within a metropolitan area, a governmental body representative of all the various local bodies in the metropolitan area is more suitable than either the municipal corporation of the region or the state government. The MPC is envisioned as a planning body responsible for consolidating local plans prepared by multiple urban and rural local governments within a metropolitan area. Unlike development authorities, MPCs are representative of the region because at least two-thirds of its members are required to be elected councillors of local governments in the metropolitan area.

The Constitution states that the MPC should prepare a 'draft development plan' for the metropolitan area that has regard for the plans prepared by the urban and rural local bodies within its jurisdiction. This draft development plan must be prepared once in five years and is required to be submitted to the state government. The essential task of the MPC as per the Constitution is 'coordinated spatial planning' and the sharing of resources in a metropolitan area whereby the needs of multiple local bodies in the region are balanced. Despite these constitutional provisions, planning processes in Indian cities continue to be divorced from the MPC. Rather, it is the development authority that is usually responsible for preparing master plans under the states' respective town and country planning legislation.

Constituting an MPC is important because it can act as a legitimate political institution at the level of the city-region responsible for strategic planning, reviewing local plans and resolving conflicts between local governments. The MPC must hence be strengthened as a directly elected institution, while the development authority should be recast as the secretariat and technical wing of the MPC. Essentially, the MPC works as the aggregate body representative of various urban and rural local bodies and acts as a bulwark against regressive localism as demonstrated in the NIMBY (not-in-my-backyard) syndrome.[57] Creating an MPC can ensure that the agency responsible for urban planning is not an unaccountable parastatal body like the development authorities. Consisting of a majority of local representatives and some nominated members, they can work as a planning body that satisfies both democratic accountability and technical expertise.

However, the MPC should not be viewed as a silver bullet for all metropolitan-level issues, as the 74th Amendment envisages it to primarily function as a planning body rather than an administrative authority. As our cities continue to expand, we need to re-examine our metropolitan governance framework. Our thinking on city-regions should not be saddled by a narrow planning perspective. In fact, in his later writings, the late K.C. Sivaramakrishnan suggested that

the provision for MPCs had become an albatross that restricted creative solutions for metropolitan governance.[58] As he pointed out, the election procedure for the MPC is cumbersome, and its composition is flawed because it does not even ensure that the city's mayor will be a member of the MPC. Hence, we may need to think beyond the MPC and consider other alternatives for invigorating our city-regions.

Towards a Multi-Tier Governance Framework

What is the ideal scale of urban governance? Should power be vested at the smallest possible unit, one that is closest to the people? Or should it be at a higher level, one that can take advantage of economies of scale? How many local governments should a city have? Should there be only one authority for a city, or can there be multiple local governments? Globally, discussions on how urban governance should be structured have largely been centred on whether power should be concentrated at the level of the city or whether there should also be a metropolitan level of government. These debates are often caught up in the crossfire between the values of localism and regionalism and between amalgamation and secession.[59] Supporters of local autonomy claim that power should be located at the level closest to people, whereas those favouring regional governance argue that the collective interest of the city and the region is also important.

Localism or subsidiarity asserts that 'power should be located as close to people as possible in the smallest units that are feasible'.[60] Essentially, this view states that government action should be taken at the lowest level at which that problem can be addressed.[61] Although the principles of subsidiarity are important, we cannot assume that every issue is local, as some matters can simultaneously have regional and state-wide implications. There is a need to also explore metropolitan and regional forms of governments because of some of the perceived risks of localism.[62] Although local self-governance is vital for promoting the interests of a particular locality, there is also a need to consider the collective interests of the region.[65]

In India, although the 73rd Constitutional Amendment created three distinct levels of rural self-governments with *panchayats* at the village, intermediate, and district levels, the 74th Constitutional Amendment does not have a similar multi-tiered local governance framework. Although the 74th Amendment provides for the formation of ward committees at the local level and the district and metropolitan planning committees above the level of the municipality, these are not distinct tiers of local government. It is ironic that whereas sparsely populated rural areas are provided with three distinct levels of local government, in India's megacities is centralised in just one body – a municipality. This is one of the fundamental weaknesses of the 74th Amendment.

The spirit of decentralised democracy cannot be realised by merely devolving powers from the state to local government. Devolution needs to be accompanied by the decentralisation of powers within the local government. Hence,

the devolution of powers from the large, centralised municipal corporation to smaller, decentralised units is necessary. Devolution includes both political and administrative decentralisation whereby decision-making powers are handed over from higher levels of the government to lower levels.[63] According to the principle of subsidiarity, the ward must function as the basic unit of governance and be empowered to take the necessary action to solve any issue faced by a locality. Only if the issue concerns more than one ward should it be taken at the higher level such as the zone, borough or municipal corporation. Devolution of powers to the lowest level can also ensure that services are provided as per the particular needs of a locality.

The ward committee also needs to be strengthened as an institution by a more democratic manner of selection of the members and by giving it wider powers. The Expert Committee on BBMP Restructuring recommended that ward committees be composed of a combination of members selected on the basis of proportional representation that reflects the party vote share in the municipal elections and members nominated from civil society.[64] Ward committees should also be vested with wider planning, administrative and supervisory powers, including that of preparing annual budget plans for their ward for incorporation into the overall municipal budget. Hence, by strengthening the ward committees in this manner and by augmenting ward-level bureaucracy, the ward can become a powerful administrative and political unit.

Although empowering wards can solve local issues, a formal institution at the level of the metropolitan region is also important for better coordination and resolving conflicts between different authorities in a metropolitan area or city-region. However, the principles of subsidiarity or localism and regionalism need not be viewed as being in opposition. The promotion of governance at the metropolitan or regional level should not be assumed to go against the decision-making authority of lower levels of government.[65] The principles of localism and regionalism can both be respected if we adopt a multi-tier governance framework that distributes power between the upper and lower tiers within local government.

Although the devolution of powers to local governments improves allocative efficiency and increases avenues for participation, for coordinated planning and ensuring equity between various localities in a city, a larger scale government seems necessary. If we have a multi-tier governance framework that distributes powers between the levels of government based on a set of guiding principles, then the fundamental features of both localism and regionalism can be respected. The division of power between different levels of local government should ideally take into consideration various competing values.[66] Efficiency, access, and accountability are enhanced through smaller local government units. Economies of scale, reduced externalities, equity, and regional coordination are better achieved through larger scale governments (see Table 3.1). Choosing the right system of governance depends on how one weighs these conflicting considerations and how these are distributed across different levels of government.

TABLE 3.1 Principles of Government Organisation

Economic efficiency: Efficient provision of services requires decision-making to be carried out by the level of government closest to the individual citizen.
Economies of scale: Larger government units can capture economies of scale by reducing the per-unit cost of producing a particular service
Externalities: The provision of some services results in externalities (spill-overs), whereby the benefits/costs of a service in one jurisdiction spill over to residents of another jurisdiction.
Regional coordination: Many services extend across the region and need to be coordinated on a regional basis.
Equity: Rich communities will have a larger tax base, whereas poor communities may require more services but have a small tax base. Equity requires richer area to subsidise the poorer areas.
Access and accountability: Providing access and accountability through hearings, participation and engagement with government is generally easier when local government units are smaller.

Source: Based on Slack and Côté (2014).

Globally, there are many examples of two-tier local governments with a metropolitan government as an upper tier and a municipality as the lower tier. Whereas the upper tier government is responsible for services that have region-wide implications, the lower tier government is responsible for services of a local nature.[67] London is the most famous among such examples for its system of having a Greater London Authority headed by a directly elected mayor at the pan-city level and 32 boroughs at the local level. Tokyo has a Metropolitan Assembly with an indirectly elected president, which oversees the functioning of a number of lower tiers: 23 special wards, 26 cities, five towns, and eight villages. The Seoul Metropolitan Government is headed by a directly elected mayor and the city is further divided into 25 districts and 522 neighbourhoods.

However, we do not presently have two-tier or multilevel governance system for India's cities. The Expert Committee on BBMP Restructuring proposed a three-tier governance framework for Bangalore with empowered ward committees at the lowest level, a set of municipal corporations in the middle level and a Greater Bengaluru Authority at the top. The Greater Bengaluru Authority proposed by the Expert Committee is distinct from the metropolitan planning committee mandated by the 74th Amendment. Under the proposed three-tier governance framework, ward committees are vested with wider planning, administrative, and supervisory powers. Above the municipal corporations, the Expert Committee proposed the creation of a Greater Bengaluru Authority that was to be headed by a directly elected mayor and comprised a combination of municipal government representatives, representatives from the various parastatal agencies providing essential services and nominated experts. The principal functions of the Greater Bengaluru Authority will involve planning for the city-region, coordinating the activities of various municipal corporations and parastatal agencies and administering municipal functions that have a metropolitan-wide impact.

Globally, metropolitan-level authorities emerged because of the need for managing transport systems across various localities of city-region in an integrated manner. Along with transportation, other key functions such as water supply, sewerage and infrastructure also have a metropolitan-wide impact. Since parastatal agencies are often responsible for these functions in many Indian cities, any reform of metropolitan governance needs to consider how these can be integrated into local governments. Since the geographic scale of these utilities is often beyond the boundaries of the city corporation, a metropolitan government is the ideal scale for integrating multiple functions. For India's mega-cities like Mumbai, Bangalore, Kolkata, Hyderabad and Chennai (Delhi is already a city-state, albeit with some limitations), it is important to consider initiating a genuine, democratically elected metropolitan tier of government.

Conclusion and the Way Forward

With the 74th Amendment, the city governments have been given a definite space within the constitutional division of powers. However, urban local governments in India still have very limited autonomy and continue to be subservient to the state government. The fundamental problem of local government design is the over-centralisation of power in the hands of the state government and the single-tier municipality. For local governments to become vibrant institutions of self-governance as envisaged in the Constitution, more powers need to be devolved to the city government. The state government should relinquish its vice-like grip over the city by making the parastatal agencies answerable to the city government. For genuine local democracy, the executive power of the municipal corporation should be shifted from the commissioner to the mayor. Along with the devolution of powers to the city government, powers should be further devolved from the city government to lower units like wards.

As India's urban growth is dominated by the spatial expansion of its cities, it is important to examine governance systems that respond to the specific challenges it faces. A city-region approach with a multi-tier governance framework is something worthwhile to explore. A city-region approach to governance must also seek to integrate other key functions such as water supply, sewerage, infrastructure, and housing, which also have a region-wide impact. Since parastatal agencies are presently responsible for these functions in many Indian cities, any reform of our metropolitan governance needs to consider how these tasks can be vested in a democratically accountable body. Hence, the fundamental question before us is whether our city-regions need a distinct tier of government with executive powers over multiple sectors. Although there may be varying views on the viability of creating such an institution, it is time that we initiate a serious conversation about how our city-regions should be governed.

A city-region approach to governance can only work if it is accompanied by smaller units of governments below it. Hence, it is important to consider a multi-tier institutional structure for urban and regional governance. Following the suggestions of the Expert Committee on BBMP Restructuring, India's megacities

can adopt a three-tier governance framework with empowered wards at the lowest level, multiple municipalities, boroughs or zonal committees at the middle level and a representative city-region or metropolitan authority at the top. Urban governance reforms must therefore provide for devolution to the wards as well as institute an integrated governance structure for the city. The multiple levels of urban governance – ward committees, zonal committees, boroughs, municipalities, and city-regions or metropolitan authorities – should all be legally recognised as 'municipal authorities' vested with the authority to carry out municipal functions. Such a multi-scale institutional framework would be able to ensure that urban governance responds to the needs of each locality as well as the larger vision of the city and the region.

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4

THE SMART CITIES MISSION AND CITY PLANNING IN INDIA

D.S. Meshram and Swati Meshram

As a follow-up of its manifesto of 2014, the Bharatiya Janata Party (BJP)–led government launched several schemes to pursue their urban agenda, such as the Smart Cities Mission, the Atal Mission for Rejuvenation and Urban Transformation (AMRUT), and the Heritage City Development and Augmentation Yojana (HRIDAY), among others. The manifesto described the aim of 'building 100 new cities'. However, it was perhaps quickly realised that it was not possible to build new cities within a short period of five years. Thus, the proposal was changed to developing the 100 existing cities into smart cities.

This chapter studies the Smart Cities Mission and compares it with the planning system currently in vogue in India. It cannot be denied that it is too early to discuss the progress of the scheme, as some of the cities were not selected under the mission until round four in January 2018. Urban development programmes require much longer gestation periods to be implemented and achieve results. However, owing to the mission's importance in terms of its spatial coverage and the vast extent of funding, the Smart Cities Mission deserves a thorough appraisal.

The Smart Cities Mission acknowledges that cities are engines of economic growth. Nearly 31 per cent of India's population lives in urban areas and contributes 63 per cent to the nation's gross domestic product (GDP). With an increasing urbanisation level, it is expected that India's cities and towns will house 40 per cent of India's population and contribute 75 per cent to the GDP by 2030. This situation calls for comprehensive development of the physical, institutional, social, and economic infrastructure of India's cities, as all these aspects are important for improving the quality of life and attracting people and investment to the Indian city. Thinking in this vein, the development of smart cities is a step in the right direction. The Mission targets to cover 100 cities in five years from 2015–2016 to 2019–2020, and it may be continued thereafter in the light

DOI: 10.4324/9781003296218-5

of an evaluation to be conducted by the Ministry of Housing and Urban Affairs (MoHUA), which will incorporate its findings into the mission.

Current Planning Approach in India

The statutory process of preparing development plans or master plans in India is based on the erstwhile Town and Country Planning Act of the UK. However, under the prevalent planning system, master plans are prepared under the various acts of the state governments. As land is under the states' purview as per the Constitution of India, systems pertaining to the development of land and built spaces are considered to be within the ambit of state government. The Master Plan for Delhi (MPD), 1981 prepared by the Town and Country Planning Organisation (TCPO), Government of India, was the first statutory comprehensive development plan, which came to be regarded as the model for preparing master plans in India. The concepts, measures, methodology, and techniques adopted in the MPD between 1961 and 1981 were popularly known as the 'Delhi Imperatives' and have been widely used while preparing master plans for the country's various towns and cities.

In fact, the momentum to prepare master plans for all of urban India was generated during the Third Five Year Plan (1961–1966) when the central government began providing 100 per cent financial assistance to the state governments to set up town planning departments with a focus on fast-growing cities and towns. The legislative framework was based on the Model Law formulated by the TCPO and the Institute of Town Planners, India (ITPI). Since then, the process of master plans picked up and concerted efforts were made for providing appropriate legislative support for the preparation, enforcement, and implementation of master plans. However, the terms *master plan* and *development plan* have been used interchangeably and connote the same meaning. The scope of a master plan or development plan has been clearly defined in various town planning acts and other relevant statutes.

The Third Five Year Plan defines the scope of a development plan or the master plan. It refers to the master plan as a statutory instrument for controlling, directing, and promoting the sound and rational development or redevelopment of an urban area with a view to achieving maximum economic, social, and aesthetic benefits. Development plans in India are prepared on a long-term basis, keeping in view the future population growth, economic development potentials, and ethnological improvements likely to occur during the plan period. The preparation of a development plan normally follows certain statutory processes and procedures, which could subsequently be followed for approval, enforcement, and implementation. Interim development plans are sometimes also prepared as an immediate measure to bring about development control in the planning area for guiding, directing, and promoting all future physical developments. However, when finally prepared and approved, a development plan replaces the interim development plan and incorporates the proposals enunciated in the interim development plan.

As stated earlier, the scope of a development plan is generally indicated in relevant acts of state governments, and it is confined to broad proposals for allocating land for various purposes such as residential, industrial, commercial, recreational, public, and semi-public, among others. A development plan proposes a network of roads and street patterns and traffic circulation systems to meet present and future requirements. It also identifies areas required to be preserved and conserved, including the development of areas of natural scenery and landscape and the preservation of features, structures or places of historical, architectural, and scientific interest and educational value. In addition, a development plan provides for all matters necessary for the development of a town or city. Thus, a development plan proposal focuses on the development of a town or city in its totality. A development plan includes zoning regulations to manage the development within each zone in conformity with a master plan. Master plan proposals are followed by and detailed in zonal plans, development schemes, improvement schemes, and town planning schemes, among others, which indicate the details and specific locations of various activities, facilities, and services as suggested in a master plan. At present, a majority of India's large towns and cities have not only prepared first-generation master plans but also second- or third-generation master plans. It is in this context that the Smart Cities Mission is situated should be evaluated. However, before we examine the Smart Cities Mission as it is being implemented in India, we should also locate it in the global context by examining various definitions for the term *smart city*.

Smart City Concept

The concept of 'smart growth' gained popularity during the 1990s as a means to support urban growth by developing compact and walkable communities. Subsequently, this term was superseded by 'intelligent cities' emphasising information technology (IT) for better functioning, which resulted in the concept of 'smart city'. Definitions of this concept propagated by various scholars have been discussed in brief. A city that is well performing in a forward-looking manner in terms of its economy, people, governance, mobility, environment, and living and built on a combination of the endowments and activities of self-determining, independent, and aware citizens is a smart city.[1]

Caragliu et al. assert that a city is smart when investments in human and social capital and traditional activities such as transport and modern IT and IT-enabled services (ITeS) communication infrastructure fuel sustainable economic growth and a high quality of life along with wise management of natural resources through participatory governance.[2] Washburn et al. explain that smart cities use smart computing technologies to make critical infrastructure components and services such as city administration, education, health care, public safety, real estate, transportation, and utilities more intelligent, interconnected and efficient.[3] Harrison et al. define a smart city as one that connects the physical, IT infrastructure, social, and business infrastructures to leverage its collective intelligence.[4] IT and ITeS play a crucial role in making a city smart, as does the integration of various

forms of infrastructure. Similarly, Barrionuevo et al. contend that being a smart city means using all available technologies and resources in an intelligent and coordinated manner to develop urban centres that are at once integrated, habitable and sustainable.[5] Lombardi et al. mention that the application of information and communication technology (ICT) with the development of human capital or education, social and relational capital and environmental issues are often indicated by the notion of a smart city.[6]

Another important definition was propagated in 2013 by IBM, which specified that smarter cities use technology to transform their core systems and optimise finite resources. A smart city is a knowledge-based system that provides real-time insights into stakeholders as well as enables decision-makers to proactively manage its subsystems. Effective information management is at the heart of generating capabilities, and integration and analytics are the key enablers.

Therefore, the smart city concept was evolved by IT companies such as CISCO and IBM, which determined that the answer to most urban problems lay in IT. However, later research has shown that the evolution of the smart city concept has been shaped by a complex mix of technologies, social and economic factors, governance arrangements, and policy and business drivers. There is considerable overlap between the smart city and related concepts such as intelligent city, knowledge city, sustainable city, talented city, wired city, digital city, and eco-city, among others.

Thus, the term *smart city* is broad, vague, and relative and depends on the interpretations of different governments, companies and individuals. Explications of this concept vary across cities, towns, regions, and countries; that is to say, there is no convergence of the definition of *smart city*. However, the concept of smart cities generally focuses on information and communication technologies to deliver the service to the citizens.

The Smart Cities Mission in India

The Smart Cities Mission in India accepts that there is no universally accepted definition of *smart city*, which means different things to different people and varies from city to city in India. A smart city has a different connotation in India than in the U.S. and Europe. Even in India, there is no one way of defining *smart city*. In the Urban and Regional Development Plans Formulation and Implementation Guidelines, 2014, the MoHUA states that a smart city is the one that uses ICT to enhance its liveability, workability, and sustainability. A smart city is built by three key elements: information collection, information communication, and information analysis. Two basic steps towards making a smart city can be taken. First, there are data created by already-implemented information technology. Some Indian cities have created a cornucopia of data in the past few decades, which can form the basis for the development of a smart city. Second, there are digital DNA containing built-environment data, which refers to data collected by building new engineering, land, planning, tax, and postal services departments. In view of rapid urbanisation and greater population agglomerations in

large cities, it is imperative to make use of advances in technology to make cities safer and protect them from cybercrimes as well as augment the quality of governance with higher levels of transparency and accountability. Such cities, which take advantage of advanced technologies, are called smart cities.

It can be observed that a smart city uses information, and communication technology, which suggests that the Indian smart city is ICT-driven; however, the Mission Guidelines of the Government of India also take into consideration several other aspects. To guide Mission cities, the government has established definitional boundaries that emphasise a wish list of infrastructure and services that describe the level of citizens' aspirations and needs. It is recognised that urban planners ideally aim at developing the entire eco-system, which is represented by four pillars of comprehensive development, namely institutional, physical, social, and economic infrastructure. This can be a long-term goal, and cities can work towards developing comprehensive infrastructure and incrementally adding layers of smartness. Thus, as practised today, urban planning is not discarded but rather accepted and encouraged to coexist alongside the mission programme. Although the guidelines highlight that the long-term objective of development that urban planners strive toward, their involvement in the mission is not encouraged. At present, very few trained planners work within the Smart Cities Mission.

Institutional infrastructure refers to activities related to the planning and management of the governance system, and physical infrastructure refers to urban mobility, housing stock, sanitation facilities, and the energy, water supply, sewage, solid waste management, and drainage systems, all of which are intended to be integrated using technology. Social infrastructure helps improve human capital index; thus, great emphasis should be given to education, health care, and entertainment. Quality education in primary and secondary schools and institutions of higher learning, quality health care facilities, and good entertainment facilities such as sports stadiums, cultural centres, and open spaces are essential ingredients.

This approach adopted in the Smart Cities Mission aims to promote cities that provide core infrastructure and give a decent quality of life to its citizens founded on a clean and sustainable environment with the application of smart solutions. The focus is placed on sustainable and inclusive development, and the idea is to look at compact areas and create a replicable model that will serve as a lighthouse to other aspiring cities. The government claims that the Smart Cities Mission is a bold initiative that will set examples that can be replicated both within and outside the smart city, catalysing the creation of similar smart cities in various regions of the country. Thus, emphasis is placed on the model's replicability.

Smart Solutions

An illustrative list of smart solutions includes e-governance and citizen services as well as waste, water and energy management and urban mobility, among others. The list is not exhaustive, and cities are free to add more applications. The strategic components of area-based development in the Smart Cities Mission are city improvement (retrofitting), city renewal (redevelopment), and city extension

(greenfield development), plus a pan-city initiative entailing the application of smart solutions covering large parts of a city. In the following, we discuss these area-based and pan-city strategic elements.

Retrofitting

Retrofitting will introduce planning in an existing built-up area to achieve smart city objectives along with other goals to make the existing area efficient and liveable. In retrofitting, an area consisting of more than 500 acres will be identified by the local government in consultation with citizens. Depending on the existing level of infrastructure services in the identified areas and the vision of the residents, the city will prepare a strategy to become smart. Since existing structures largely remain intact in this model, it is expected that more intensive infrastructure service levels and a large number of smart applications will be packed into the retrofitted smart city. This strategy may also be completed in a shorter time frame, leading to its replication in other parts of a city.

Redevelopment

Redevelopment entails the replacement of the existing built environment and the co-creation of a new layout with enhanced infrastructure using mixed land use and increased density. Redevelopment envisages an area of more than 50 acres, which is identified by urban local bodies (ULBs) in consultation with citizens. For instance, a new layout plan for an identified area will be prepared with mixed land use, higher floor space index (FSI), and high ground coverage. Two examples of the redevelopment model are the Saifee Burhani Upliftment Project in Mumbai, also called the Bhendi Bazaar Project, and the redevelopment of East Kidwai Nagar in New Delhi undertaken by the National Building Construction Corporation.

Greenfield Development

Greenfield development will introduce most smart solutions in a vacant area exceeding 250 acres by using innovative planning, plan financing, and plan implementation tools, such as land pooling or land reconstitution with the provision of affordable housing, especially for the poor. Greenfield developments are required in order to address the needs of the expanding population. One well-known example is the Gujarat International Finance Tec City in Ahmedabad. Unlike retrofitting and redevelopment, greenfield developments can be located within the limits of either ULBs or an urban development authority.

Pan-City Development

Pan-city development envisages the application of selected smart solutions to the existing city-wide infrastructure. The application of smart solutions will

entail the use of technology, information, and data to improve infrastructure and services. For example, applying smart solutions in the transport sector (intelligent traffic management systems) and reducing citizens' average commuting time or cost will have positive effects on productivity and quality of life. Another example is wastewater recycling and smart metering, which makes a substantial contribution to better water management in a city.

The smart city proposal (SCP) of each shortlisted city is expected to encapsulate either a retrofitting or redevelopment or greenfield development model or a combination of these elements and a pan-city feature with smart solution(s). In fact, the pan-city is an additional feature to be provided. Since the smart city is taking a compact-area approach, it is necessary that all residents feel that there is something in it for them. Therefore, it appears that the additional requirement of some city-wide smart solutions has been incorporated into the scheme to make it inclusive.

An Appraisal of the Smart Cities Mission's Strategic Elements

The purpose of the Smart Cities Mission is to drive economic growth and improve quality of life by enabling local area development and harnessing technology, particularly technology that leads to smart outcomes. Area-based development is expected to transform existing areas (retrofitting and redevelopment), including slums, into better planned ones, thereby improving the liveability of the whole city. New areas (greenfields) are intended to be developed around cities in order to accommodate the expanding population. The government expects the application of smart solutions to enable cities to use information technology and data to improve infrastructure and services. Such development is expected to improve quality of life, create employment, and enhance incomes for all, especially the poor and the disadvantaged, thereby leading to inclusive cities. However, the area coverages adopted are 500 acres under retrofitting, 50 acres under redevelopment, and 250 acres under greenfield development. Developing a total area of only 800 acres cannot improve the overall quality of cities and enhance the incomes of poor and disadvantaged because quality of life depends on various aspects, including the provision of physical and social infrastructure, which play a major role in improving quality of life, and it is a known fact that the majority of our towns and cities experience shortages of both physical and social infrastructure and also are not safe. Moreover, the projects selected under the mission are standalone projects, which cannot be expected to generate the desired impacts on the whole town and cannot improve citizens' overall quality of life.

The Mission expects the selected cities to identify projects based only on strategic components such as retrofitting, redevelopment, greenfield development and pan-city development. This means that a common strategy has been adopted, which may not be suitable for different people in different towns at different locations. This approach may ultimately lead to 'one size fits all' approach. The emphasis of the retrofitting component is placed on the model's replicability

in another part of the city. However, replication has limitations and mainly depends on the location.

The approach adopted in the mission also strongly focuses on the adoption of smart solutions to provide core infrastructure, such as water supply, sanitation, power, and solid waste management, among others, which can only be ensured when these services are available in adequate quantity. For example, if an adequate quantity of water is not available, it cannot be supplied to meet people's requirements, whatever smart solutions we devise. It is also well known that most of the major cities and towns in India have infrastructural deficiencies in terms of quantity and quality. Furthermore, people need to be well sensitised toward consumption without wasting the resources that impact the quality of life. The mission pays little attention to these aspects of city building.

The mission has implemented area-based development (ABD); accordingly, a majority of projects are being carried out in selected areas of selected cities, and a majority of the chosen projects fall under the category of redevelopment or greenfield development. However, the secretary of urban development stated that the idea of ABD projects is to initially begin in a small part of the city, where it can be successfully implemented, and then replicate in other places. Anupam Saraph, visiting professor of systems science at Pune University and a resident of Aundh, Pune, highlighted the following:

> the smart city mission is not meant for city improvement but caters to the interests of real estate and technology players. A majority of smart city projects are targeted at people who can pay additional sums to private players and the local government. This is one of the reasons for choosing the Aundh – Banas – Balewadi belt, which has residential complexes for people of higher disposable income.

A study conducted by Begwani[7] in the School of Planning and Architecture, New Delhi observed that the mission's focus is basically on ABD; thus, the majority of projects included in the proposals of all 99 shortlisted cities entail retrofitting, redevelopment, or greenfield development or even a combination of all the three. In 93 of the 99 studied cities, the area-based model has been adopted whereby retrofitting composes 55 per cent of the projects, retrofitting plus redevelopment plans a total of 36 per cent, and greenfield development, retrofitting plus greenfield, and redevelopment constitute 5, 3, and 1 per cent, respectively. Reasons cited for focus on retrofitting include feasibility, ease of adaptability, scalability, and implementation; moreover, impacts can be demonstrated in a shorter time, and the cost of retrofitting is relatively low compared with greenfield or redevelopment. In some of the proposals, it was observed that redevelopment is more time-consuming and cannot be completed in the mission's prescribed five-year time limit. In the case of greenfield development, land availability is the main hurdle. Moreover, it is also not possible to complete infrastructure development in five years.[8]

Since the launch of Mission in June 2015, 2,864 projects with investments amounting to Rs. 135,000 crore are in various stages of implementation. Among these, only 148 projects amounting to Rs. 1,872 crore have been completed. Of the 99 cities studied, the extent of the area selected under ABD ranges from 270 acres to 4,200 acres; thus far, only 46 cities have projects targeting 1 per cent to 5 per cent, and the total target area accounts to 482.5 km2. If the area of the selected 99 cities – 220,000 km2 – is taken into account, then the ABD component accounts for only 0.2 per cent, which is quite negligible.[9]

The study also highlighted that area-based proposals are not being conducted as per smart city guidelines, and there is also a lack of an integrated approach to project planning and implementation because projects are planned in isolation rather than in a spatially integrated manner. Thus, the objective of the Smart Cities Mission to 'develop and transform the ABD area in an integrated and comprehensive manner so as to attain distinct identity of ABD area' is not being achieved.[10]

Preparation of Smart City Proposals

The guidelines claim that the government is not prescribing any particular model to be adopted in the designated 100 smart cities. The approach is not one size fits all, as each city has to formulate the concept, vision, mission, and plan (proposal) appropriate to its local context, resources and ambitions. Accordingly, cities have to choose their own models of a smart city and answer the question, What kind of smart city do we want? To accomplish this, cities prepare their SCPs explicating their vision, plan for resource mobilisation and intended outcomes in terms of infrastructure upgradation and smart applications. A particular model is not being prescribed, and it is expected that the SCPs will include a large number of infrastructure services and smart solutions, as highlighted in the guidelines.

The guidelines also provide that certain elements must be included in an SCP to ensure electricity supply, with at least 10 per cent of the smart city's energy requirements to come from solar energy, adequate water supply (including wastewater recycling and stormwater reuse), sanitation (including solid waste management), rainwater harvesting, smart metering, robust IT connectivity and digitalisation, pedestrian-friendly pathways, encouragement of non-motorised transport (e.g. walking and cycling), intelligent traffic management, non-vehicle streets and zones, smart parking, energy-efficient street lighting, innovative use of open spaces, visible improvement in the area (e.g. replacing overhead electric wiring with underground wiring), encroachment-free public areas, and ensuring the safety of citizens, especially children, women, and older adults. Cities will have to add more 'smart' applications to this list in order to improve their SCPs. In the case of redevelopment and greenfield models, in addition to these essential features, at least 80 per cent of buildings should be energy-efficient and green buildings. Additionally, at least 15 per cent of the total housing provided in greenfield development should be in the affordable housing category. It is emphasised that because cities are competing with each other for selection under

the Smart Cities Mission, the SCPs have to be prepared with great care so as to make a proposed smart city sufficiently 'smart'.

Although it is mentioned that a particular model is not being prescribed under smart solutions, because only four categories of strategic elements are required to be selected for funding under the mission, this will ultimately result in prescribing a 'one-size-fits-all' solution. Although it is evident that each city has its own identity and soul, functions and roles, different strategies are not encouraged by guidelines. Replicability depends on various prevailing circumstances, aspects and conditions. For example, the transferable development rights concept, which is being practised in Maharashtra, was successful in Mumbai but much less so in Nagpur and Aurangabad, where land values are low relative to Mumbai. Similarly, the land-pooling concept has been more successful in Gujarat, specifically in Ahmedabad, than in the cities and towns of Maharashtra, although this concept originated in Maharashtra.

It is well known that in a majority of the towns, an around-the-clock water supply cannot be assured, nor is power generation sufficient to meet the requirements of our towns and cities. Moreover, the gap between demand and supply in the housing sector – specifically for the urban poor – is ever-widening. The participation of the urban poor in urban planning and development is quite insignificant. It is better to talk less about the safety and security of women and children, as we are reading and hearing in the news and electronic media every day in Delhi and other cities. Similarly neglected are the requirements of older adults and disabled people, who constitute quite a large number of people in the country, although there is a law titled the Rights of Persons with Disabilities Act, 2016 to cater to the requirements of this section of the population. No separate car parking spaces are provided for disabled persons; although the act states that this is mandatory, these are always encroached upon by able-bodied persons. In the capital city of Delhi, footpaths are regularly encroached on, making walking difficult even for the able-bodied.

For efficient delivery of services to meet citizens' requirements, there is a need to have in place adequate infrastructure such as water supply, sanitation, power, solid waste collection and disposal, and so on in place because a deficiency in any one element would have an adverse impact on all the other components. The mission talks about smart mobility; however, in almost all of India's major cities, one can witness traffic jams, encroachments on the roads by hawkers and vehicular parking, traffic violations due to the non-synchronisation of signals, inadequate earmarked parking spaces, and other related issues. Many people park their vehicles on roads even when earmarked parking places are available. Most cities are struggling to overcome pollution problems largely created owing to an increasing number of vehicles, which becomes worse during peak hours. In a majority of large cities, the quality of life is deteriorating day by day because of the ever-increasing population, which always overtakes physical development. Approximately 20 to 30 per cent of people in mega- and metropolitan cities of India live in slums in dilapidated and hazardous conditions not fit for human

habitation (Census of India, 2011). To make the people 'smart', there is a need to sensitise them to all aspects of smartness.

Another reason that the story of smart governance is not encouraging is that the present governance structure promotes minimal civic engagement; the procedure for citizens' participation is quite cumbersome, and the public finds it difficult to get quick and satisfactory results. The situation is exacerbated by the presence of multiple agencies with overlapping functions and jurisdictions, and the process needs to be streamlined for better governance involving the public. As Kumar[11] argues, the Smart Cities Mission promotes non-participatory governing structures.

Thus, focusing only on ICT, no other single aspect of smart cities is going to make any dent in improving the overall quality of life of our urban areas. ICT solutions may bring some improvement in the management of cities but cannot play a major role in the provision of services to achieve the agenda of smart city development. For the planned and orderly development of towns and cities, a comprehensive approach entailing the integration of all components is required so that all the systems work in harmony in a holistic rather than sectoral approach. As cities need to fulfil the basic needs and requirements of all sectors of society, it is imperative that inclusive policies are adopted and implemented. The mission components should not be selected in an isolated manner but should rather be integrated and viewed as a totality. Infrastructure projects, such as water supply and waste management, are not cost-effective, and it is rarely possible to recover the implementation costs, not to mention maintenance costs. It is difficult for the ULBs to provide these facilities when a majority of them are starved of financial resources.

Cities preparing the SCPs are expected to use strategic planning principles, and proposals should contain ABD projects and pan-city initiatives. The SCP is a collaborative effort because the objectives and funds of all government departments, parastatal agencies, private-sector agencies, and citizens are dovetailed during the preparation and implementation process. Realising that the task of preparing the SCPs is quite challenging for the states and ULBs, the mission proposes to obtain expert assistance by hiring consulting firms and engaging with handholding agencies. However, it should be pointed out that a majority of the mission's selected cities have local bodies and development authorities, as well as their own engineering and planning departments. All states have separate departments of public works and town planning. Thus, rather than paying large consulting fees for technical assistance and advice from private consulting firms, the mission would do well to rely on the expertise of urban planners with significant experience in state, town, and country planning organisations.

Urban planners are trained in institutions of excellence created by the Act of Parliament in India such as the School of Planning and Architecture. Although the guidelines express cognisance of these institutions of higher learning and state that 'urban planners aim at developing institutional, physical and social infrastructure', the guidelines make no effort to involve qualified planners in the Smart

Cities Mission. Urban planners are neglected and uninvolved in the making of smart cities; rather, private consultants are actively encouraged. These consultants tend to employ junior planners, who are largely without adequate experience, thereby resulting in poor SCPs and very low-quality projects. This also amounts to downgrading and neglecting the country's qualified urban planners.

To be sustainable in a broader sense, a smart city should offer economic activities and employment opportunities to its residents regardless of their education and skills, as people generally migrate to cities in search of job opportunities. Apart from employment, it is also important for smart cities to provide every resident with a good quality of life, including affordable housing and cost-effective physical and social infrastructure. However, there is no denying that the nature of work, business, and employment are changing rapidly because work has become technology-driven. The availability of the required skills in the labour market is important if the aim is to create employment opportunities; however, the current labour force is not adequately trained and requires proper training to acquire the desired level of skills.

Smart city governance must show the way through innovation and participation. Inclusivity in all its forms is at the core of the governance of smart cities. Although an emphasis on technology is important to improve governance, citizen participation is even more critical. In the following, we consider the governance aspects of the Smart Cities Mission.

Governance of Smart Cities

Role of Consulting Firms and Handholding Agencies

The Ministry of Urban Development prepared a technically qualified panel of consulting firms among which the states and union territories were at liberty to choose for consultation. As they deem necessary, the states and union territories may request financial proposals from these firms using the request for proposal (RFP) template provided in the mission's toolkit and select firms based on applicable procurement rules and guidelines. The states and union territories have the option of appointing a consulting firm outside of the panel by following transparent and fair procedures as per their financial rules. However, no state or union territory has ever selected a consulting firm outside of the list provided by the Ministry of Urban Development.

Under the Smart Cities Mission, a number of foreign governments have offered to provide technical assistance and support, and other external entities, including bilateral and multilateral agencies as well as domestic organisations, have offered similar assistance to the Ministry of Urban Development. Notable international agencies that have made such offers include the Asian Development Bank, World Bank, the Japan International Cooperation Agency, the U.S. Trade and Development Agency, the Agence Française de Développement, Kreditanstalt Fuer Wiederaufbau, the Department for International Development, UN-Habitat,

and the United Nations Industrial Development Organisation. Organisations with experience in the field of smart city development can also extend support to the states and union territories as handholding agencies for preparing the SCPs. The ministry assists in solidifying such arrangements.

The task of preparation of SCPs under the mission has been assigned to the majority of international consultants, some of which have experience in the planning and development of new towns across the globe but may not have exposure to such projects in developing countries like India, which is different from Western countries. Therefore, the detailed planning and design of proposed smart cities in the Indian context is a serious challenge. A smart city is a complex techno-social system located within a larger system. Experts who have obtained their training and experience in foreign countries are ill prepared for developing 100 smart cities in the Indian context, particularly because the definition and scope of the idea of a smart city itself are vague and differs from city to city and country to country, and the parameters for assessing the success of a smart city in the Indian context are not fully identified.

In this sort of situation, it would be comparatively less risky and expensive to involve the existing state-level town and country planning organisations in planning and developing the smart cities in India. In reality, it appears that the origin of the Smart Cities Mission is based on the exclusion of existing institutional structures, which are presumed to be slow and ineffective in delivering development outcomes.

Selection of Smart Cities

Based on the recommendations of the state governments, the central government selected a total of 100 smart cities are distributed among the various states and union territories. The selection criterion involves a formula that gives equal weightage (50:50) to the urban populations and number of statutory towns in states and union territories. Based on this formula, each state and union territory will have a certain number of potential smart cities, with each receiving at least one. Each city had to compete for selection under the 'City Challenge' programme, which comprised two stages. Under Stage I, a letter was sent to all state governments to shortlist potential smart cities. Based on Stage I criteria, the Ministry of Urban Development distributed a number of smart cities across states and union territories. In this manner, the list of potential 100 smart cities was announced.

Under Stage II, each potential smart city prepared its proposal with the assistance of a consultant hired from the aforementioned panel prepared by the Ministry of Urban Development and a handholding external agency. The SCP was then submitted to the Ministry by a stipulated date for evaluation by a panel of experts. Selected cities were required to set up a special-purpose vehicle (SPV) for the preparation of detailed project reports (DPRs), tenders, and so on and begin implementation of the SCP. Those cities that were not yet selected needed to upgrade their proposals for the next round of the City Challenge.

In the first round held in January 2016, the top 20 cities from 12 states were selected for funding among 98 competing cities. This was followed by a fast-track round conducted in May 2016. To provide an opportunity to all the states and union territories, a special round covered 23 states and union territories that upgraded their proposals, and 13 cities were selected in the fast track round.

In the second round, with a cap of 40 new cities envisaged for 2016–2017, 27 cities were selected out of 63 competing cities from 36 states and union territories. During the third round conducted in June 2017, 30 cities were selected among 45 competitors with a proposed total investment of Rs. 57,393 crore. Ten additional cities were selected in the fourth and final round conducted in January 2018. The list of cities and towns selected in the four rounds, including the fast-track round, is provided in Table 4.1.

Table 4.1 shows an imbalanced distribution pattern of the 100 selected smart cities. However, it should be noted that the distribution was conducted on the basis of uniform criteria devised by the government. For example, Andhra Pradesh and Bihar each obtained three cities; however, each state covered four cities. Chhattisgarh was allocated two cities, but three are covered, and Karnataka was allocated six cities but has covered seven. The economically fast-growing states, like Maharashtra, was allocated 10 cities; however, coverage has been reduced to only eight. Similarly, Tamil Nadu was allocated 12 cities, but this number was reduced to 11, and the 13 cities allocated to Uttar Pradesh were reduced to 10 cities. West Bengal's state government was allocated four cities, and the state government identified Bidhan Nagar, New Town Kolkata, Durgapur, and Haldia. However, for political reasons, the state government pulled all four cities from the mission and decided to develop 10 green cities, which will be developed as eco-friendly and smart cities. Thus, it appears that politics also played a significant role in the selection of certain towns and the number of towns in different states.

Although the mission adopted the city challenge mode for the selection process, equity among various categories of towns and cities remained difficult to achieve. In fact, equality has to be maintained among equals. The states lagging behind needed more cities to be included under the mission; however, economically richer states grabbed a larger number of towns. It is also interesting to note that of the 69 towns covered under the Jawaharlal Nehru National Urban Renewal Mission (JNNURM), 48 have also been covered under the Smart Cities Mission, thus accounting for 48 per cent of the number of selected towns in the latter mission. Similarly, 34 out of 53 metropolitan towns have been also covered under the Smart Cities Mission.

Thus, despite attempts to bring transparency to the selection of cities and towns under the mission, the states selected their preferred cities. Encouraging large towns to further develop by giving them more funds in the hope that they will create more job opportunities and increase per capita income has created an uneven and imbalanced urbanisation pattern in the country.

TABLE 4.1 Selected Cities Under the Smart Cities Mission, 2018

S. Number	*State and Union Territory*	*Urban Population*	*Level of Urbanisation*	*Total Number of Cities*	*Cities and Towns*	*Population of Town (2011)*	*Number of Selected Cities*	*Cities Covered*
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
1.	Andaman and Nicobar Islands (UT)	1.4	36	1	Port Blair (FTR)	140,572	1	1
2.	Andhra Pradesh	146.1	30	31	Visakhapatnam (1)	1,878,980	3	4
					Kakinada (1)	350,968		
					Tirupati (2)	374,260		
					Amaravati (3)	13,400		
3.	Arunachal Pradesh	3.1	23	–	Itanagar (4)	59,490	1	2
					Pasighat (3)	26,656		
4.	Assam	43.9	14	7	Guwahati (1)	962,334	1	1
5.	Bihar	117.3	11	27	Bhagalpur (FTR)	410,210	3	4
					Patna (3)	1,684,222		
					Muzaffarpur (3)	393,724		
					Bihar Sharif (4)	296,889		
6.	Chandigarh (UT)	10.3	97	1	Chandigarh (FTR)	1,055,450	1	1
7.	Chhattisgarh	59.4	23	9	Raipur (FTR)	1,047,389	2	3
					Naya Raipur (3)	560,000		
					Bilaspur (3)	365,579		
8.	Daman and Diu (UT)	1.8	75	–	Diu (4)	23,991	1	1
9.	D and N Haveli (UT)	1.6	47	3	Silvassa (4)	98,032	1	1
10.	Delhi NCT (UT)	163.3	97	1	NDMC (1)	249,998	1	1
11.	Goa	9.1	62	3	Panaji (FTR)	1,00,000	1	1
12.	Gujarat	257.1	43	3	Surat (1)	4,467,797	6	6
					Ahmedabad (1)	5,577,940		
					Vadodara (2)	292,797		
					Rajkot (3)	1,323,363		
					Gandhinagar (3)	292,797		
					Dahod (3)	130,530		

(*Continued*)

TABLE 4.1 (Continued)

S. Number	*State and Union Territory*	*Urban Population*	*Level of Urbanisation*	*Total Number of Cities*	*Cities and Towns*	*Population of Town (2011)*	*Number of Selected Cities*	*Cities Covered*
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
13.	Haryana	88.2	35	19	1. Faridabad (FTR)	1,414,050	2	2
					2. Karnal (3)	302,140		
14.	Himachal Pradesh	6.9	10	1	1. Dharamshala (FTR)	22,580	1	2
					2. Shimla (3)	169,578		
15.	Jammu and Kashmir	34.1	27	3	1. Srinagar (3)	1,180,570	1	2
					2. Jammu (3)	502,197		
16.	Jharkhand	79.3	24	11	Ranchi (FTR)	1,073,427	1	1
17.	Karnataka	235.8	39	26	Belagavi (1)	488,292	6	7
					Davanagere (1)	435,128		
					Mangaluru (2)	484,785		
					Tumakuru (2)	305,821		
					Shivamogga (2)	322,428		
					Hubballi-Dharwad (2)	943,857		
					Bengaluru (3)	8,443,675		
18.	Kerala	159.3	48	18	Kochi (1)	601,574	1	2
					Thiruvananthapuram (3)	743,691		
19.	Lakshadweep (UT)	0.5	78	–	Kavaratti (4)	11,210	1	1
20.	Madhya Pradesh	200.6	28	33	Jabalpur (1)	1,216,445	7	7
					Indore (1)	2,195,274		
					Bhopal (1)	922,130		
					Ujjain (2)	515,215		
					Gwalior (2)	1,159,032		
					Sagar (3)	273,296		
					Satna (3)	280,222		
21.	Maharashtra	508.3	45	37	Pune (1)	3,124,000	10	8
					Solapur (1)	952,000		
					Kalyan-Dombivali (2)	1,518,000		
					Nagpur (2)	2,460,000		

					Thane (2)	1,841,000		
					Nashik (2)	1,486,000		
					Aurangabad (2)	1,165,000		
					Pimpri Chinchwad (3)	1,727,692		
22.	Manipur	8.2	30	1	Imphal (FTR)	268,243	1	1
23.	Meghalaya	6.0	20	1	Shillong (4)	354,325	1	1
24.	Mizoram	5.6	52	1	Aizawl (3)	291,000	1	1
25.	Nagaland	5.7	29	1	Kohima (2)	107,000	1	1
26.	Odisha	70.0	17	9	Bhubaneswar (1)	840,834	2	2
					Rourkela (2)	272,721		
27.	Puducherry (UT)	8.5	68	1	Puducherry (3)	300,104	1	1
28.	Punjab	103.9	37	18	Ludhiana (1)	1,618,874	3	3
					Amritsar (2)	1,155,664		
					Jalandhar (2)	868,181		
29.	Rajasthan	170.8	25	30	Jaipur (1)	3,073,350	4	4
					Udaipur (1)	475,150		
					Kota (2)	1,001,365		
					Ajmer (2)	551,360		
30.	Sikkim	1.5	25	1	Namchi (2)	12,190	1	2
					Gangtok (3)	100,286		
31.	Tamil Nadu	349.5	48	32	Coimbatore (1)	1,601,438	12	11
					Chennai (1)	6,727,000		
					Vellore (2)	504,079		
					Madurai (2)	1,561,129		
					Thanjavur (2)	222,943		
					Salem (2)	831,038		
					Tiruppur (3)	877,778		
					Tirunelveli (3)	474,838		
					Thoothukudi (3)	370,896		
					Tiruchirappalli (3)	919,974		
					Erode (4)	498,129		

(*Continued*)

TABLE 4.1 (Continued)

S. Number	*State and Union Territory*	*Urban Population*	*Level of Urbanisation*	*Total Number of Cities*	*Cities and Towns*	*Population of Town (2011)*	*Number of Selected Cities*	*Cities Covered*
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
32.	Telangana	136.1	39	12	Warangal (FTR)	819,406	2	2
					Karimnagar (3)	260,899		
33.	Tripura	9.6	26	1	Agartala (FTR)	400,004	1	1
34.	Uttar Pradesh	444.7	22	64	Lucknow (FTR)	2,817,105	13	10
					Agra (2)	1,585,704		
					Kanpur (2)	2,765,348		
					Varanasi (2)	1,198,491		
					Jhansi (3)	505,693		
					Allahabad (3)	1,112,544		
					Aligarh (3)	874,408		
					Bareilly (4)	903,668		
					Moradabad (4)	887,871		
					Saharanpur (4)	705,478		
35.	Uttarakhand	30.9	31	7	Dehradun (3)	583,971	1	1
36.	West Bengal	291.3	32	–	New Town Kolkata (FTR)	36,541	4	Withdrawn

1. Compiled from the following website: http://smartcities.gov.in/content/innerpage/city-wise-projects-under-smart-cities-mission.php.
2. Parenthesis implies a round number in which a city was selected under the mission; FTR stands for fast-track round.

Special Purpose Vehicle

Under the Companies Act 2013, implementation of the mission at the city level has been assigned to a newly created organisational structure called the SPV. The SPV's role is to 'plan, appraise, approve, release funds for, implement, manage, operate, monitor, and evaluate the smart city development projects'. Each SPV is to be headed by a full-time CEO and 'have nominees of [the] central government, state government and ULB on its board' (MoHUA, 2018). The states and ULBs are charged with ensuring that (1) a dedicated and substantial revenue stream is made available to the SPV to make it sustainable and enable it to evolve its own credit-worthiness for raising additional resources and (2) use of the central government's contribution for smart city development is limited to creating infrastructure that has public benefit outcomes. However, the projects may only be executed 'through joint ventures, subsidiaries, public–private partnership (PPP), turnkey contracts, etc. suitably dovetailed with revenue streams' (MoHUA, 2018). The SPV holds the status be a limited company incorporated under the Companies Act, 2013 at the city level, whereby the state or union territory and the ULBs will have 50:50 equity shareholdings.

Funds provided to the SPV are in the form of tied grants kept in a separate grant fund, and their utilisation is subject to conditions laid down by the Ministry of Urban Development. To ensure a minimum capital base for the SPV, the paid-up capital of the SPV should be such that a ULB's share is at least equal to Rs. 100 crore with an option to increase it to the full amount of the first instalment of funds provided by the central government. With a matching equity contribution by states and ULBs, the initial paid-up capital of the SPVs will thus be Rs. 200 crore. Since the central government will initially contribute Rs. 194 crore along with the matching contribution of the state government, the initial paid-up capital can go up to Rs. 384 crore (MoHUA, 2018).

It is mandatory for each smart city to create an SPV headed by a CEO. In other words, a separate body has been created for smart city implementation; however, state governments and local bodies must provide a matching financial contribution. The issue of multiplicity of agencies having overlapping jurisdictions is always raised from various platforms; however, the Mission preferred to make it mandatory to create another agency rather than assigning the responsibility of implementation to ULBs. It needs to be noted that under Section 243-W of the 74th Constitutional Amendment Act (CAA) 1992, powers, authority and responsibility have been assigned to municipalities with respect to the preparation of plans for economic development and social justice, as well as the performance of functions and implementation of schemes in relation to the matters listed in the Twelfth Schedule, including urban planning activities such as town planning, regulation of land use, and the construction of buildings, roads and bridges, water supply, public health, sanitation, slum improvement and upgradation, urban poverty alleviation, urban amenities and facilities, and environmental and ecological protection, among others. Thus, the ULBs have been deprived

of their legitimate functions under the mission, and the creation of a new agency puts an additional burden on the public exchequer and increases overhead costs in addition to costs of establishment, vehicles, and so on. Specifically, the plethora of new agencies in the form of SPVs for the 100 cities significantly deviates from the government's purported emphasis on the principle of 'minimum government and maximum governance'.

All SPVs are headed by bureaucrats rather than experts or professionals such as architects, engineers, or city planners. Smart city planning involves complex functions, such as plan making, preparation of DPRs, and the like, and these functions need to be assigned to the professionals working in the state town planning departments or ULBs. If the work is to be done through joint ventures, subsidiaries, PPPs, why is it not possible for it to be conducted by ULBs through their existing professional staff, who are equally competent and capable of taking on the responsibility of implementation, specifically when local bodies are expected to share the burden of Rs. 100 crore as an equity matching contribution?

The central government's proposal is to provide Rs. 48,000 crore over the five-year period (or an average Rs. 100 crore per city per year) as financial support for smart city implementation, and the state governments or ULBs are to match this contribution. Earlier schemes such as the Integrated Urban Development Programme (IUDP) and Integrated Development of Small and Medium Towns (IDSMT) involved a similar component of mandatory matching contributions by state governments and local bodies. However, in those cases, after availing of the central assistance, this matching contribution was not forthcoming. Subsequently, the state governments were allowed to direct their matching contributions towards land costs, which in most cases were inflated. This precedent indicates that it may be difficult to obtain Rs. 48,000 crore from state governments and local bodies. New Town Kolkata has already withdrawn from the Smart Cities Mission. Moreover, the central assistance of Rs. 100 crore under the mission is not sufficient for cities like Mumbai, Delhi, Kolkata, Chennai, Bangalore, and Hyderabad considering the number and complexity of the problems faced by these megacities.

It is also important to highlight that economically fast-growing states like Maharashtra, Gujarat, Karnataka, and Tamil Nadu have always secured more funds than other states in the Smart Cities Mission as well as earlier schemes like the IUDP, the IDSMT, Mega Cities, Urban Mapping, Urban Basic Services, and Environmental Improvement of Urban Services (EIUS). The coverage of towns and cities was also higher in these states.

Monitoring of the Mission

Monitoring and evaluation of the Smart Cities Mission in 100 cities will be undertaken at the national, state, and local levels.

National Level

An apex committee (AC) is designated to approve smart city proposals, monitor their progress, and release funds. The AC is a committee of top bureaucrats with notional participation by professionals. This committee is headed by the secretary of the Ministry of Urban Development, and members comprise representatives of related ministries and organisations, namely the secretary of housing and poverty alleviation, the secretary of expenditure, the joint secretary of finance of the Ministry of Urban Development, the director of the National Institute of Urban Affairs, the chief planner of town and country planning, select principal secretaries of states, and select CEOs of SPVs.

State Level

At the state level, a high-power steering committee (HPSC) chaired by a chief secretary has the responsibility of steering the mission program. The HPSC includes representatives of state government departments as well as the mayor and municipal commissioner of the ULB in which the smart city is located. State governments also nominate a state mission director, whose rank must not be below that of secretary to the state government and who functions as the state's member secretary of the HPSC, and other members include a principal finance secretary, a principal planning secretary, a principal secretary or director of the state's or union territory's TCPD, a representative from the Ministry of Urban Development, select CEOs of SPVs in the state, select mayors and municipal commissioners or chief executives of ULBs, heads of the concerned states, line departments, and a secretary or engineer-in-chief or equivalent of the Public Health Engineering Department.

Thus, it can be seen that the AC is dominated by bureaucrats at the central level. Similarly, at the state level, the HPSC is headed by the chief secretary of the state government, and the state's mission director is the member secretary of the committee, that is the principal secretary of urban development, another bureaucrat. Most of the committee members are also the bureaucrats from the concerned departments. Not even the chief town planner of the state government has been included in the committee.

The Future of India's Smart Cities

As indicated in the first part of the chapter, urban planning in India is implemented according to master development plans, which are prepared for a period of 15 to 20 years. These plans are prepared on a scientific basis, adopting and fulfilling all conditions, criteria, and requirements of respective state-level acts after carrying out detailed studies and surveys. Following preparation, these plans are duly notified and approved by competent authorities to make them statutory

documents. The neglect and non-implementation of the proposals does not make master plans a weak instrument of development. The Smart Cities Mission relies on a projects- and schemes-based ad hoc approach for the development of cities and towns. We argue that this strategy needs to be reversed if we aim to secure the overall development of our towns and cities. We need projects to emerge out of integrated master plans rather than developing projects and schemes in an isolated manner. As such, if the overall development of our towns and cities is to be achieved, the proposals identified under various central and state government schemes should emanate from master development plans in an integrated manner. Standalone projects focusing only on a few aspects of development will not improve the overall quality of towns and cities.

As is evident, city planning in India focuses on the overall development of towns and cities and rightly moves away from jargon like *green*, *healthy*, *safe*, *inclusive*, *holistic*, *world class*, *intelligent*, and so on. A separate terminology is not needed because the overall development of cities and towns includes all these aspects. It is odd, for example, to ask whether people would prefer to live in the city that is not safe or healthy. Therefore, it is imperative to plan and develop Indian cities and towns in an integrated manner to achieve overall development encompassing livelihoods, services, transport, education, health, commerce, and socio-economic and physical infrastructure rather than focusing only on one single aspect.

Trying to fit urban planning and development into a 'straitjacket' achieves little. The development and planning of a city depend on its distinct function, role, and soul as shaped by its historic background, administrative statutes, structural and demographic complexities, cultural diversity, and socio-economic and socio-political currents, among other factors. Therefore, the planning and development of towns and cities need to be seen in totality in order to achieve overall development.

The registrar general and census commissioner of India projected the urban population for 2011 to be 358 million and estimated that the urban population growth rate would decline from 2.75 per cent per annum between 1991 and 2001 to 2.23 per cent per annum between 2001 and 2011. Urban experts also believed that India's urbanisation would slow down over time. However, according to the Census of India (2011), the urban population grew at a rate of 2.76 per cent per annum from 2001 to 2011 to reach a total of 377 million, and the level of urbanisation increased from 27.7 per cent in 2001 to 31.1 per cent in 2011 – representing an increase of 3.3 per cent compared with a 2.1 per cent increase between 1991 and 2001.[12] Thus, urbanisation increased faster than expected, and for the first time, the absolute increase in urban population was higher than the rural population. This situation calls not only for providing additional infrastructure and civic amenities in urban areas but also to upgrade and update the already overly strained existing infrastructure.

We may also note that of the 100 towns selected as smart cities under the mission, 33 are of the population category above 1 million, 23 are from the population category of 500,000–1 million; and 35 towns are from the category of

100,000–500,000 – that is 91 towns are from the census category of Class I towns. Although there are two towns from Class II (50,000–100,000), four towns from Class III (20,000–50,000), and three towns from Class IV (10,000–20,000), there is not even a single town from Class V or Class VI. This clearly indicates an uneven selection of towns under various categories owing to the absence of a clear-cut policy for the selection of towns under the mission.

In the absence of a national urban policy, urban development ultimately leads to imbalanced and haphazard urban growth. Some states are more urbanised, whereas other states and urban territories are lagging behind. Within the states, some towns are more urbanised, specifically metro- and mega-cities, whereas small and medium cities and towns are less developed. The mission offered an opportunity to correct this imbalance and assist the state governments, specifically when the central government would provide the huge amount of Rs. 48,000 crore and an equal amount was to come from the state governments and local bodies. With a total project investment of Rs. 96,000 crore under the Smart Cities Mission, it would be possible to achieve the goal of smart cities. One possible step to be taken is to prepare the national urban policy to spell out priorities of cities to be selected for development, redevelopment, and investment and funding under the missions and schemes of central and state governments.

Thinking in this direction, it would be interesting to refocus on the recommendations made by the National Commission on Urbanisation in 1988. The commission identified cities and towns that could generate economic momentum and accordingly named the cities and towns to be taken up for priority development – that is national priority cities, state priority cities, special priority urban regions, and small towns that would serve the rural hinterlands. Other attempts to draft a national urban policy were made by the Expert Group on National Urbanisation Policy (1975), followed by the TCPO, Government of India (1992) and the National Institute of Urban Affairs (1999). It is surprising that despite of all these efforts, the Government of India has not adopted any national policy to steer urbanisation in the country. Attempts to tackle urbanisation through interventions such as the JNNURM, the Smart Cities Mission, AMRUT, HRIDAY, and other programmes did not lead to balanced urban development but rather engendered polarised urbanisation, creating unplanned, haphazard, unauthorised constructions, unhygienic conditions, and slums and blight to accommodate the ever-increasing populations of cities and towns. These conditions will ultimately make cities unmanageable and unliveable. Therefore, the government needs to decide whether it wants to implement an overall planned development of our towns and cities or intends to create islands of prosperity in the midst of urban poverty. The government also needs to understand that growth beyond bearing capacity will build more pressure on the existing urban infrastructure in towns and cities. This scenario calls for adopting policies promoting balanced urban growth.

Thus far, there is no clear-cut Indian version of a smart city, which appears to be a buzzword induced by the ICT sector. The eminent architect, Christopher

Benninger, speaking at the third Cyrus Jhabvala Memorial Lecture on 21 September 2018 observed that a smart city is nearly 'a misnomer and a slogan', and governments should rather concentrate on building cities that give 'a decent living to the poor people'. To be a smart city, city authorities should be able to provide the entire resident population with basic amenities. The smart city is an inclusive and diverse city.

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5

WATER GOVERNANCE IN THE NATIONAL CAPITAL TERRITORY OF DELHI, INDIA

Ashok Kumar[1]

This chapter concentrates on drinking water, although the lack of access to decent sanitation services is equally important. To understand the issue of access to drinking water by the poor and marginalised groups in Delhi, it is necessary to provide a brief account of the organisations involved in the provision and policymaking for water in the city-state. Delhi is governed by multiple agencies attached to the central and state governments. For example, water production and distribution are controlled by the Delhi Jal Board (DJB), an agency set up under the state's DJB Act, 1998. Law and order are overseen by the central government, and land and city planning are under the jurisdiction of the Delhi Development Authority (DDA) set up under the Delhi Development Act, 1957. Both the DJB and the DDA have a direct impact on water infrastructure; the former produces and distributes potable water, and the latter develops water infrastructure in residential areas, including large townships. Two other organisations are important at the local level: the New Delhi Municipal Corporation under the Ministry of Home and Delhi Cantonment Board under the control of the Ministry of Defence and the DJB, which provides bulk water to both the New Delhi Municipal Council (NDMC) and DCB. According to the Census of India,[2] the population of Delhi is 16.79 million, and its geographical area is 1,483 km^2.

Water governance involves the public, private, and third sectors, as well as communities, and is critical to water supply and demand. Water governance also entails the impact of globalisation, and multilateral and bilateral agencies play their part in affecting water policies and practices. The protection of aquifers to sustain water sources such as rivers, lakes, and ponds and supplying sufficient quantities of high-quality water for various purposes are highly dependent on the ways that water is governed in cities and regions. Water governance is both a technical and political matter involving power plays among global players, the state, the private and third sectors, and local communities as well as local leadership such as resident

DOI: 10.4324/9781003296218-6

welfare associations (RWAs). Who gets access to water is not entirely based on the availability of safe drinking water but also on who governs water and how it is governed. Water governance largely works at the intersectionality of various elements such as settlement typology, which is generally spelt out in terms of formal and informal settlements, social and religious identities, gender and caste identities, income and class identities, and diverse histories, among other factors. In Delhi, water governance has produced inequitable geographies of water supply to variegated publics. This chapter explains how these inequities manifest in the form of various kinds of exclusions and considers future possibilities for creating an equitable water supply to Delhi's residents.

We begin by providing a critical analysis of water infrastructure services in Delhi by highlighting various forms of exclusions experienced by the urban poor in accessing potable water. The organisational focus of this chapter is the DJB, the main agency that provides drinking water, which is controlled by the state government and the DDA, the main city planning agency, which is controlled by the central government. This chapter examines the nature of water exclusions for the urban poor living in informal settlements, that is slums and unauthorised settlements.

Before we continue, it is necessary to briefly discuss the idea of exclusion. Amartya Sen argues the following:

> being excluded from social relations can lead to other deprivations as well, thereby further limiting our living opportunities. For example, being excluded from the opportunity to be employed or to receive credit may lead to economic impoverishment that may, in turn, lead to other deprivations (such as undernourishment or homelessness). Social exclusion can, thus, be constitutively a part of capability deprivation as well as instrumentally a cause of diverse capability failures.[3]

Other radical thinkers have treated exclusions as the bedrock of inhibiting human development. B. R. Ambedkar saw exclusions and inclusions as being entangled and enfolded into one another in complex and multiple ways and succinctly argued that there was 'no caste without outcasts' (see also Ambedkar 1936).[4] Mohandas K. Gandhi elaborated that '[c]aste is another name for the control. Caste puts a limit on enjoyment. Caste does not allow a person to transgress caste limits in pursuit of his enjoyment'. However, Gandhi favoured the caste concept: 'Those being my views, I am opposed to all those who are out to destroy the Caste system' (Gandhi, quoted by Roy, 2014: 41).

In this chapter, exclusions are defined as encompassing the non-availability of services, policy hindrances, legal provisions, historical legacies, and identity-based social prohibitions that obstruct access to basic services like water and sanitation. Exclusions are also viewed as a lack of enjoyment of certain human rights and cause for 'diverse capability failures' that emerge as multiple deprivations. Policy hindrances and legal provisions reduce the ability of the poor and

lower middle classes to access water and sanitation services. For example, policies focused on the privatisation of water and sanitation services provide these services at market-fixed prices, which are beyond the financial affordability of most poor and vulnerable residents. However, even when water is provided by the government, in India, state governments are increasingly succumbing to pressure from international and national financial institutions to continually raise water prices. Increasing prices of water in both the public and private sectors is a major obstruction to water security and fulfilling the water needs of the urban poor. In such situations, even when safe drinking water and modern sanitation services are available, their marketisation places the poor at a huge disadvantage, as they are prevented from accessing them. Legal provisions refuse to provide water to the residents living in unauthorised and informal settlements. Supported by the United Nations Children's Fund, the United Nations Population Fund, and UN Women, the India Exclusion Report 2015 highlights legal, design, technical, and political barriers to accessing water and sanitation services.[5] Municipalities in India are not tasked with the responsibility of providing water even under the 74th Amendment to the Indian constitution. Rather, water is most often provided by parastatal institutions controlled by the state governments. Vulnerable population groups largely belong to historically marginalised communities and have little education and no skills to earn a reasonable wage.

The Nature of Water Exclusions

Calculating the exact number of citizens who work in the informal sector is impossible, as the Government of India is still in the process of establishing the national database of informal sector workers through an act of Parliament. However, it is estimated that approximately 450 million workers in India are engaged in the informal sector, which constitutes nearly 90 per cent of the entire workforce. The total number of informal sector workers in Delhi was 5,587,000 according to the Census of India 2011.[6] Based on the national estimate of 90 per cent of the working population being engaged in the informal sector, the number of informal-sector workers in the capital territory can be approximated as 5,028,300. With low education and no skills, informal-sector labourers work in temporary, low-productivity jobs at wages lower than the already paltry minimum wage and generally without any medical insurance.[7] Most live in 6 × 10 m2 huts in slums, where water is accessed through public taps, tankers, and tube wells. In extremely peripheral areas, they must purchase expensive bottled water from private vendors, who, in turn, buy it from the DJB. As far as sanitation is concerned, there are no individual toilets. In cases when the government provides them, community toilets generally do not work because water for flushing is provided only for a few hours. Over time, the community toilets become dysfunctional, and people must then resort to open defecation. Census of India 2011 reported that 10 per cent (1.7 million people) of Delhi's population openly defecates. Apart from those workers engaged in the informal sector, there are a substantial number of families who live

in slums. In a written reply made before the Supreme Court of India, the civic agencies of Delhi submitted the following: 'About 49% of the total population of Delhi lives in slum areas, unauthorized colonies, and about 860 jhuggi-jompri [squatter settlements] clusters with 420,000 jhuggies'.[8]

We have poorly treated the poor citizens of urban India (see Table 5.1). As we demonstrate in the following, the marginalisation of this diverse group of people living in slums, on roads, at construction sites and in nearby brick kilns is the result of certain historical legacies, current politics, economic policies, and exercises of power by governments by enacting exclusionary policies, processes, programmes, and structures. The chief objective of this chapter is to unearth the consequences of these actions. In the following subsections, we organise our discussion into colonial and postcolonial exclusions.

Exclusions as a Colonial Legacy

The new capital city of the British Empire was built in the first half of the 20th century based on modernist principles of order and functionality. Piped water and sanitation services were provided to all ruling classes living in the white town, which is currently called Lutyens Delhi as an eponym of its main architect. In contrast, from the 12th to the 19th centuries, Old Delhi predominantly and heavily relied on *baolis* (tanks with steps on four sides leading down to the water), neighbourhood wells, individual household wells, canals, and rivers. There were 607 wells in Delhi during the Mughal times. Class differentiation also existed during that era: poor residents took water from rivers and canals, whereas the wealthy dug wells in their houses and neighbourhoods.[9] Thus, the Mughal and British colonial legacies created and sustained inequitable water supply systems and sanitation services in the city of Delhi for several centuries.

Overcoming historical legacies of power and privilege is an onerous task that requires the dismantling of long-established regimes of privilege that have become an integral part of current political dispensations. The 'civilising mission' of the colonial regime was extended into the Indian republic polity after 1947.[10] Although the system may appear to bear little resemblance to that which prevailed during colonial times, its implications can be equally harsh. The extension of this geographically and temporally uneven and inequitable water regime has been so firmly established that changing it into a more egalitarian system appears to be an untenable proposition.

Postcolonial Exclusions

Water production and distribution became an uphill task for the postcolonial regimes in urban India because of a fast-increasing city population, diminishing water resources, a lack of adequate finances to build water and sanitation networks, and the deteriorating quality of groundwater. The old, inequitable system of water planning was easily adopted despite the loud political rhetoric of equal

TABLE 5.1 Administrative Division-Wise Daily Water Supply Through Tankers by the Delhi Jal Board, 2009–2011

S. No.	*Administrative Division*	*Quantity of Water Supplied in (million gallons)*			*Population ('000)*			*Per Capita Water Availability per Day in Litres*		
		2009–10	*2010–11*	*2011–12*	*2009–10*	*2010–11*	*2011–12*	*2009–10*	*2010–11*	*2011–12*
1.	Central II	10.64	15.54	21.51	45	45	45	2.94	4.3	5.95
2.	North West I	131.4	131.4	146	425	450	475	3.85	3.63	3.82
3.	North West II	200.29	165.27	171.72	99.65	82.23	85.44	25	25	25
4.	North West III	5.07	5.27	5.71	50	50	50	1.26	1.31	1.42
5.	North East I	51.82	48.97	48.15	98	95	90	6.58	6.41	6.65
6.	North East II	49.52	51.41	53.56	56	60	62	11	10.66	10.75
7.	North East III	14.85	13.55	12.22	100	100	100	1.85	1.69	1.52
8.	East I	15.41	15.45	15.41	66	66	66	2.9	2.91	2.9
9.	East II	10.78	9.8	10.08	52.4	52.4	52.4	2.56	2.33	2.39
10.	South I	70.44	60.19	80.79	310	310	310	2.83	2.42	3.24
11.	South III	36.84	46.74	50.36	676	676	676	0.68	0.86	0.93
12.	South IV	130	130	130	500	500	500	3.23	3.23	3.23
13.	South West I	90	90	100	270	270	27	4.15	4.15	46.07
14.	West III	106.93	106.93	106.93	215	215	215	6.19	6.19	6.19
15.	North	3.5	46	48.5	400	450	500	0.11	1.27	1.21
Total		927.49	936.52	1,000.94	3,363.05	3,421.63	3,253.84	3.42	3.4	3.82

Source: CAG (2013).

and universal access. As we will see, poor and marginal residents were again at the receiving end of exclusionary policies.

Legal Exclusion

Delhi has a long history of networked water supply. The British colonists established the Delhi Joint Water and Sewage Board in 1926 to oversee the operation and maintenance of Delhi waterworks and supply water to the Delhi Municipal Committee, the New Delhi Municipal Committee, the Civil Lines Notified Area Committee, and the Delhi Cantonment Authority. However, the board's primary beneficiaries were the three colonial settlements, excluding the Delhi Municipal Committee, where a large majority of ruling classes lived.[11] The Delhi Municipal Corporation (DMC) was set up in 1957 and took control of the board. The Delhi Water Supply and Sewage Disposal Undertaking was established in 1958 and tasked with the responsibility of procuring, treating, and distributing water in the DMC area. The Delhi Water Supply and Sewage Disposal Undertaking was governed by the Delhi Water Supply and Sewage Disposal Committee, one of the six statutory committees of the DMC.

Although Delhi became a state in 1992, it was not until 1996 that the Delhi Water Supply and Sewage Disposal Undertaking was shifted to the Government of the National Capital Territory of Delhi. The DJB was created in 1998 by an act of the Government of the National Capital Territory of Delhi and took over the procurement, processing, and distribution of water in the DMC area (now divided into three corporations). Additionally, the DJB was also made responsible for supplying bulk water to the New Delhi Municipal Council and the Delhi Cantonment Board, and this provides sanitation services in the entire city of Delhi. These governing arrangements exist even today.

The exclusion of the poor from accessing piped water occurs in multiple ways; however, two factors can be highlighted. First, the DJB measures its success in terms of aggregate infrastructure development rather than the number of people who regularly receive adequate, affordable, and good-quality water. A related measure of success is the 'average availability of 50 gallons of filtered water per capita per day'.[12] This kind of prioritisation obscures that residents living in informal settlements are not being provided with sufficient water, thereby compromising their capabilities and functions. Second, the DJB is well aware that it under-serves poor and marginal groups. For example, an internal note of 2004 concluded that 'there is a need for targeted interventions to cater to the water and sanitation needs of the poor'.[13]

Rhetorical concerns about the poor of Delhi are laudable; however, in actual practice, the DJB Act is openly discriminatory. For instance, Section 9 (1 a) of the DJB Act 1998 asserts that the DJB will not 'provide water supply to any premises which have been constructed in contravention of any law'. However, under political pressure and following the regularisation of unauthorised colonies and slums, the DJB began providing water to some of these areas. Nonetheless, the

main point is that the DJB is not legally obliged to provide water to any illegally built residential areas, which include most of the unauthorised settlements and slums, where a large majority of residents live.

Exclusions via Overestimation

Delhi's water uptake stems from the upper Ganges and Yamuna rivers, the Bhakra and Tehri dams and groundwater sources. In 2013, a comprehensive audit of the Comptroller and Auditor General of India found that the DJB lacked information systems to collect and analyse data on water production and the distribution of potable water. The DJB calculates the total treated raw water per day as the total installed capacity of its treatment plants (working at full capacity) and then divides that figure by the current population, theoretically obtaining the amount of water produced. Water treatment plants are assumed to be working at 100 per cent capacity. For example, if the installed capacity of all water treatment plants in Delhi is 833 million gallons per day (MGD), then that figure is divided by Delhi's population of nearly 17 million, which yields a quotient of 200 litres per person per day.[14] However, this figure is notional, theoretical and an erroneous calculation because the DJB does not know how much water flows into water treatment plants owing to the absence of flow metres installed at the water treatment plants. The DJB also cannot determine with any certainty how much water is distributed to the residents connected with the network because it does not have systems like functional pump metres in district metering areas. Amid this utter confusion and less use of technology, Truelove10 argues that water inadequacies and exclusions are obscured through the deliberate overestimation of water production.

Exclusions Through Commodification and Privatisation

In the absence of other options for potable water, Delhi residents can purchase bottled water from the DJB via private vendors. Private corporate vendors sell millions of 1-litre or half-litre bottles every day. The DJB sells 20-litre water canisters to local private vendors who, in turn, sell them to households who cannot access potable water from any other source. Calculated he DJB's bottled water is highly expensive compared with its piped water. Corporate vendors sell at the steepest possible rates, which are unaffordable for the poor. Treating water as a commodity with an instrumental value excludes the most vulnerable.

In addition to its commodification, the privatisation of water in Delhi has been attempted since 2002 with the World Bank's financial assistance, although this venture has not been successful thus far. Fearing backlash from non-governmental organisations (NGOs) and the public, the late Sheila Dixit, the then chief minister, made the following claim: 'We are not going to increase water supply but improve the efficiency with which water is distributed'.

However, the Government of the National Capital Territory of Delhi is now attempting to involve the private sector to enhance the level of water services and

make water available 24/7. This scheme aims to increase the level of service by providing 24-hour piped water supplies to residents with improved water infrastructure. The project includes Mehrauli and Vasant Vihar in South Delhi, which are largely high-middle income and upper class neighbourhoods (see Figure 5.1). MVV Water Utility Private Limited was selected through the tendering process and tasked with improving the level of service in those areas. The DJB also awarded work on a consortium of SPML Infra, Tahal Consulting Engineers and Hagihon Jerusalem Water and Wastewater Works (MVV). The agreement to carry out the project was signed some eight years ago on 12 September 2012. The MVV was granted the responsibility to manage the systems for a period of two years.[15]

The president of the Vasant Vihar RWA gave his consent to this project, which, with a World Bank loan of 1,640 crore, a project with a target of a 150,000-metre network and a population of 500,000 with a target of 200 litres per capita per day. The project was initiated with the support of the World Bank in 2002, and it was to end by 2005 and expand to encompass the entire Delhi territory by 2015. Some scholars have described this project as an 'exit the penury syndrome',[16] whereby the elite and middle classes attempt to transcend the state of being extremely

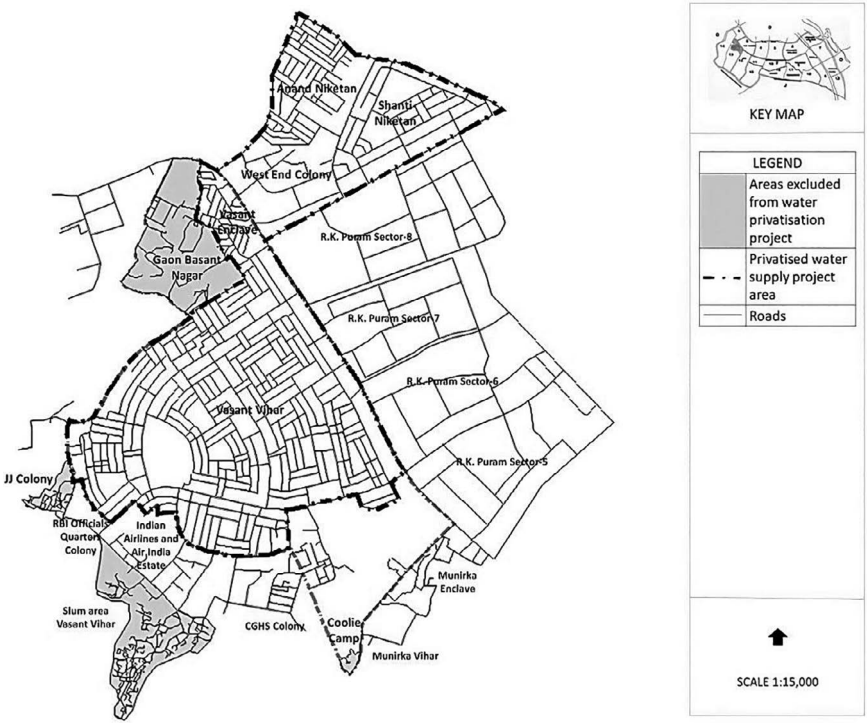

FIGURE 5.1 Excluded areas from the Project for Enhancing Level of Service

Source: Author (2017).

water-poor without acknowledging the implications of such projects on the rest of the population and the natural ecosystems. Nevertheless, an important question remains: What is the impact of this project on the poor in general and specifically on poor slum dwellers residing rear the project area? As we can see from Figure 5.1, this project deliberately excludes the poor populations in the areas shown in light yellow on the edges of the project area. These areas are Coolie Camp and Slum Area Vasant Vihar, JJ Colony in the southern part of the project site and Gaon Basant Nagar in the eastern part. The exclusion of these poor areas could not be more overt; there is not even the pretence of inclusion.

Exclusion Through Lack of Coordination

Dwarka is a sub-city near the Indira Gandhi International Airport. The DDA planned and built this large township for rising middle-class and elite groups. In the initial years of the sub-city's existence, water was provided through 400 tankers twice a week. The DDA bought water in bulk from the DJB and provided it to the residents (see Figure 5.2).

Dwarka's water requirement was estimated to be 50 MGD, which could not be met through tankers. A curious scholar might ask: Why was no piped water supplied for so many years? DJB officials claim that the township was built without bothering to consult them for water supplies. Dwarka finally obtained a piped water supply from the DJB in February 2015 after nearly 25 years. We also discovered that another DDA-planned settlement called Narela with a population of 225,000 also initially lacks access to piped water supplies. Until recently Narela obtained its water supplies through tankers. It appears that the DDA has not learned its lesson. For example, the DJB also was not consulted for the recently approved Land Pooling Policy 2019, which is anticipated to result in 1.7 million housing units.[17]

Exclusion Engendered by City Planning

As indicated earlier, city planning in Delhi is carried out by the DDA, a planning agency established by an act of parliament in 1957. The DDA is responsible for the city-state's planned and orderly development, which the agency attempts to achieve by preparing and implementing a statutory master plan.

Differential Master Planning in Delhi

The first Master Plan for Delhi was prepared and enforced in 1962 with the help of the Ford Foundation team led by Albert Meyer. This plan had the horizon year of 1981 and was based on comprehensive research work documented in work studies. After closely examining the Master Plan for Delhi, 1981 and associated work studies, we made several interesting discoveries.

The DDA divided Delhi into three classes: Class A: Delhi Urban Area; Class B: Ghaziabad, Faridabad and Ballabgarh and Class C: Gurgaon, Bahadurgarh, Narela,

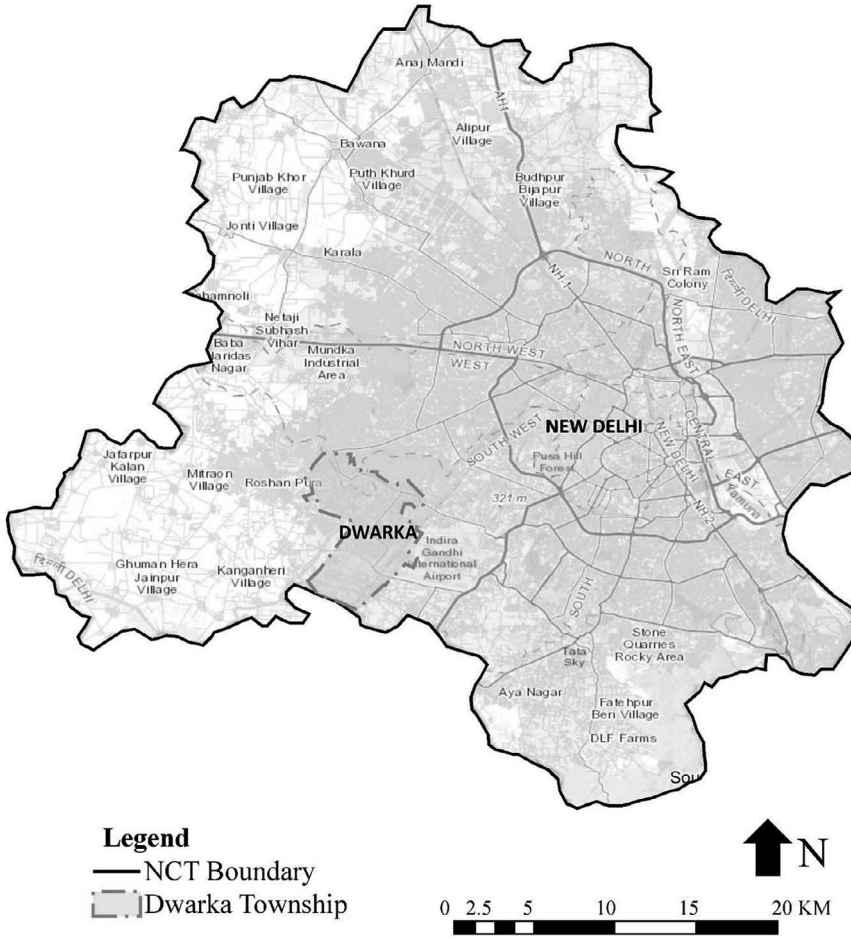

FIGURE 5.2 Dwarka Township in south-western Delhi

Source: Author (2017).

and Loni. The DDA proposed differential water supply standards and differential times for the supply of water to these areas. The standard of water supply for Class A was set at 50 gallons per capita per day, whereas the standard for Class B was set at 45 gallons per capita per day; that for Class C was set at a much-reduced rate of 35 gallons per capita per day. The Master Plan for Delhi, 1981 also proposed that water would be supplied in Delhi and the Ring Towns. The planning agency intended to supply water to Class A areas for 24 hours; however, in practice, water could only be supplied for 18 hours. Similarly, the planning agency intended to supply Class B with water for 18 hours but could only supply it for 16 hours. The water supply for Class C areas was proposed and supplied for 12 hours.[18]

This tradition of making essential services like water supplies available in different areas for varying time durations and with different standards is exclusionary

TABLE 5.2 Different Time Durations and Different Standards of Water Supply

Class A: Delhi (Delhi Urban Area)	*Class B: Ring Towns (Ghaziabad, Faridabad, Ballabgarh)*	*Class C: Ring Towns (Gurgaon, Bahadurgarh, Narela, Loni)*
Per capita supply 50 gallons	Per capita supply 45 gallons	Per capita supply 35 gallons
24 hours supply per day	16 hours supply per day	12 hours supply per day
Must supply between 4 a.m.–10 p.m.	Continuous supply from 4 a.m.–10 p.m.	Continuous supply from 5–11 a.m. and 4–10 p.m. in domestic areas; major industries should meet their requirements from tube wells.
–	Sources are to be groundwater, infiltration galleries and wells.	Sources are to be tube wells; infiltration wells are to avoid mechanical treatment.
	Major industry should meet their requirements from bore to small tube wells.	Road washing, horticulture from local wells and ponds

Source: Delhi Development Authority (1962).

at its root. Mostly, people living on the periphery of the city were given access to reduced amounts of water for shorter periods (see Table 5.2).

Two other important matters are worth highlighting: (1) the city planning agency's inequitable intent is clear; (2) amid the comprehensive work plans, the Master Plan for Delhi only spared a single paragraph for water policy, giving little space and thought to water planning.

The next version of the Master Plan for Delhi was enforced in 1990 with a time horizon of 2001. This development plan proposed a uniform standard of water supply at the rate of 80 gallons per capita per day throughout Delhi, of which 50 gallons was allocated for drinking purposes. Ring towns were not discussed in this plan, which is likely because the Regional Plan, 2001 was notified in 1989. Additionally, as the landowning agency, the DDA allocated land to DJB for building water treatment plants and sewage treatment plants. Although an improvement over the previous master plan, a uniform but high standard of water supply was set even for domestic purposes. Master plan and DJB policies could not eliminate water inequities in the city (see Figure 5.3). Thus, the planning agency's focus remained on aggregate water production and distribution and setting high water supply standards.

Trying to find a middle ground, the DDA ended up providing a higher standard of water supply at the rate of 45 gallons per capita per day in its Master Plan 2021. The plan argued that there is a need for capacity building and the DDA should therefore adopt the principle of 'user pays approach', which should be

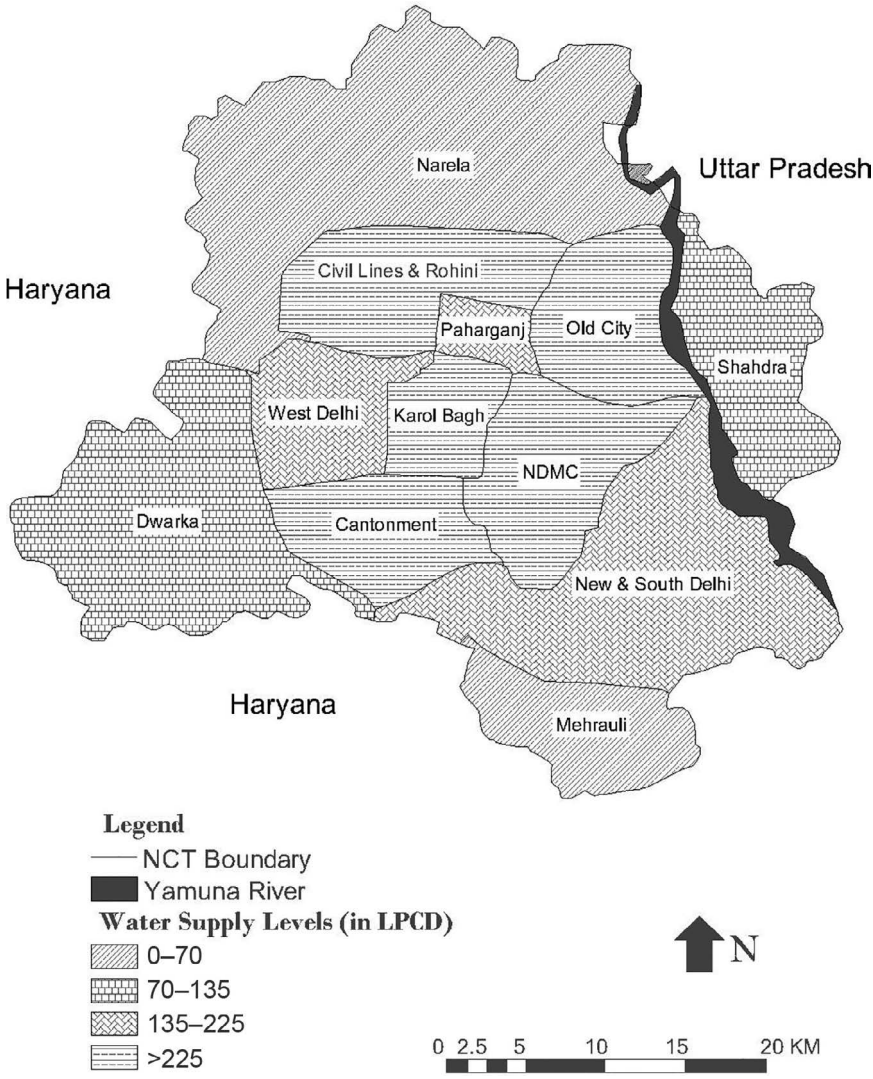

FIGURE 5.3 Water inequities in Delhi, 1999

Source: Author (2017).

implemented through public–private partnerships. The plan also emphasised the need to improve efficiency through better community participation and decentralised management. Hints about commodification and privatisation could not be missed, as this plan was enforced in 2007, when neoliberal economic and political thinking took centre stage.

The plan also proposed that the DDA should reduce the percentage of non-revenue water due to an estimated 40 per cent water loss. The plan expressed

concerns about water conservation through an integrated community-driven model. To pursue this line of thinking, the DDA even made proposals for making amendments to the Delhi Water Board Act, 1998. The plan acknowledges water inequities but provides no mechanisms to reduce them.

In the Master Plan for Delhi, 2021, the approach to water planning changed from water provision alone to water management, thus highlighting concerns with water commodification and privatisation. However, water inequities continue to persist.

At the present time, the DDA has outsourced the preparation of Master Plan for Delhi, 2041 to a central government-controlled urban studies research organisation, the National Institute of Urban Affairs.

Resettlement and Rehabilitation or Displacement and Redevelopment

In less than two-and-a-half decades, the development agenda in India has moved from welfare-oriented policy regimes to market-led policies. Generally speaking, urban planning policies have followed economic policies; cities have become central sites for the implementation of market-led policies. The Government of India is directly involved in framing urban planning and development policies. If the urban poor present obstacles to policy implementation, then they are to be set aside. The building of flagship projects like the Delhi Metro (underground public transport) and the 2010 Commonwealth Games held at Delhi comprise two notable examples of making way for 'development'. The redevelopment of slum areas is another illustration of restructuring and modernising the city. The main point is that development displaces, and development led by the private sector or a public–private partnership displaces even more, apart from being inequitable and unjust.[19]

If anything, current urban policies have perpetuated displacements and evictions and consequently have continued to push the poor towards the physical and societal periphery. The urban poor are evicted from the physical, political, and economic centrality of the city. Evictions of slum dwellers and squatters from the city to its margins can be characterised as the domination of urban space by the elite whereby evicted spaces are rendered out of reach of the urban poor owing to new land uses such as malls and entertainment plazas. Geographical distance from major places that offer employment further marginalises the poor by making access to these places potentially expensive. In such cases, exploitation in the form of loss of livelihoods and domination in the form of evictions from the city to the margins are not only socially and spatially manifested but also socially and spatially produced and reproduced. Speak (2012)[20] shows that women evicted from the urban area cannot return to the inner city due to mobility and cost constraints. The distance between the urban area and its periphery is sufficiently prohibiting for them to stay away from the city.

Several scholars show that displacements and evictions of low-income families are the visible spatial manifestations of rising levels of urbanisation in India.

Overriding reasons for displacements and evictions in Indian cities are clashes and conflicts between the needs of the urban poor and the aspirational classes. Such conflicts could relate to the legitimate use of a planned park as an open space by a neighbourhood's middle-class communities versus its use for open defecation by a poor boy who has no access to sanitation facilities.[21] It could be that spaces in which marginal groups currently reside are desired by the rich and powerful for building a promenade.[22] Displacements could also manifest a state's rounding-up persons who are asking passers-by for money from the streets to protect 'national pride' during a mega sporting event.[23] Any of these situations could lead to displacements and evictions of marginal groups from the city.

Another significant part of this scholarship views the harshness of urbanisation as a consequence of the 'expansion of the urban frontier, a making way and making space for the new Indian middle class, through the smashing of the homes and livelihoods of the urban poor'.[24] The spaces occupied by marginal groups who are objects of these 'expanding urban frontiers' were historically located on the edges of the cities; thus, their occupation did not invite immediate state action against the urban poor and they were allowed to stay on these lands. Over some time, these settlements have grown and expanded. As India's cities and towns are expanding at an increasing rate, these spaces are rapidly becoming part of the city, and decision-makers are beginning to realise the value of these lands, thereby paving the way for actions against the poor, who are now termed 'illegal occupiers'. However, forced removal is not restricted to Indian cities. As data on global evictions and displacements from urban areas demonstrate, displacements and evictions are a global phenomenon.[25]

We looked at two different examples: Kathputli, a slum located in central Delhi, and Bhalswa, a resettlement colony made up of people picked up from various slums and resettled approximately 25 km away from the city near a large solid waste dumpsite. We found that in both cases, access to water and sanitation services has been significantly reduced. It is appropriate that we examine the case of Bhalswa Jahangir Puri in some detail. The following account heavily draws on Kumar (2020)[26] and the report prepared by the Manch.[27]

A Delhi High Court ruling in 2006 banned the use of handcarts and cycle rickshaws in the Chandni Chowk area of Old Delhi. 'The ruling was presented as a move to ease traffic congestion and begin the implementation of an alternative mass transport system. . . . Discourse on sustainability and environmental pollution was used to justify the action'.[28] Drawing from a report prepared by the Lok Shakti Manch,[29] we examined how people living in the resettlement colony of Bhalswa Jahangir Puri have been affected. According to a response to a right to information application we made to the Delhi Urban Shelter Improvement Board, the Bhalswa resettlement colony houses 3,521 families and is located approximately 25 km from the city centre. Residents of Bhalswa began living there since November 2000; some arrived in 2002.

A majority of the residents of Bhalswa came to Delhi from the states of Uttar Pradesh, Bihar, West Bengal, and Rajasthan during the 1970s and 1980s. They

were shifted to Bhalswa between 2000 and 2002 from 11 settlements located in several places in Delhi, including Preet Vihar, Seelampur, Teenmurti, Ashok Vihar, Jahangirpuri, Gautampuri (Yamunapushta), Garhi, Dakshinpuri, and Nizamuddin. Before the resettlement process was completed, a majority of the people had worked in the city as labourers in factories, domestic help, hawkers and vendors, and service deliverers such as drivers, electricians, and plumbers. One-third of the workers were employed as permanent workers in the city.[30]

However, following their resettlement in Bhalswa, over 40 per cent of these workers lost their jobs, and those who retained employment have to travel distances exceeding 20 km to reach their workplaces. Most women lost their jobs because they could not manage the long-distance travel to workplaces. Women bore the additional responsibility of looking after children alone, as men stayed in the city for work and only occasionally returned.[31] Children were forced to work as domestic servants, rag pickers, or looking after small shops with their parents or working as helpers in others' shops. A study carried out by Lok Shakti Manch,[32] a prominent NGO in the area, found that 54 per cent of the workers were able to retain their jobs notwithstanding commuting and financial difficulties. Currently, a large proportion of families are involved in the informal sector with household enterprises such as making brooms, *papads* (flatbreads), small utensils, *bindis*, or festive decorative items for garments. In terms of movement from various parts of the city and loss of livelihoods, the right to centrality suffered a huge setback; in some cases, families could not even get together for weeks, as male workers have to stay in the city to continue with their jobs. Bus services are unreliable, and Delhi Metro does not come close to Bhalswa.

Residents have very little access to physical infrastructure, including water and sanitation. Residents that before resettlement, they had easy access to good-quality water, and no expenditure was incurred for obtaining water; however, since resettlement, over 64 per cent lack proper access to water. Some have even had to dig bore wells and use hand pumps to access groundwater. Nearly 94 per cent depend on multiple sources of water and DJB-supplied tankers.[33] Some have to buy bottled drinking water, while others obtain it from their workplaces, which are located as far away as Rohini and Jahangirpuri. Being located near the Bhalswa Landfill, groundwater is contaminated and unfit for drinking.

Before resettlement, over 70 per cent of the residents used public toilets at no charge for women and a small daily charge of INR 1 for men. A small percentage of households had personal toilets and bathrooms. However, since resettlement, sanitation has become one of the biggest problems for Bhalswa's residents. Only six out of ten public toilets are operational. People are heavily dependent on public toilets, as no space for constructing private toilets was provided.[34] The doors of the working toilet blocks are broken, and the toilets are grisly and dirty. Although sanitation facilities are nominally free, people are asked to pay fees to rent seekers. No clarity exists regarding day-to-day maintenance.

Concluding Remarks

Why is it not possible for us to wash our hands and maintain physical distance in and outside our homes? Historical legacies of colonialism have set the stage for fragmented provision of water supplies to people of different identities and classes. Conditions created by the colonists historically prevented us from accessing good-quality water. We always drew water from rivers downstream. Postcolonial democratic governments have followed identical policies in the absence of low levels of public accountability. Government servants' lack of transparency and rent-seeking behaviour has further hindered our access to safe water and quality sanitation services. Of course, as Partha Chatterjee eloquently explained,[35] the same water systems serve the middle and elite classes (the civil society) very well because of their influential civil agency. Unjust water laws such as the DJB Act, 1998 are brutally exclusionary, taking no responsibility for residents living in slums and unauthorised colonies. Rather than making egalitarian laws, the process of backdoor privatisation, disguised as enhancing the level of service, has flared in the city, and we are again faced with exclusion owing to discriminatory project boundaries. The DJB's commodification of water, which has led to the sale of bottled water, only exacerbates our challenges accessing clean drinking water. City planning policies patently promote differential water standards. We also cannot wash our hands because the water supply is not sufficient for drinking purposes. Redevelopment policies are in fact eviction and displacement policies, whereby we are left to struggle on the peripheries of the cities without much access to water. We have to buy expensive bottled water for drinking on a daily basis, and the blackness of the groundwater is indicative of high levels of pollution. In such circumstances, how do you expect us to regularly wash our hands?

Maintaining physical distance is impossible because we live in *jhuggi jhompri* (small huts) with a total area ranging from 20 to 25 m2. How do you expect 8 to 10 cohabiting people to maintain physical distance in that kind of limited space? Moreover, unlike the middle classes, we must work daily even during the pandemic lockdown period because we have to run the pump houses for distribution of piped water supplies and continually unclog the sewage carrying pipes. We cannot sit at home during the lockdown. A majority of us have lost our jobs during the COVID-19 pandemic. With no income and little government support, we decided to travel home on foot. Pregnant women and older adults have had to walk up to 500 miles. Trains finally started carrying stranded migrant workers for payment after one-and-a-half months of the lockdown. So, how do you expect us to maintain physical distance? To be brutally honest, we are 'the absolute other' of Rudolf Otto.[36]

Notes

1 This chapter was written as a part of the global help extended by researchers working at the School of Planning and Architecture (SPA) New Delhi as part of the India Water

Collaboratory under the Global Challenges Research Fund Water Hub. Assistance provided by doctoral scholars at the SPA and my Bachelor of Planning thesis student in the form of providing reading materials is gratefully acknowledged. All omissions and commissions are the sole responsibility of the author. I would particularly like to thank Professor Anna Mdee, Dr Sarah Cooper, Mr Nitin Singh, and Ms Shivani Singhal from the University of Leeds for reading and contributing to an earlier version of this chapter.

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6

DRINKING WATER FOR ALL

Rurban Water Planning in India

James L. Wescoat Jr.[1]

Introduction: The Rurban Challenge

Drinking water is essential for life, and it is a vital but somewhat underdeveloped topic in settlement planning. This issue is more commonly addressed by civil engineers and public health professionals than by planners. This chapter makes a case for the contributions of planners and planning to drinking water services in India. I have previously written about water and poverty, the right of thirst for animals, and ethical responsibilities to plants in irrigated landscapes, in each case striving to link pragmatic and rights-based approaches to fulfilling basic water needs.[2] This chapter builds on those efforts by examining human water needs in 'rurban' settlements, that is villages that aspire to urban standards of living[3] (Figure 6.1).

This middle landscape of rurban and peri-urban communities may constitute a majority of human settlements in India today, and they present widespread planning challenges.[4] They receive comparatively less attention from water planners than formal cities, particularly mega-cities that not only face monumental water challenges but also receive a large proportion of policy emphasis (e.g. to name a few important studies, see the following citations[5]). Rural drinking water and sanitation have become a specialised field of expertise, with its own department in the Government of India, state government departments, and dedicated non-governmental organisations.[6] Rurban settlements, by comparison, are located somewhere in between villages and cities, and they lack the specialized financial, technical, and managerial support needed for planning and development.

Some advances have been made toward defining rurban water conditions and establishing policies to support them.[7] The word *rurban* has an interesting history as a hybrid concept. Its earliest usage had negative connotations associated

DOI: 10.4324/9781003296218-7

FIGURE 6.1 Rurban water patterns in Aurangabad District, Maharashtra

Source: Author (2017).

with the urbanisation of agricultural areas, as does the concept of the peri-urban settlement today.[8] It is interesting to consider how these concepts might further evolve to connote positive improvements in water, sanitation, and related services.

Early concerns about rural and urban drinking water and sanitation were raised in international forums like the Mar del Plata Conference in 1977, which led to the UN International Decade of Drinking Water and Sanitation from 1981 to 1990. The New Delhi Statement in 1990 titled 'Some for All Rather Than More for Some' constituted an important benchmark in that history. It empirically assessed what was accomplished in the decade and laid out four principles for further attention:

> [1] . . . the need to protect environment and health, [2] the need for institutional reforms, including the full participation of women, [3] the need to promote community management and [4] the need to adopt sound financial practices and appropriate technologies. . . .[9]

This statement moved toward universal access; however, it would be decades before the United Nations declared water to be a human right. In the meantime, the World Health Organisation and UNICEF established the Joint Monitoring Programme (JMP) for Water and Sanitation in 1990. When the UN adopted the Millennium Development Goals in 1992, JMP became the vehicle for tracking progress toward implementation of the drinking water and sanitation goals of reducing by half the number of people who lacked safe access, which is far less than universal access but more realistic than earlier declarations. The drinking water goal was met, but the sanitation goal was not. The new Sustainable Development Goal 6 takes a more inclusive approach to '[e]nsure availability and sustainable management of water and sanitation for all.'[10] Statistical methods for tracking progress have issues but are improving.[11] Figure 6.2 presents recent JMP data for India. It is evident from these data that JMP has followed the convention of distinguishing urban and rural sectors. That is also true of most Government of India policies, which are divided into urban and rural programmes. The emergence of rurban and peri-urban growth – along with their special challenges and aspirations – has not been adequately addressed. Our argument here is that these hybrid patterns of growth aspire to but face constraints on meeting higher than minimum standards of universal access.

In this context, we raise three important questions for comprehensive examination. What is rurban drinking water planning? What are its special challenges? What innovative planning approaches does it entail that may also have relevance for urban and rural settlements? Drawing on recent research in the states of Maharashtra and Gujarat, we address each of these are questions in the following sections.

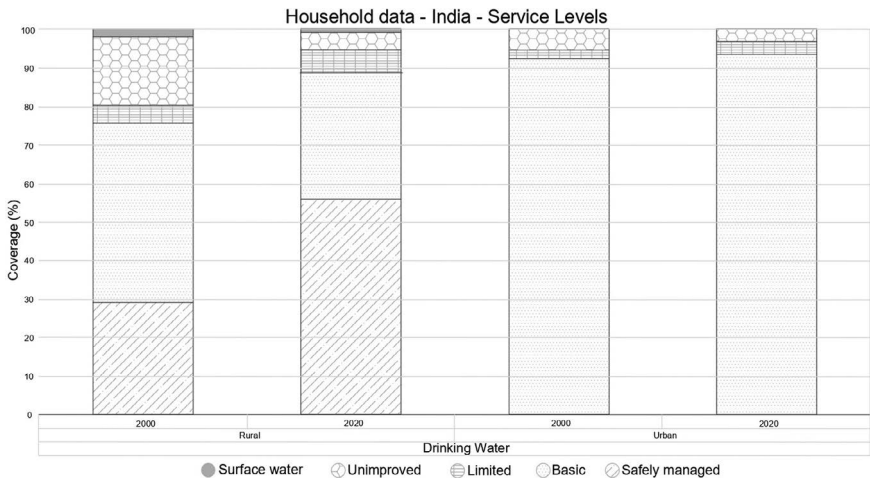

FIGURE 6.2 Rural (left) and urban (right) drinking water access, 2000–2015

Source: Joint Monitoring Programme (2017).

What Is Rurban Drinking Water Planning?

Rurban drinking water planning requires definitions of both the terms *rurban* and *water planning*. Census of India settlement classifications rely primarily on population size and provide an important but limited starting point (see Table 6.1).

Census towns are distinguished from villages by three variables, which are population greater than 5,000, greater than 75 per cent of the male workforce engaged in non-agricultural occupations, and a density of more than 400 persons per km^2.[12]

Rurban settlements span these formal categories of village and town. For example, in Gujarat, which developed rurban policies early, rurban projects have included both taluka headquarters, which are already towns or cities, and integrated village cluster schemes in tribal and non-tribal areas.[13] The Government of India's Shyama Prasad Mukherji Rurban Mission followed the Gujarat example, and it replaced the previous government's national programme for Providing Urban Amenities in Rural Areas (PURA). The Rurban Mission began on 21 February 2016 and provides block grants to states for rurban projects.

Interestingly, the pace, scope, and meaning of rurbanisation and peri-urbanisation on the ground far outstrip these public policies. They include processes in which villages have gained dramatic increases in connectivity through digital communications as well as improved transportation infrastructure and urban amenities formerly limited to larger cities, such as cable TV, computers, foreign goods, and an expanding range of choices among non-seasonal and non-local foods. Rurban planning implies increasing access to civic institutions such as post-primary education, health care facilities, and public utilities. It connotes cosmopolitan urbane lifeways. What distinguishes the rurban from urban is its continuing engagement with agricultural production, regional natural resources, and land-based livelihoods. Even on these counts, rural–urban linkages are stronger than is often assumed. Assumptions about village social structures and mores have to be questioned, as rural social dynamics are complex, varied, and rapidly changing. In that dynamic context, social barriers to universal access can also take new forms.[14]

TABLE 6.1 Census Classification of Settlements by Population Size

Villages	*Towns*
Less than 100	Less than 5,000
100–199	5,000–9,999
200–499	10,000–19,999
500–999	20,000–49,999
1,000–1,999	50,000–999,999
2,000–4,999	100,000–499,999
5,000–9,999	500,000–999,999
10,000 and above	1,000,000 and above

Source: Census of India (2011).

Increasing drinking water and sanitation standards contribute to the shift from rural to rurban settlements. Meeting those standards can involve watershed, aquifer, and drought planning; community water budgeting that includes irrigation as well as domestic uses; multiple water source development; infrastructure schemes comprising wells, elevated storage reservoirs, piped water distribution networks, household taps, and emergency water supplies; a shift from infrastructure to sustainability and services; and commitment to equitable and universal access at all levels. These are challenging objectives, and there are many examples of failure, slipback, and exclusion, particularly of those most in need; however, there are also advances beyond what was deemed possible a generation ago.

Rurban systems are often laid out with common components and configurations adapted to water sources, estimated water demand and project financing (see Figure 6.3). Water sources include wells, reservoirs, and pipelines. Schemes usually include pumps, rising mains, sumps, and elevated storage reservoirs. Pipe distribution networks provide water to household taps on a rotational basis, and some households and communities also rely on rainwater harvesting and water reuse. This rurban configuration is replacing the former rural models of dug wells, hand pumps, community taps, tanks, and pit latrines. As more water is used within the home, the challenges of drainage water recycling and management increase, but they have rarely kept pace with water deliveries in practice.

The contribution of town planners to drinking water access has been somewhat limited to date but has considerable potential. Figure 6.4 posits that rurban drinking water planning is shaped by four contributing fields: civil engineering, public health engineering, economic planning, and rural development planning. Town planners are involved, to be sure, but perhaps one of the reasons that they have not become more central to the field is the close connections required with these other specialised fields of practice.

The economic planner assesses needs, priorities, and budgets for public drinking water programmes, as well as establishing monitoring and evaluation mechanisms to track expenditures, outcomes, and principles of environmental and social

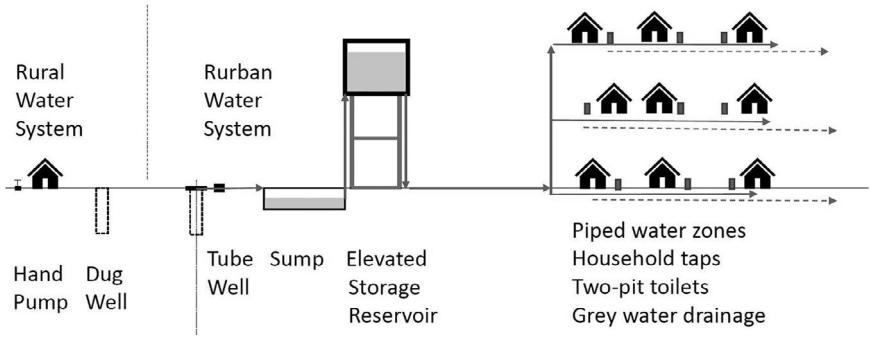

FIGURE 6.3 Conceptual framework of a rurban water system

Source: Adapted from Gupta and Novellino (2015).

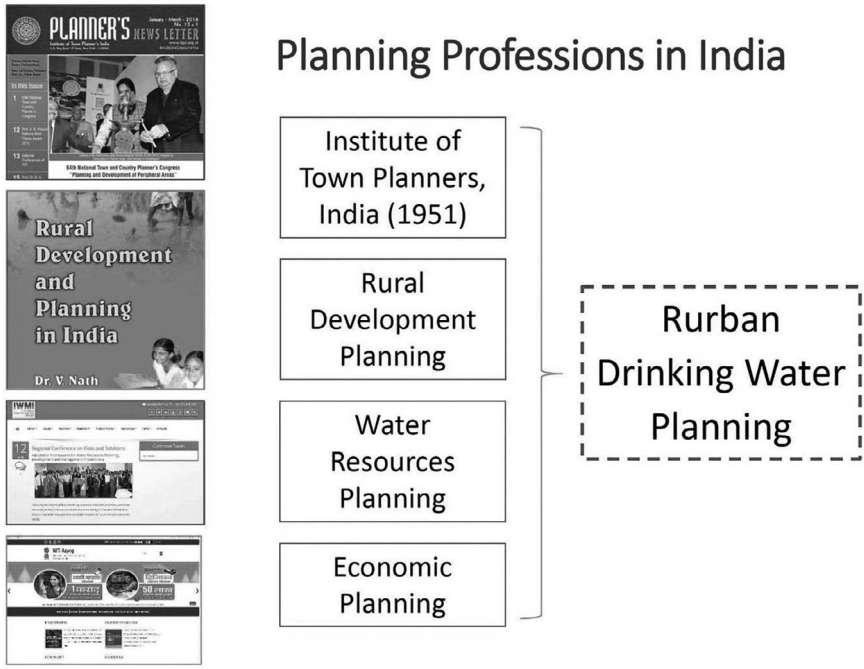

FIGURE 6.4 Professions potentially contributing to rurban drinking water planning

Source: Author (2020).

protection for those vulnerable to exclusion, oppression, and displacement. These are familiar principles and processes for town planners.

Civil engineers take the lead in drinking water and wastewater infrastructure provision. Once a programme is funded, engineers identify potential sources in a watershed and aquifer using hydrologic and hydrogeological methods. Engineers estimate community water demand and infrastructure alternatives for meeting it. City planners can help civil engineers assess and integrate environmental and social aspects of these drinking water alternatives.

Development planners help mobilise communities through participatory methods. They lead stakeholder processes, as well as information, education, and communication programmes, which are familiar concepts and methods for planners. Town planners can likewise identify communities' needs, facilitate stakeholder-based processes, and identify environmentally sound alternatives. Mapping methods help identify multi-village, networked, and regional planning alternatives.

Town planners currently contribute to the goal of rurban water access in a number of ways. Some have developed innovative community water budgeting methods.[15] Organisations like Clean Up the River Environment (CURE) and Cities Alliance have developed innovative drainage and wastewater plans on the fringes of Agra city.[16] A search of the *ITPI Journal* yielded papers on water planning that help explain the current situation in rural water and

sanitation planning both as a field of study and on the ground studies in various regions of the country.[17] Some planners have developed proposals for small-town water systems,[18] while others have focused on urbanising areas like Hubli Dharwad.[19] The journal *Environment and Urbanization* has made sustained contributions to water and sanitation planning, criticism, and innovation in South Asia and other regions. However, few planners operate at the intersection of these four fields today, particularly in small towns and villages. The dominant practitioners are civil engineers for physical infrastructure, social mobilisers for community input, and public administrators for programme planning and monitoring.

What Are Some of the Special Challenges of Rurban Drinking Water Planning?

Drinking water supply should not be a problem anywhere, except perhaps in the most remote, impoverished and conflict-affected areas. Even in such places, societies have the resources to meet basic needs. Human domestic water requirements are physiologically and functionally small relative to other uses, especially irrigation. The Government of India has increased its rural domestic water standard from 40 to 55 litres per capita per day (lpcd), its peri-urban standard from 70 to 100 lpcd, and its urban standard to 135 lpcd.[20] The lowest standard is 20 lpcd, below which water tankers are provided in states such as Maharashtra. To support these objectives, in 2019, the Government of India announced the Jal Jeevan Mission to ensure functional tap water connections in every household in the nation by 2024 and established detailed formats for Village Action Plans, District Action Plans, and State Action Plans.

Realities on the ground vary widely. Some users consume much more than these national standards and others much less. Floating, migrant, and homeless populations who often live in peri-urban and rurban areas are rarely included in population estimates for water planning, and their settlements are rarely well served. Monsoon climatology limits supplies during much of the year, particularly March through May, and has high variability. Nonetheless, current drinking water standards should not be difficult to meet in volumetric terms. Irrigation agriculture has much greater water demands, and the unfolding challenge will involve transferring water from agriculture to municipal, industrial, and environmental uses without compromising food security. Safe drinking water systems should not be difficult to build and maintain, though inadequate maintenance is a widespread problem. Similarly, the aggregate economic costs of providing drinking water are not that high for society, although affordability is prohibitive for at least one-third of the population, and sound financial management is challenging even in prosperous areas. Finally, as piped water supply and toilet facilities improve in rurban areas, wastewater drainage problems also increase, especially in low-lying settlements. Effective and equitable governance by *Panchayati Raj Institutions* (PRIs) is thus a major challenge for implementing rurban drinking water and sanitation programmes. In summary, equity, governance, finance,

maintenance, and climate-sensitive planning are the main challenges for securing universal water service in rurbanising areas.

PRI governance has special relevance for rurban drinking water planning. The Government of India's National Rural Drinking Water Programme and Government of Maharashtra's Jalswarajya II programme emphasise planning at the district and *gram panchayat* levels with a coordination role by block-level institutions in between. This programme has been described as a neoliberal reform project,[21] although devolution to district- and block-level planning is by no means new ideas in India. A search for their antecedents revealed a record of at least 150 years of policy deliberation and experimentation (see Table 6.2). A key historical

TABLE 6.2 Devolution of Planning to District and Block Levels

Year	*Water Legislation and Associated Activities*
1861	India Council Act on legislative devolution
1870	Lord Mayo Resolution on financial devolution or local public works
1882	Lord Ripon Resolution on local self-government – extension of urban to rural boards with an emphasis on the block level
1907–08	Royal Commission on Decentralisation emphasised block level
1919	Montague-Chelmsford reforms (1919) local self-government a state subject
1950	Constitution article 40. State support for village panchayat government
1951–6	The First Five Year plan mentioned district planning.
1956–61	The Second Five Year Plan emphasised block plans.
1957	Balwant Rai Mehta Committee recommended community development including drinking water planning at the block and district levels.
1961	Maharashtra Zilla Parishads and Panchayat Samities Act
1963	K. Santhanam Committee – emphasised fiscal decentralisation
1967	Administrative Reforms Commission mentions Panchayati Raj
1969	Planning Commission guidelines for District Planning
1977	Ashok Mehta committee – reduce three levels to two with an emphasis on the District
1978	Dantwala Committee – Working Group on Block Level Planning
1983	Economic Advisory Council of the Prime-Minister on 'Decentralisation of Development Planning and implementation in the States'
1984	Planning Commission Working Group on District Planning
1985	G.V.K. Rao Committee emphasises block planning
1986	L.M. Singhvi Committee recommends constitutional status for PRIs
1992	73rd Amendment, Constitution (also 74th and Art. 243 ZD)
1998	Maharashtra District Planning and Development Act
2006	Government of India, Integrated District Planning Manual
2009	National Rural Drinking Water Programme (NRDWP) begins.
2013	National Rural Drinking Water Programme (NRDWP) Guidelines updated; Planning Commission of Government of India was abolished.
2015	Most recent annual action plan for the NRDWP.
2016	Devolution of Government of India funding to the state level
2017	Resumption of project as MRDWP with revised procedures that re-emphasise Zilla Parishad's role in drinking water planning

Source: Author (2017).

question is the extent to which these earlier devolution efforts improved access to basic water services.

What Are Some of the Innovative Water Planning Approaches in Rurban Areas?

There are few guides for rurban planning generally or rurban water planning in particular. In the following, we offer a few examples of innovative rurban water planning projects for the following types and scales:

- *Physical planning* at the village and multi-village scales,
- *Peri-urban planning* at the district scale,
- *Water services planning* at the block and district scales, and
- *Water sustainability planning* at the district, state, and national scales.

Taken together, these four types and levels of interventions offer a suite of tools for rurban water planning in India.

Physical Planning at the Village and Multi-Village Scales

In recent years, village water infrastructure has moved from community to household models of service (see Figures 6.5 and 6.6). This approach is extending higher levels of drinking water service to households, and it could be further enhanced by more comprehensive site and area planning. Rurban site planning includes source water protection, grading, drainage, water-sensitive planning, ecological treatment and reuse. Area-wide planning includes an analysis of watershed and aquifer hydrology, linkages between domestic and nearby farm water budgets, along with multi-village schemes in areas of local water scarcity. Multi-village schemes have been tried in the past but require special management skills, commitment, and support.

A comprehensive approach to physical planning was undertaken in four villages in the Saurashtra region of Gujarat in collaboration with the Aga Khan Agency for Habitat-India. Village site design focused on *nallah* and drainage improvements for laundry areas, flood risk reduction, environmental drainage, horticultural plantings, schoolyard, and housing improvements.[22]

Peri-Urban Planning at the District Scale

Peri-urban areas pose special challenges for universal access to water and sanitation. Social and physical conditions change at a pace that defies baseline assessment and forecasting, unplanned development degrades local water resources, and the institutional structures and capacity needed to address these dynamics lag far behind growth. Hybrid strategies and programmes can result in highly unequal access to safe drinking water and sanitation (Allen, 2006).[23] Administratively, peri-urban areas may be small cities and still fall under the jurisdiction

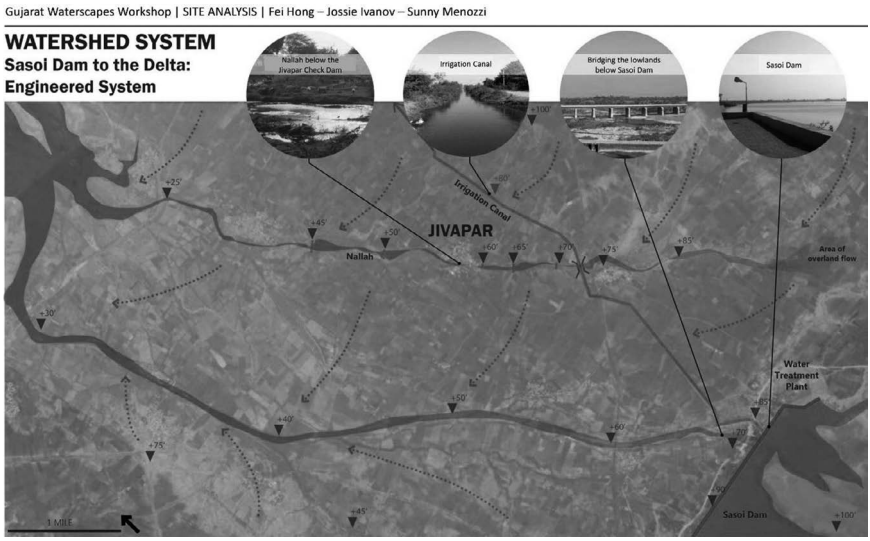

FIGURE 6.5 Watershed map for Jivapar Village in Jamnagar Block

Source: Adapted from MIT (2017).

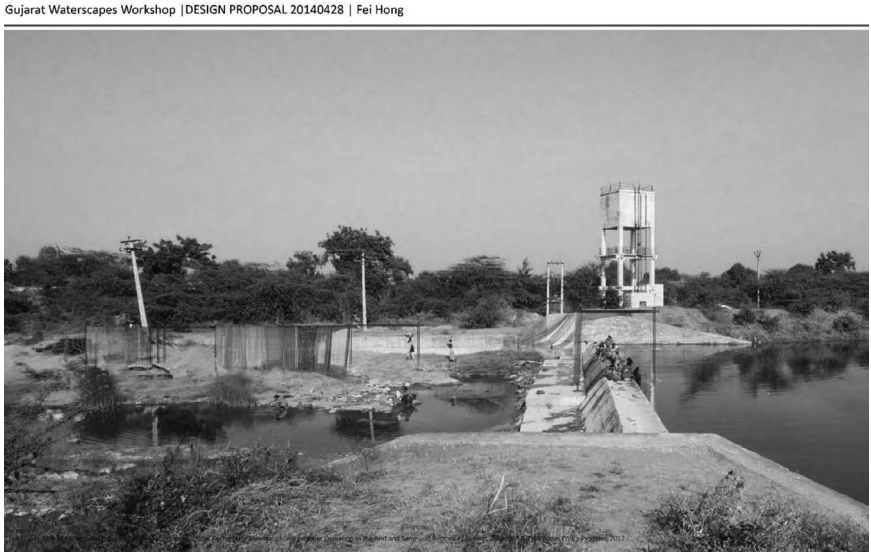

FIGURE 6.6 Drinking water supply with improved laundry and toilet facilities

Source: Adapted from MIT (2017).

of a district *zilla parishad* responsible for rural drinking water development that lacks the staff, resources, and expertise to address peri-urban problems and needs. There are a number of efforts currently underway to address peri-urban water and sanitation planning in Maharashtra and Uttarakhand.[24]

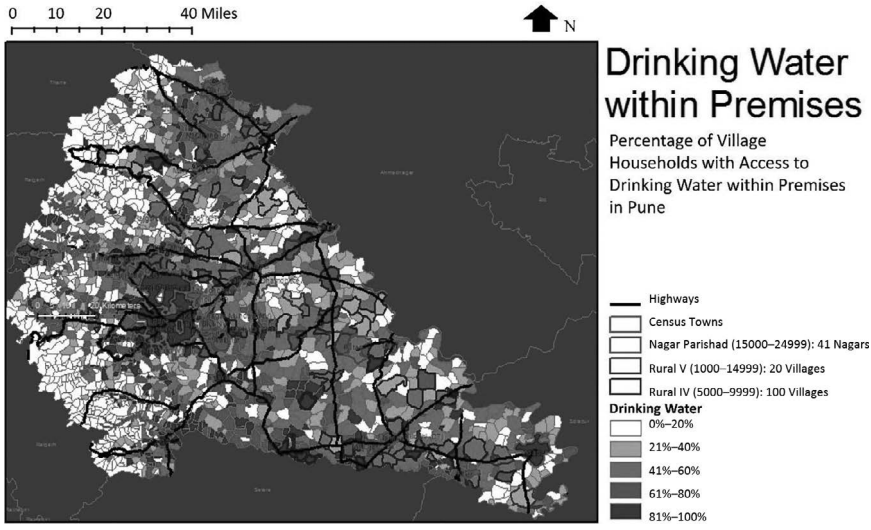

FIGURE 6.7 GIS map of Census of India Water and Sanitation Services (WSS) variables and village size

Source: GIS map prepared by MIT graduate research assistant Rebecca Hui.

Research in Pune District highlights the correlation between settlement size, water, and sanitation services, which provide a basis for improving the situation.[25] On the positive side, an unexpected finding showed that peri-urban villages outside major cities, block towns, highways, and industrial areas were positively correlated with census data on improved drinking water and sanitation access (see Figure 6.7). There are important exceptions in peri-urban areas that have extensive slum development and waste discharge. Additionally, the timing, equity, and reliability of water access remain highly variable in these villages, and a top planning challenge involves removing the increasing amounts of household water use through improved drainage systems.

Water Services Planning at the Block and District Scales

Historically, heavy emphasis has been placed on physical infrastructure planning and construction to improve drinking water access measured in litres per capita per day. This infrastructure is treated as project development 'outputs', for example number of wells, storage tanks, and miles of pipeline constructed. A better assessment of access is obtained from water service 'outcomes,' as measured by the number of hours of water access per day, drinking water quality, repair time, revenue recovery, and inclusive service for all.[26]

Research in five districts of Maharashtra addressed these village water service outcomes.[27] The results were compiled in three-chapter district drinking water plans as follows:

- Chapter 1: Current patterns and trends
- Chapter 2: Priorities for annual action planning
- Chapter 3: Long-term vision and strategy

Training modules for district staff included basic statistics, charts, and GIS mapping skills. The field research used a mobile survey application built with www.kobotoolbox.com.[28] The water service variables surveyed include

- Frequency of water supply (days/week),
- Hours of service (per day per zone),
- Supply breakdown (days per year),
- Household connections (per cent of total households),
- Estimated water coverage (litres per capita per day), and
- Adequate drinking water supply for animals (y/n).

Social equity and inclusion variables comprise

- Equal coverage for all (same, some exceptions, significant differences),
- Women's water labour (distance to tap or source), and
- Pollution exposure level (same, some exceptions, or significant differences).

Sustainability variables include revenue recovery, operation and maintenance, operator training, and village water supply committee performance. These variables were refined and pilot tested with district and block officers and village *gram sevaks* in Aurangabad, Bhandara, Pune, Raigad, and Satara Zilla Parishads (Figure 6.8). In 2020 the mobile app was further refined to address Jal Jeevan Mission formats.

In addition to the shift from infrastructure to services, a second major policy emphasis is sustainability and preventing 'slipback', whereby physical infrastructure falls short of its design life, which can be acute in vulnerable communities. Rurban planning thus monitors operations and maintenance, expenditures, and financing, as well as access.

Water Sustainability Planning at the District, State, and National Scales

Several studies have tracked sustainability at the state and national levels. India has created the world's most comprehensive and detailed drinking water database.[29] It contains baseline information for each habitation, which includes data on water sources, schemes, coverage, water-quality testing, and financial disbursements. Habitation data are aggregated to the *gram panchayat*, block, district, and state levels (see Figure 6.9).[30] State and district officials regularly update the Integrated Information Management System (IMIS) database to account for expenditures and progress towards policy objectives.

FIGURE 6.8 Block and district drinking water and sanitation officers in Aurangabad
Source: Author (2017).

Although the IMIS has a trove of valuable data, it is rarely used for research purposes and are underutilised for policy analysis. In this context, a team of MIT researchers, the Socialcops IT firm, and National Informatics Centre worked together on a draft data dashboard to display patterns and processes of 'slipback'.[31] Figure 6.9 displays the percentages in each district of water schemes that have suffered slipback in Maharashtra. The dashboard also mapped a strategic selection of variables (financial, environmental, institutional, technological, social) to help explain these patterns.

Although this dashboard experiment has not continued, the Jal Jeevan Mission has created a drinking water dashboard to help track progress toward piped water supply and functional household tap connections.[32] To date, rurban planning still lacks accurate information on the water needs of floating, migrant and homeless populations, as well as indices of sustainability, which the new Maharashtra village surveys and district plans should help correct.[33] Taken together, these four types of planning studies provide a more detailed basis for assessing progress in rurban areas toward the ultimate goal of drinking water for all.

Conclusion

International, national, state, district, and local policies call for improving drinking water services in India's rurbanising settlements. Rurban settlements strive

to achieve more than the minimum rural standards of previous policies. In principle, they treat drinking water jointly as a human right, an economic good, and an urban amenity for all. Planning is a key process for achieving the goal of universal access to drinking water, sustaining the infrastructure that is built, and ensuring that the built environment provides improved water services for all in rurban areas. We have shown that planning contributions are important but are often undertaken by officials without formal training in planning. Whether the work is done by planners or others is less important than the adoption of systematic methods for working with communities to achieve rurban water improvements. This goal requires planning at all levels, scales, and related sectors. We showed that planning at the national and state scales can make more intensive use of India's exceptional IMIS database with dashboards and other tools. Planning at the district level can develop enhanced data-driven and GIS methods for short- and long-term strategic planning. And physical planning at the site, rurban, and watershed scales can help integrate environmental resources and social processes in ways that improve access to safe drinking water for all.

Notes

1 Acknowledgements: I want to thank MIT graduate student researchers Rebecca Hui, Marianna Novellino, Himani Gupta, Paige Midstokke, Ranu Singh, and Riddhi Shah, who contributed to this and related water studies from 2015 to 2019. We are grateful to the MIT Tata Center for Technology and Design and the Tata Trusts for generous research funding. The study of district water planning contributes to the Government of Maharashtra and World Bank Jalswarajya II programme. We thank the planners in those organisations, and the numerous *gram panchayats* that shared their experiences, needs and innovations with us. We are especially grateful to planner J. V. R. Murty for his advice and encouragement.

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Further Readings

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PART II

Production of the Built Environment

7

FUTURE OF ZONING

From Land-Use Zones to Development Zones

Poonam Prakash

Zoning is one of the principal instruments of modern planning for organising different activities in a city. Well-intended and aimed to mitigate the adverse impacts of industrialisation, land use zoning has become one of the key features of modern town planning in India. Zoning organises human activities into functional residential, commercial, and industrial categories, among others. With this broad categorisation, zoning sets certain permissibility conditions setting thresholds of acceptability of activity types and scales in a premise as well as in an area. Initially developed as a response to the ill effects of industrialisation in the United States, nearly all the world's cities currently employ some form of zoning regulations, whether they are strictly single-use zones, as found in the United States, or more permissive zoning, as found in some European cities.[1]

However, this ubiquitous zoning system is not simply a technical exercise in classification based on objective criteria, as is often presumed, but rather is an attempt to create a certain sense of order in the built environment. At a more fundamental level, zoning is a system of classification, and as with any other classification system, it simultaneously represents and constructs a world through exclusions and inclusions of individuals, groups, and activities. Zoning appears to be a way of looking at the world. As Hirt (2013)[2] argues, land-development laws are not mere technical tools but rather shape the human environment through unstated rules related to social categories and economic activities. For example, in 1885, the Modesto California Ordinance, the first zoning ordinance in the U.S. used to regulate laundry use, shifted such activities to the town's periphery. This seemingly innocuous and justified regulation resulted in shifting mostly Chinese immigrants, who at that time were derogatorily called 'Chinamen'.[3]

As a system of defining social hierarchies, zoning was much more explicit in ancient societies. In ancient India, a detailed and comprehensive zoning system extended from the regional scale down to town layouts,[4] including a settlement

DOI: 10.4324/9781003296218-9

hierarchy and the location of towns based on functions and zoning within fort towns. Such a zoning encompassed palaces, temples, residential quarters, mercantile areas, and cremation and burial grounds and classified groups and activities based on castes and occupations. The residences of lower caste families were usually located outside the city. For example, lower caste burial or cremation grounds were to be located to the north or east, whereas cremation grounds for higher castes were to be located to the south.

Zoning continues to exist in the present day as a tool for the classification of social groups and distribution of resources. The separation of white and black towns during the colonial period, the development of civil lines and cantonments in India,[5] and the arrangement of residential areas on the basis of ethnic groups in Singapore are a few examples of zoning that extend beyond than mere technical exercises to function as reflections of prevalent social and political contexts of the times. In recent history, zoning in the U.S. was explicitly used for racial segregation.

Although there are many studies of zoning in the U.S. and Europe, we do not find similar discussions on land classification in India. Taxonomical systems have usually been the basis of any discipline. Function-based classification is the prevalent system of zoning in settlement planning. There are few systematic studies on the processes of land use zoning adaptation in Indian cities. Many studies are available on bulk control[6] (also see Barber and Stecko 2007), and there has been a clamour for changes in zoning regulations in most policy documents;[7] however, there is very little discussion on the classification system.

Fast-changing technological developments in the past few decades have led to a shift in the extent, type and nature of activities that can be accommodated alongside one another in Indian cities. We perceive that these changes have profoundly affected the existing land use zoning system, and cities are increasingly finding it difficult to prepare land use plans in an era of market-led planning. The future of functional zoning is thus increasingly under question. The mixed-use areas planned for multiple uses at the premise level are expected to include high floor-area ratios (FARs). These areas do not necessarily need to be built on the basis of traditional work–home relationships, which are related to the predominant use of the area.

In this context, this chapter traces the history of zoning and its adaptation in India in the next two sections. Then the fourth and fifth sections examine national-level guidelines and present a few city-level examples of land use classification and key shifts and rationales for such actions. Contestations around zoning regulations highlight the process of framing these rules in the sixth section. The concluding section identifies some key questions that should form the basis for developing zoning regulations that are inclusive, responsive to change and maintain a focus on public safety and health.

The Evolution of Zoning as Part of Modern Town Planning

Traditional zoning is commonly referred to as Euclidean zoning, as derived from the 1926 landmark U.S. Supreme Court case of *Town of Euclid v Ambler Realty*,

which determined that as a type of public control over private property and development rights, zoning is in principle constitutional. However, comprehensive zoning in the U.S. was established for the first time in New York in 1916.[89] Prior to this, zoning regulations consisted of single-use restrictions on buildings such as slaughterhouses, tanneries, and junk houses and primarily addressed issues of trespassing and nuisance. Comprehensive zoning meant that rather than regulating any one particular use, regulations classified and located all uses in a single ordinance. In addition to land-use zoning, other types of zoning regulations are bulk control (height, FAR, ground coverage), density, and subdivision regulations.

The New York zoning ordinance was enacted to cope with four problems: (1) the loading and unloading of trucks for garment factories on Fifth Avenue, which was largely a fashion retail store street (restriction of manufacturing in commercial areas); (2) the narrow streets and courtyards of early skyscrapers, which led to height and bulk restrictions for light and air; (3) the scattering of industries in residential areas; and (4) overcrowding.[10] For the first time, the commercial district was added in the ordinance, thereby making it incompatible with residential areas. The separation of business from residential zones was primarily an American phenomenon that did not exist in Europe.[11] A comparison of France, Germany and the U.K. evinces a very different approach to zoning than that of the U.S. A comparison of U.S. and European codes by Hirt (2010)[12] shows that land use separation as practised in the former is an aberration rather than the rule. In Europe, mixed-use zoning is the norm unless the activity creates a nuisance in the form of fumes or pollution. According to Hirt (2010),[13] zoning in the U.S. is a more important endeavour to regulate private-sector activity as opposed to the public sector–led planning that is prevalent in Europe: 'at least in my interpretation, its overwhelming reliance on the mere regulation of private-sector activity (i.e. through zoning) rather than on more proactive public-sector-led planning and production of the built environment – an approach more common in Europe'.

The evolution of zoning occurred in two phases. The first phase (1885–1930) encompassed the process of establishing the validity of zoning through the process of legalisation through various laws and zoning ordinances and the exercise of police power. During the second phase, zoning became an administrative practice. The process of justifying the use of police power and enactment of laws justifying zoning unfolded as shown in Figure 7.1.

The second phase of zoning as an administrative practice brought a set of challenges, the first one which was that zoning assumed each city to be the same, much like each car is the same in terms of its components. Designating a certain percentage of land use for each city became the norm, and it became difficult to imagine a city without a certain proportion of industries. The second challenge was the division of cities into arbitrary administrative boundaries that led to divisions of communities. One of the positive outcomes of this phase was the establishment of zoning language.[14]

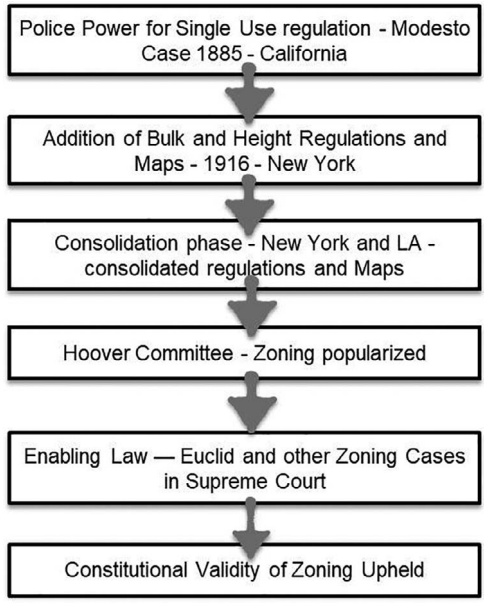

FIGURE 7.1 Evolution of legitimisation of zoning in the U.S.

Source: Prepared from Whitall, G. (1931).

Zoning in the U.S. coincided with the country becoming largely urban.[15] Large population concentrations required rules to govern the functioning of activities and people. Another reason for zoning was a change in the processes of production. Industrialisation required specialised functions and a certain order in which individuals depended more on others for economic production. This shift required certain protections and regulations for collective functions. Zoning was seen as a practice to regulate collective functioning. Euclidean zoning has been criticised for its lack of efficiency, equity, and ecology.[16]

Historically, the purpose of land-use classifications in the U.S. was based on criteria of land suitability or conservation of resources, particularly water, and for the resolution of clashes between industrial and residential interests.[17] Although it served to preserve property values, zoning also stimulated economic growth and the expansion of business interests.[18] It was expected that zoning would address conflicts between control over private property (individual) versus regulations needed for stable conditions for investment (collective) that could manage conflicts over housing, environment degradation and congestion, among others. As such, Lewis (2013)[19] argued that zoning represented more than the protection of property values. It was actually in the interests of investors and industrialists to push for zoning, as it would provide protection from nuisance laws and stabilise land values. Industrial interests were able to ensure that several elements important to them were introduced in zoning ordinances. The most

notable of these ordinances resulted in a significant share of urban land zoned for industry, the creation of a very flexible appeal system and the grandfathering of non-conforming uses. Although zoning was institutionalised, zoning regulations have mostly been products of expediency rather than rigorous thought.

However, criticisms of land use classification became more serious in the 1950s during the first major wave of suburbanisation in the U.S. One of the major criticisms of zoning in the U.S. has been its use for the purpose of racial segregation. Zoning thus affects human life and is a matter of concern. Even if explicit segregation is not legal, zoning tends to be exclusionary due to its inherent characteristics of categorisation. Such exclusions can be enacted through economic segregation, enhanced housing costs, or reduced facilities provision, among other factors. As we will see in the next section, many elements of the U.S. zoning system were adapted in India's urban context.

Zoning in India

Although some form of regulations and zoning has existed since the colonial period, we will begin the story of zoning in India with the period when the first comprehensive plans and new town plans were prepared after independence. One reason for focusing on developments after independence is that prior regulations of activity were part of either expansion or renewal schemes. Many activities were also regulated through the concept of nuisance as elaborated in the Indian Penal Code. The British colonists made such zoning efforts to advance colonial purposes. It was only with the enactment of town planning legislation requiring the preparation of comprehensive plans that comprehensive zoning was introduced in India.

Institutionalisation of Functional Zoning

Delhi was the first city to prepare a comprehensive zoning plan. Following the initial works for the plan undertaken by the Town Planning Office, the Master Plan for Delhi (MPD) 1981 was prepared in the 1950s by a team led by Albert Mayer, an ex-army man who had previously worked with Clarence Stein and Lewis Mumford.[20] By the time Mayer came to India during World War II, zoning laws were well established in the United States. The city of New York, where Mayer was a well-known architect, was the first city to implement comprehensive zoning in 1916. It is therefore no surprise that the first Delhi Master Plan contained a chapter on zoning regulations.

For the first time, mechanisms to control the use of public land were established to 'promote public health, safety, and the general moral and social welfare of the community'.[21] Seemingly aware of criticisms of the role of zoning in segregating communities, the introductory paragraph of the zoning regulations chapter warned against using zoning as a mechanism for segregation or nuisance control. In a very similar manner to U.S. regulations, one of the key purposes of zoning in India was to protect residential areas from harmful invasions of

commercial and industrial uses while simultaneously promoting the growth of industrial and commercial uses in a planned and orderly manner.

Uses that existed prior to the plan but were not permitted in a particular land-use zone were termed 'non-conforming uses' and were to be relocated to conforming areas within a stipulated period. Of particular significance were industrial and commercial uses in residential areas, which were to be shifted to conforming uses within a certain time frame, with top priority given to shifting noxious industries. Commercial uses in residential areas were to be shifted with the condition that a provision for local commercial areas was made in the zonal plan. Unlike the New York ordinance, which provided regulations for three use districts, namely residential, commercial, and industrial areas, zoning regulations in Delhi were much more detailed and contained 24 use zones with specified permissibility limits. The Delhi Master Plan 1962 became a model for many cities in northern India.

However, criticism of Delhi for proclaiming Western planning ideas unsuitable for the Indian context began soon after the publication of the Delhi Master Plan 1962. Ewing (1969) made scathing criticisms of India's implementation ill-suited Western concepts like zoning, particularly when these had not been highly effective even in the U.S. Ewing suggested that Indian town planning should make a 'decisive break with foreign stereotypes'.[22] That break was never made in India. Delhi and several other cities continued to follow Western-style zoning regulations.

Such Western influences seemed less visible in the zoning laws of other parts of the country like Maharashtra, Gujarat, Andhra Pradesh, which could be due to the difficulty of controlling uses on private lands. Zoning regulations in these states were more permissive at the building level than was the case in Delhi. For example, zoning in Delhi usually allowed for premises of related activities such as convenience shopping areas or schools within the predominantly residential zone; however, residential and commercial could not coexist in the same building. This was not the case in many other parts of the country, where commercial and small industries could be permitted on the same premises.[23]

Despite these differences in permissibility at the premise level in different parts of the country, function remained the main criteria for the classification of activities in a city. For example, Bombay classified its zoning into residential, commercial, industrial, public, semi-public, and transportation areas.[24] The Madras (now Chennai) Plan (1975) included had the previously listed five categories along with the addition of recreational, agricultural and non-urban uses.[25] In a report published in 1976, the Town and Country Planning Organisation (TCPO) described the results of a survey of more than 100 cities, which identified broad ranges of land-use distribution that followed a very similar classification to that in Madras. This classification thus became institutionalised.

Challenges to Zoning Regulations

Difficulties in the classification system were beginning to emerge by the 1980s. These challenges were related to substantive issues of purpose and technical

problems of classification. The former was related to exclusions of groups who could benefit very little from accessing the safe and healthy environments created through the implementation of zoning regulations in the Delhi Master Plan. Anywhere from 30 to 50 per cent of the population, including residents of slums, unauthorised colonies, and urban villages, was excluded from the benefits of planned development and consequently from zoning regulations in almost all large cities. States categorised some of these areas as 'illegal', despite the fact that as early as 1969, professionals had already noted that the Delhi Development Authority (DDA) and the Municipal Corporation of Delhi had hardly any financial and administrative capacity to implement the plan.[26] This meant that zoning heavily compromised public safety and the health and welfare of people living in areas where zoning could not be made applicable.

The second difficulty was related to the level of permissibility. Permission for commercial and industrial activities on residential premises was either not provided, as in the case of Delhi, or was given with reasonable restrictions on the scale and type of activities, as was the case in Mumbai. The lack of enforcement of regulations, inadequate provision of planned spaces for commercial and industrial activities, ambiguous licensing procedures, and political nexuses contributed to the proliferation of commercial and industrial activities in residential areas. The interim review report of the first MPD published in 1978 noted that commercial areas had not developed at the required speed during the previous two decades due to inadequate norms for the provision of shops given in the plan. Consequently, many residential properties were being used for commercial purposes, and 'nonconforming' developments had increased to 24,000 by 1978.[27] According to surveys conducted for plan revisions, retail shops or household industries were located on the ground floors of more than 10 per cent of the houses in many of the low-income housing areas of rehabilitation colonies. The survey also reported the existence of professional offices in higher income areas (Delhi Development Authority, n.d.).

The MPD 2001 presented a detailed chapter on development regulations with a three-tier system taking into account functions, scales, and types of activities. The previously established system of 24 use zones was expanded to 37 zones within nine use categories.[28] The existence of commercial and industrial activities in residential premises led to the introduction of mixed-use rules as part of development regulations in the revised plan for 2001 as a means to balance 'socio-economic requirements and environmental impact'. As per the MPD 2001, mixed-use provisions were intended to benefit small entrepreneurs and facilitate local-level retail shopping requirements. Regulations set area and ownership thresholds for commercial activities.[29] In establishing area-level regulations for commercial activities, the revised plan acknowledged the existence of commercial activities in residential premises and relaxed its provisions to include plot-level permissibility. However, this still was not part of land use classification and permissibility changes continued to be implemented in a predominantly residential use zone. Chennai, Hyderabad, and Mumbai did not experience permissibility

problems, as zoning regulations already permitted certain activities; however, the scale and types of permitted activities were also contested in these cities. Mixed-use regulations in Delhi can be seen as a precursor to future contestations around the functional classifications of zoning even as the classification system continued to become increasingly institutionalised.

Shifts and Disjunctures

In addition to the detailed development regulations in the Delhi Master Plan, based on the recommendations of a national seminar on the 'Master Plan Approach: its efficacy and alternatives', the Ministry of Urban Affairs and Employment awarded a research study to the Institute of Town Planners, India in 1996 for the preparation of Urban Development Plan Formulation and Implementation Guidelines. One of the aspects of the four terms of reference for this study was the 'efficient implementation mechanism and innovative techniques for promotion of planned spatio-economic development of urban areas'.[30] As part of this task, the report included 'Development Promotion Regulations' containing land-use classification. The Ministry of Urban Development revised these guidelines nearly a decade later in 2015. The revised guidelines were *inter alia* 'to suggest the new set of norms and standards, zoning regulations including integrated development of peri-urban areas, which are easily comprehensible and user-friendly'.[31] The 1996 document mostly contained functional classifications,[32] whereas the more recent document contains the first mention of 'mixed use' and 'protective and undevelopable' use categories.

Another attempt at classification was made through the 'National Urban Information System'. The Planning Commission, Government of India set up the National Natural Resources Management System in 1983 to facilitate the optimal utilisation of the country's natural resources through a proper and systematic inventory of resource availability and the reduction of regional imbalances through effective planning under the guidance of the Department of Space. One of the 10 standing committees worked on urban management with the objective of coordinating the application of remote sensing data and GIS techniques in the context of urban planning and management. In 2000, the committee recommended the development of a National Urban Information System (NUIS) on a priority basis in mission mode.[33] The NUIS intended to accomplish the following: (a) generate spatial data in terms of maps and images, (b) introduce the use of modern data sources and methods, and (c) develop and implement an information system as a decision support in planning and management of urban settlements. The design guidelines for the NUIS were formulated in 2006 in a document that provided a five-layer system of classification ranging from the region to the plot level. Level III of this system classifies urban land use into 12 categories. The early version of this system seems to have been very similar to the Dewey classification system in terms of its inclusion of three levels of use category (up to nine classes), use zones (up to 99) and use premises (up to

999). This no longer seemed to be the case in later Urban and Regional Development Plans Formulation and Implementation (URDPFI) and NUIS or Atal Mission for Rejuvenation and Urban Transformation (AMRUT) land classification guidelines. The URDPFI has 12 use zones, whereas AMRUT's guidelines contain 28 classes and additional subclasses.[34]

These documents prepared at the national level over the last two-and-a-half decades present a shift in the classification system (Table 7.1). Among others, mixed-use, heritage, and eco-sensitive areas were included as use zones. Another interesting inclusion was slums as a class in the AMRUT guidelines (Table 7.2). Mixed-use, heritage, and eco-sensitive areas do not function as base classes. As academia hardly pondered over these issues, in practice, one can posit a tacit accommodation of a larger context. The connection between the purpose of zoning regulations, reality and the administration of zoning has become much weaker.

A similar shift was visible in the second revision for Delhi Master Plan, 2021, which came into effect in February 2007. The chapter on development regulations describes nine use categories with 26 use zones as well as an additional line referring to a mixed-use zone, which is defined as '[a] use zone in Land Use Plan can be indicated as consisting of more than one use zones'. The plan was modified over time, and although no changes were made to the classification system, it added a chapter for a transit-oriented development zone.

Similarly, the Hyderabad Metropolitan Region Development Plan, 2031 added a multiple-use zone, a conservation (agriculture) zone, and a special reservation zone that included heritage areas. Chennai's plan for 2026 also included a mixed residential zone, and Mumbai's Plan for 2031 inserted multiple-use and special reservation zones.

Reasons for Shifts

The previously described shift began in the 1990s and became evinced in changes in zoning regulations by the first decade of the 21st century. In part, this shift can be attributed to three significant factors: (1) the emergence of environmental and heritage discourse in India beginning in the 1980s; (2) the opening of the economy in the 1990s, which paved the way for extensive private-sector urban development; and (3) the rise of information technology, which engendered some changes that are beginning to emerge in recent years.

Around the mid-1980s, conflicts around the environment began to enter the limelight. The Brundtland Commission was created by the United Nations in 1983 to reflect on ways to save human environments and natural resources. India had already implemented laws for the protection of water and forests in the 1970s, and the Environment (Protection) Act was enacted in 1986, thus evincing a shift from more resource-specific protections to the more encompassing and sometimes fuzzy concept of 'environment'.

In 1984, 16,000 people died as a result of a gas leak in Bhopal, and a similar, less severe oleum gas leak was reported in Delhi the same year. In 1985,

TABLE 7.1 Classification of Land at the National Level in Different Documents

S. No.	*UDPFI 1996* *Use Zone*	*NUIS 2006 (Table 5 P. 96)* *Type of Land*	*NUIS 2006 (Land Use Classes details for Table 5 P. 113)* *Land Use*	*URDPFI 2015* *Use Zone*	*AMRUT 2016* *Land Use Class*
1	Residential	Residential	Residential	Residential	Residential
2	Commercial	Commercial	Commercial	Commercial	Commercial
3	Manufacturing	Industrial	Industrial	Industry	Industrial
4	Public and Semi-Public	Public and Semi-Public	Public and Semi-Public	Public and Semi-Public	Mixed
5	Recreational	Recreational	Recreational	Recreational	Educational
6	Transportation and Communication	Transportation	Transportation	Transportation and Communication	Health Services
7	Agricultural and Water Bodies	Public Utilities	Public Utilities & Facility	Mixed Use	Central Government Property
8	Special Area	Reclaimed land	Agricultural Land	Primary Activity	State Government Property
9		Vacant land	Forest		Railways
10		Agricultural land	Wastelands	Special Area	Public and Semi-Public
11		Built Up area (Rural)	Wetlands	Protective and Undevelopable Use Zone	Religious
12		Forest	Water Bodies		Recreational
13		Wastelands			Public Utilities
14		Wetlands			Solid Waste Management
15		Water Bodies			Communication
16		Others			Heritage
17					Slum
18					Vacant Land
19					Transportation
20					Traffic Related
21					Rural
22					Green Areas
23					Agricultural Land
24					Wetlands
25					Wastelands
26					Specific Land Use
27					Eco-sensitive Areas
28					Others

Note: UDPFI = Urban and Regional Development Plans Formulation and Implementation; NUIS = National Urban Information System; AMRUT = Atal Mission for Rejuvenation and Urban Transformation.

TABLE 7.2 Level One Categories in Four Metropolitan Cities

S. No.	*Delhi 2001*	*Delhi 2021*	*Bombay 1991*	*Bombay 2034 (draft)*	*Chennai 1975*	*Chennai 2026*	*Hyderabad 2031*
1	Residential	Residential	Residential	Residential	Residential	Primary Residential	Residential Use Zone
2	Commercial	Commercial	Commercial (C)	Commercial (C)	Commercial	Mixed Residential	Commercial Use Zone
3	Industrial	Industrial	Industrial (I)	Industrial (I)	Industrial	Commercial	Multiple Use Zone
4	Government	Government	Transportation	Special Development Zone	Institutional	Light Industrial	Public and Semi-Public Use Zone
5	Recreational	Recreational	Public/ Semi-Public	Port's Operational Zone	Open Space & Recreational	Industrial	Work Centre Use Zone
6	Public/ Semi-Public	Public/ Semi-Public		Port's Waterfront Zone	Agriculture	Special and Hazardous Industrial	Open Space Use Zone
7	Utility	Utility		Natural Zone	Non-Urban	Institutional	Water Bodies Use Zone
8	Agricultural and Water Bodies	Agricultural and Water Bodies		Green Zone		Open Space & Recreational	Transportation Use Zone
9	Transportation	Transportation				Non-Urban	Special Reservation Use Zone
10		Mix Use Zone*				Agricultural	Defence/Military Lands, Burial Grounds, Cremation Grounds, etc.
11						Urbanisable	Special Area Development Plan Areas

*Mix Use Zone was added as a separate paragraph under the nine defined land-use categories in the Master Plan 2001.

environmental lawyer-activist M.C. Mehta filed public interest litigation with the Supreme Court of India against pollution and congestion, which led to a series of policy efforts for cleaning the air, including shifting to compressed natural gas fuel.[35] Under the direction of the Supreme Court, the Ministry of Environment and Forests set up the Environment Pollution (Prevention and Control) Authority in January 1998. A similar discourse also emerged in heritage protection. The notion of 'cultural significance' emerged in conservation discourse in the 1980s,[36] and in 1999, the DDA announced the Delhi Urban Heritage Foundation Regulations with the lieutenant governor as its chairman. In the mid-1980s, the Department of Environment Planning and the Department of Architecture Conservation were established at the School of Planning and Architecture, New Delhi.

This emerging discourse on environment and heritage was reflected in the MPD, notified in 1990 for perspective 2001. In addition to regulations structured around functional areas of the city, the plan included a chapter on the environment and a section on urban heritage conservation, which included historical monuments as a use zone under the recreation category. The plan also provided protection to the Delhi Ridge by categorising it as a regional park. This was a very thoughtful way of embedding some of the emerging concerns into the functional classification system. Monuments in many parts of Delhi are a part of our everyday experiences. However, in many other cities, the delineation of environmentally sensitive areas was shown as part of the land use plans. Similarly, the land-use codes of many plans began to include a tourism zone or heritage zone, although these were not part of the zoning regulations. A shift to supplement land use zones with development zones thus began to emerge.

Another reason for this shift relates to globalisation and the privatisation of the Indian economy in the 1990s, which generated increasing pressure to open up planning. As discussed in Section 7.6, the Ministry called for 'flexible' land use. The National Housing Policy of 1996 and the National Urban Housing and Habitat Policy of 2007 both recommended increased private-sector participation and changes in zoning regulations. The state began to withdraw and paved the way for enhanced private-sector participation, which has unfolded in urban development in a variety of ways. Enhanced FAR was one of the main implications of newer zoning regulations; however, there were also seemingly more innocuous changes such as the auction of convenience shopping centres and local shopping centres to developers. The emergence of malls in local neighbourhoods has led to use-related conflicts in Delhi.

This larger context of the shift to market-led planning was reflected in many ways in the MPD, 2021. For our purposes, I highlight two developments, namely property development at Delhi Metro stations and the provision of facility corridors in the MPD. Delhi Metro pushed for modifications in the plan that permitted it to undertake property development (mostly commercial) at all stations, thereby mixing transport use with commercial use for the first time. Second, the concept of facility corridors was introduced in the Delhi Master Plan. In a

divergence from previous plans, community- and neighbourhood-level facilities were not demarcated but rather would be developed as and when there was a market for a particular facility. As shown in Figures 7.2 and 7.3, the plan shows mostly yellow and blue in comparison with previous zonal plans that allocated facility spaces for specific facilities. This shift in the larger context led to greater 'flexibility' in land uses.

A third reason for this shift, although not clearly visible at the first level, is the technological revolution that we are currently undergoing. The rise of the service sector, particularly the information technology (IT) industry, has forced some changes in zoning regulations. The IT industry poses two challenges to zoning regulations, the first of which relates to an emerging demand for spaces such as co-working and co-living spaces and studio apartments. Second, rapid technological changes increase market uncertainty, and it is much more difficult

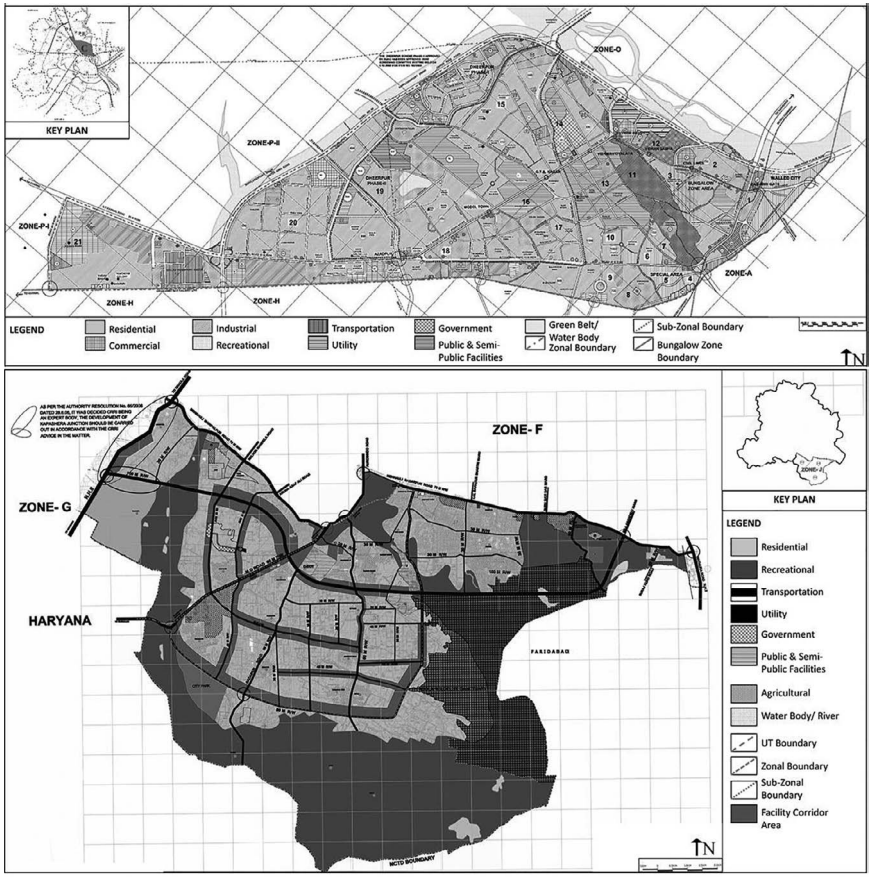

FIGURE 7.2 Difference in details in zonal plans of zone C and zone J

Source: Delhi Development Authority (2010).

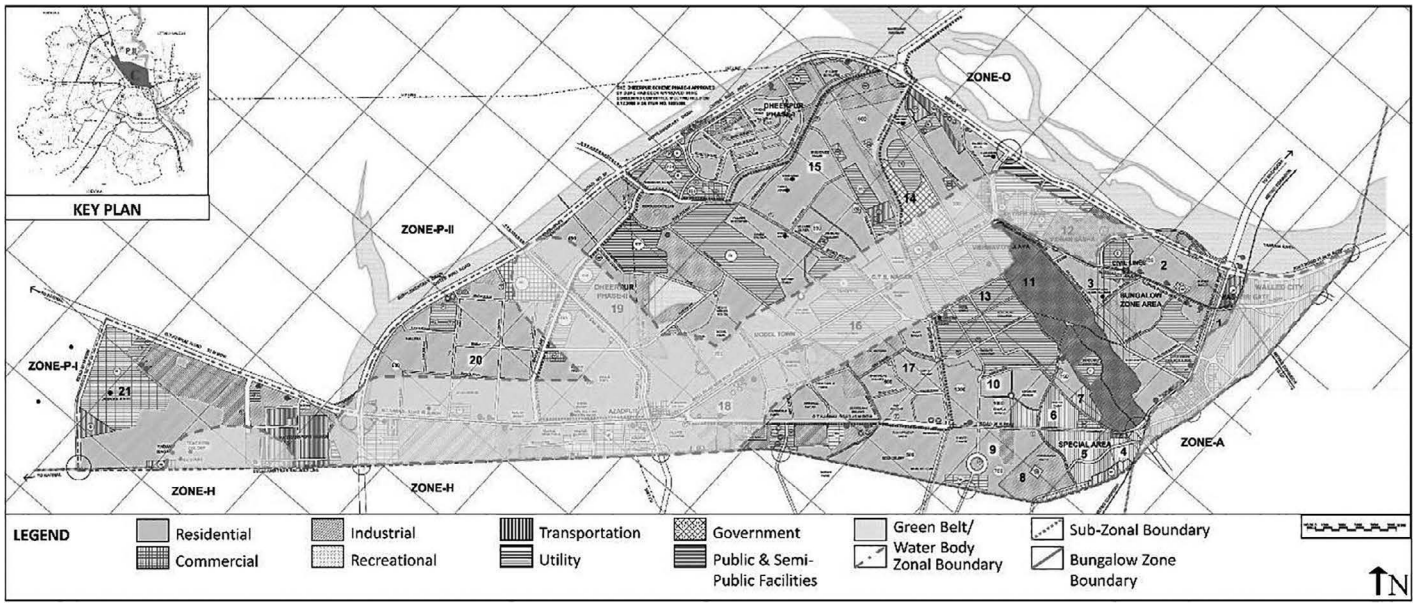

FIGURE 7.3 Superimposition of development zones on land-use zones

Source: Delhi Development Authority (2010).

to predict which activities will survive and which will become redundant in the next few years. A shift in manufacturing activity in Delhi has led to the closure of many industrial enterprises, which have been converted into banquet halls or commercial showrooms. Similarly, online shopping facilitated by large multinational corporations has led to a proliferation of large warehouses and new logistics requirements.

More directly related technological changes in urban planning are emerging with the advancement of mapping software. The differences between the 2006 NUIS classes and the 2016 AMRUT guidelines are primarily due to the availability of much more fine-grained data. With the endless possibilities that such data present, it seems that some of the basic principles of classification are becoming muddled. Many groups are asking for data for a variety of purposes. For example, central government property is shown as a class, as they want to know how much land they hold, and the same is the case for the railways. Amidst the overwhelming options available to us due to technology, the basics are sometimes lost. Thus, we end up maintaining slums as a class separate from residential areas because that is the way we are now framing the city. As elucidated in the next section, the lack of a more robust classification process has resulted in a substantial number of ad hoc decisions.

The Process of Reframing Zoning Regulations

Definitions and thresholds of permissibility are usually based on experts' techno-rationality. However, as Stage and Watson (2018)[37] argue, if we define rationality as a way of seeing with a particular set of values, these values can differ between the techno-managerial class, land developers with real estate interests and marginalised groups. Competing and powerful interests within cities and land markets, weak enforcement and socio-economic realities have continuously challenged these expert-driven zoning boundaries in Indian cities. Thus, the process of framing the classification system is as important as the classification system itself. This section highlights how that process has influenced and thereby changed zoning regulations with the examples of mixed-use and transit-oriented development policies in Delhi.

'Flexible' Land Use: A Case of Mixed-Use Regulations in Delhi[38]

As previously mentioned, mixed-use regulations were included as part of the MPD, 2001. The Master Plan was notified in 1990. Very little was implemented or permitted on the ground under these provisions until 2001. No specific streets were identified in zonal plans. Attempts were made for the provision of commercial activities in some of the group housing residential plots along main roads in new areas. In 1985 a Public Interest Litigation (PIL) was filed in the Supreme Court for closure of hazardous industries.[39] Over time, the PIL also included the closure of commercial shops in residential areas that were not in conformity with

the MPD. As we will see in later sections, this became a major trigger for pushing for major structural changes in the zoning regulations.

Preparations for the revised MPD, 2021 began around 2000. The economic liberalisation and privatisation in the 1990s led to a growing discourse in which master planning was characterised as a villain to shift the attention from implementation failures.[40] In 2003, the Ministry of Urban Development issued guidelines as a framework for the revision of MPD, 2021 in which it proposed 'flexible land use' and recommended the relaxation of mixed-use provisions and permission for commercial areas in industrial premises. Keeping these guidelines in mind, in the introductory chapter of the plan, the DDA included private-sector participation, liberalised controls for development, reduced standards for the poor, and more permissive zoning for residential areas:

> To meet the growing demand of commercial activities and overcome the shortfall of available commercial space, a liberalized provision of Mixed Use in residential areas has been adopted adhering to the requisites of the environment, while achieving better synergy between workplace, residence and transportation.[41]

The plan's chapter on mixed-use provisions openly acknowledges post facto permissibility:

> The policy acknowledges the need for permitting use of land for purposes other than that for which it was originally envisaged and lays down the conditions under which this may be applied in different situations.

Numerous modifications to the master plan have been made since 2007. Mixed-use provisions have been modified six times, with the last being as recent as March 2020.[42] Many of the modifications were initiated due to pressure from various groups to allow existing commercial activities on residential premises to prevent sealing and closure. As is argued elsewhere,[43] the process of modifying liberalised mixed-use provisions and post facto permission of 'violations' in the plan became central to court action, contestations, protests, and legislative interventions.

The state employed both short- and long-term strategies to deal with this heightened conflict and subvert Supreme Court orders. First, it set up an 'expert committee' known as the Tejinder Khanna Committee that was to hold 'stakeholder consultations' and provide inputs to ongoing revisions of Master Plan Delhi, 2021. Second, it used the power of the state government to identify 2,183 streets on which mixed use with much greater relaxations would be permitted. Finally, to provide immediate relief to traders from imminent demolitions, the Ministry of Law and Justice enacted the Delhi Laws (Special Provisions) Act, 2006 for one year while the master plan finalisation process was completed. The temporary relief became almost a permanent one, as the Delhi Laws (Special

Provisions) Act continues to be extended every year, and in 2017, it was extended till 2020.

These three interventions practically changed most of the provisions that formed the basis of the Supreme Court judgement. In one of its judgements, on earlier mentioned PIL, in December 2017, the court noted that '[a]s is quite evident, the authorities had commenced a cat and mouse game with this Court perhaps to protect the vested interests of those having little or no respect for the rule of law'.[44]

The first phase of contestations blurred boundaries at many levels. The interpretation of due process of law for plan modification was stretched, and the basis for defining permissibility became considerably fuzzy. Between 2011 and 2013, the DDA began the process of reviewing the master plan. Most suggestions came from landowners and developers. Another round of plan modifications emerged out of this review process. These modifications were related to the enhancement of FAR and further relaxations in the mixed-use provisions. Due to the fuzziness of most of the rationale for mixed use, the plan became open for everyone to demand modifications in these provisions.

The public notice process currently serves two main purposes. Mostly, it is seen as a formality to be completed as part of the plan modification process. In some cases, as in the case of mixed land use, it is used to legitimise dominant interests. In most cases, very few people are informed of the modifications or are interested in participating. In the case of most of the mixed land-use modifications, the board meetings were attended by residents as well as trader groups. However, the board is not bound to provide any reasons for its rejection or acceptance of citizens' objections and suggestions. The process does not even acknowledge competing interests in a systematic manner, let alone use these meetings as opportunities for resolution. Consequently, citizens' suggestions and objections are heard but not necessarily meaningfully considered.

The mixed-use modification process is an illustration of how boundaries of functional zoning have become a ground for contestations and accommodations, thereby raising fundamental questions around the purpose of zoning, the extent of flexibility and the processes through which competing interests remain unrecognised and unaddressed.

Flexible Land Use: Transit-Oriented Development Policy, Delhi

The second illustration is that of a supposedly more considered planned mixed use in the form of transit-oriented development. In December 2019, a little less than two years before the perspective period for the plan is scheduled to end, an additional chapter titled 'Transit Oriented Development (TOD) Policy' was inserted in the Delhi Master Plan. The aspiration of the policy is 'to ensure sustainable mobility and optimize utilization of land through compact mixed-use development'. Along with sustainable development, the policy intends to unlock the 'economic potential and land values' in the city.

Although there are many concerns of content and process related to TOD policy, the focus here is mostly on the implications of this modification mean for functional zoning. The policy is a superimposition of a development zone on proposed land-use zones (see Figures 7.2 and 7.3). The shaded portion in Figure 7.2 denotes the influence zone for TOD superimposed over the zonal plan, which includes a higher intensity of development along with mixed use. To accommodate mixed-use development, the land-use and development zones are combined. According to the policy, the predominant land use would encompass 50 per cent, and other uses can be mixed in a certain proportion.[45]

Conclusion

This chapter highlights the complexity of developing a classification system in planning and the challenges posed by larger societal changes on the organising principles of the current classification system. These issues merit more serious debate and discussion, as they form the ontological basis of the planning profession. This debate needs to start with the substantive question of the purpose of zoning and the current disconnect between that purpose and zoning regulations as reflected in a large population living in unsafe and unhygienic conditions and many more living in violation of zoning regulations in one way or another. We need to revisit the purpose for which zoning regulations are conceived. The priority of public health and safety seems to have taken a back seat in the present context, and most of the modifications seem to be driven by economic interests. What is the purpose of rules and how do they affect a place and quality of life? Does zoning bestow or remove rights? These are some of the questions that need to be addressed.

A second area of focus is the technique used to develop the zoning system. Currently, there is a trend of mixing development and use zones such that the logic of the system becomes fuzzy. It would seem that function will continue to exist as an organising principle. Although there are alternatives like form-based codes and performance zoning, in most cities, these are used to supplement rather than replace functional zoning. The classification system needs to provide a more relational and comprehensive understanding of aspects such as natural resources, developmental intensity and impacts of land use. The distinction between zones classified based on their suitability for development and those classified based on function can supplement each other. It would seem that there is a trend to combine function, developmental intensity, and resource protection.

National-level guidelines for land-use classes add very little in terms of simplicity and clarity. Rather, they add more categories and use zones. The introduction of the mixed-use category is a very weak attempt to deal with the issues posed by larger societal changes. The guidelines on land use classification need to address the fundamental questions of the nature and extent of changes in activities due to globalisation and technological changes. Otherwise, they will have very limited application in practice. How do we develop a zoning system that incorporates the rapid change and complexity seen in large cities?

A third set of questions revolves around the process of framing zoning regulations. This chapter highlights increasing contestations over zoning regulations. The example of contestations over the permissibility of commercial activities in residential areas demonstrates how the state aligns itself with the interests of powerful interest groups, and modifying the law is one of the strategies it has adopted to subvert law enforcement and accommodate those groups. This is a dangerous trend, as the rules of the game become increasingly fuzzy, which has both economic and social implications, and it also prevents discussions around the values and meanings inherent in different rationalities for developing a more holistic understanding. For such discussions to happen, the process needs to acknowledge different rationalities and develop spaces for deliberation.

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8

RETHINKING HIGH-RISE URBANISM

Design Strategies and Planning Tools

Vinayak Bharne[1]

Introduction: The Fallacy of High-Rise Urbanism

In his 1924 book *The City of Tomorrow and Its Planning*, Le Corbusier juxtaposed an image of Manhattan with his alternative version of 'the Contemporary City'.[2] In contrast to New York's compact high-rise aggregate, this new model depicted an airy field of 24 cruciform towers standing within a park. The street grid had been replaced by a field of gigantic mega blocks, the street wall obliterated by setting the buildings away from the block edge and the tower redefined as a freestanding and replicable object rather than part of a continuous, diverse urban fabric. Le Corbusier went on to demonstrate the model's application by superimposing it on the traditional Parisian grid. In response to what he saw as the congested, unhealthy traditional city, his 'Plan Voisin' erased the intimate horizontal fabric centred on courts and yards and imposed a new urban order that could not have been less stark.

The project was never realised, but the model and its manifesto – eventually known as the Ville Radieuse – marked a turning point for the formal, social, and moral dimensions of city making.[3] In the United States, central business districts that had come to be identified with the monumental streetscapes of towers now became vivid galleries for newer high-rise models. Popularised by New York's Lever House (1952), towers were made with their own plazas linked exclusively to private interiorised office parks. As seen in John Portman's hotels, glazed towers were perched on brutalist podia housing, parking, and service uses with dead street faces. Nothing was more antithetical to this nihilism than New York's and Chicago's early towers (ca. 1890) that, while expressing their individuality on the urban skyline, had simultaneously generalised their bases to nurture a vibrant street life (Figure 8.1).

Meanwhile, with developers vying for maximum land value, the tower also became a popular housing production prototype, and over the past few decades, hundreds of high-rise buildings erupted randomly within finely grained traditional

DOI: 10.4324/9781003296218-10

FIGURE 8.1 Midtown New York: high-density buildings fostering a vibrant street life

Source: Image courtesy Moule & Polyzoides

neighbourhoods, regardless of the size and scale of their neighbours. Such relentless extrusion is the result of a linear floor-area ratio (FAR)–based zoning that establishes a numerical maximum building envelope per zone where an FAR of three means that the total buildable area could be up to three times its lot area. In the absence of other guidelines, this area can therefore be legally accommodated in a six-storey perimeter block building just as conveniently as in a 20-storey tower, irrespective of context. With FAR offering assembled lots, considerable buildable areas over individual ones, high-rise accumulations have now become synonymous with high-end housing production from Buenos Aires to Mumbai (see Figures 8.2 and 8.3).

The most dramatic products of this FAR syndrome are the 'circumstantial hyper-Manhattans' of South-East and East Asia. In Tokyo, for instance, towers are peculiar simply in the way they exist in fragmented, cacophonic spurts amidst

FIGURE 8.2 Tall, thin buildings in the Shinjuku District of Tokyo, Japan, are the result of the literal vertical extrusion of small lots

Source: Author.

FIGURE 8.3 Lunkad Skylounge, Pune, India: slabs and towers define a common green in this high-end residential enclave secured by walls and gates

Source: Author.

fabrics of relatively minuscule buildings. Standing in anything but an urban grid, they defy any urban logic save their presence on important streets and subway stations. Resulting from ad hoc piecemeal vertical extensions of historic lots by successive entrepreneurs, they often embody spasmodic configurations as seen in Roppongi or Kachijo, with low medieval fabrics surrounded by high rises, creating sharp disjunctions from bustling high-rise urbanity to quiet, small-scale traditional circumstances right next to each other.

Similarly, in Hong Kong, with individual property owners competing for optimum land value, unique fabrics of tall, thin buildings on small, traditional lots have come arisen, with little concern given to light and air. These 'pencil skyscrapers' have an extremely low aspect ratio (gross floor area divided by the number of stories) compared to typical high-rise buildings in the U.S. or Europe. Here in 20- to 25-storey heights, each floor typically contains no more than a pair of 400-square-feet units, with the bottom two floors dedicated to commercial use. They are the result of Hong Kong's relatively laissez-faire building height limitations from when the British-controlled government traded the discretionary European planning controls for a developer-friendly quasi-mathematical formula. This hyper-Manhattan prototype has now spread from Malaysia to China, making it the most dominant high-rise urban model in Asia (see Figures 8.4 and 8.5).

Another high-rise model is typified in Asia's numerous new townships. Here, as exemplified by Amanora Park Town in Pune, India, high-rise towers are located

FIGURE 8.4 'Pencil skyscrapers' in central Hong Kong

Source: SPWan9108, Wikimedia Commons.

FIGURE 8.5 High-rise wall in Hong Kong

Source: Yancee2011, Wikimedia Commons.

within a single 'zone' of the town plan rather than being arranged along both sides of major boulevards and avenues. This represents the literal opposite of the Manhattan model, where towers line streets helping define a vibrant public realm. Large adjacent individual sites within the high-rise zone of these new towns contain prototypical 'clusters' of towers accompanied by common lawns and other amenities. For all the branding and architectural creativity that accompanies these vertical communities, this high-rise model eventually results in disparate introverted enclaves that deny any response to the spaces between them. How to modify this model to offer practical and positive responses to the public realm of these new towns remains a significant urban design and architectural question.

The tower as an urban landmark may contradict the iconic place traditionally reserved for religious edifices or palaces and, later, for a few state institutions such as the Nebraska State Capitol and the Los Angeles City Hall. Yet Kuala Lumpur's Petronas Towers, Dubai's Burj Khalifa, and Pudong's Jin Mao Tower also echo the original intentions of the skyscraper as a symbol of commercial competitiveness. The problem, however, is that few of these marvellous icons engage in conscious urbanist responsibilities. The publicly accessible mall at the base of the Petronas Towers is completely internalised with dead street walls and narrow sidewalks. The 3,800-feet × 2,800-feet lake-centred oval mega block containing the shimmering Burj is an urban fortress with nothing happening at the block street edge. Jin Mao Tower, located along Century Boulevard, neither contributes to any collective street form nor marks any public space and has multiple tenants demanding separate lobbies at its gigantic base. Any clear notion of a front, or entry, or understanding of the experience of moving between the street and building is totally disorienting. Inasmuch as the endowing of these private monuments with cutting-edge technology and architectural symbolism are laudable, their urbanist contributions remain tellingly questionable (see Figures 8.6 and 8.7).

FIGURE 8.6 Shanghai Bund: the buildings make a continuous urban wall defining the promenade edge

Source: Wikimedia Commons.

FIGURE 8.7 Aerial of Pudong with the Jin Mao Tower in the foreground: the random location of towers set back from the street, and the lack of a street wall present a blatant contrast to the controlled diversity of the Bund in the backdrop

Source: Photo by Jakub Hałun, Wikimedia Commons.

A hundred-odd years since they first appeared in Manhattan, the virtues and vices of skyscrapers have not gone unnoticed. Hardly limited to Ken Yeang's bioclimatic skyscraper manifestos, a lot has been written about reforming the high-rise as an architectural object. Yet relatively little has been said about rethinking its urbanism.[4] The conscious assemblages of towers and slabs towards coherent urban form, their positive role in street making, intrinsic relationships with block sizes, combinations with other mid- and low-rise typologies to recast high density in urbane forms, and the planning tools to enable them are subjects that remain below the radar. How, then, can high-rise urbanism be empowered to foster a rich urban life without compromising the ambitions and aspirations of the builders?

Shaping Urban Form

The collective arrangement of high-rises towards something bigger and identifiable than themselves alone is equally if not more important than their solo contributions to the urban skyline. The high-rise district is one such place type characterised by a grid of hierarchical vertical buildings. Principal avenues carry taller buildings than side streets. Blocks have alleys that accommodate all service uses behind the buildings, creating positive frontages towards the street. At street level, the tower is de-glamorised and turned into an undemonstrative urban unit intended for making street walls. In 1916, New York City passed an ordinance requiring all building massing to step back from the street to ensure ample light into the street space. The consequent art deco towers carefully respected the street by using a fairly planar 10 stories or so of their façades to create the abutting frame that these rights-of-way needed, and beyond that point, towering faceted and pinnacled masses strove skyward to create the skyline (Figure 8.8).

The high-rise corridor is another place type identifiable as a high-density spine that both separates and connects various neighbourhoods or districts. It is typically half to one block deep, with tall buildings lining a major thoroughfare and tapering down into mid- and low-rise fabrics. The base of these buildings is activated with retail and commercial uses, street-friendly frontages, and ample sidewalks. In some cases, such as seen in Vancouver, the towers are set back atop a two- to three-storey residential or commercial base defining a lower scale street room. On Michigan Avenue in Chicago or Wilshire Boulevard in Beverly Hills, the essential identity stems as much from the character of the right-of-way as the continuity and richness of the high street wall (Figure 8.9).

The composing of high-rises to create conscious urban space is a forgotten art. Stuart Cohen, in his analysis of Chicago's Michigan Avenue, noted how four skyscrapers designed independently – the Wrigley Building (1921), 333 North Michigan Avenue Building (1923), Tribune Tower (1925), and London Guarantee Building (1928) – work together to define a very specific figural urban space.[5] Likewise, the Rockefeller Center, situated on three elongated blocks in Midtown Manhattan, has multiple office slabs of different heights and orientations hierarchically surrounding the tallest central tower fronting a T-shaped plaza. The towers have thin profiles, maximising the amount of natural light into the street, with

FIGURE 8.8 Midtown Manhattan: Central Park is visible in the background

Source: Photo by Moule & Polyzoides.

FIGURE 8.9 Michigan Avenue, Chicago

Source: OmidGul, Wikimedia Commons.

space between the towers carefully calculated to permit the central tallest one to be seen in its entirety. These high-rise assemblages are exceptional and exemplary because they prioritise the city and its configurations as more important than the architectural idiosyncrasies of the single buildings (see Figure 8.10).

FIGURE 8.10 Garden at the base of Rockefeller Center, New York, looking towards the central tower

Source: Photo by Moule & Polyzoides.

Designing the High-Rise Block

At the scale of the urban block – the mediating element between the district or corridor and the building – the high rise has a tarnished reputation for contextual appropriateness. The idea of 'Blending Density'[6] is a response to this syndrome. Instead, of accommodating a given programme within a single vertical extrusion in the block centre, it advocates for a heterogeneous distribution of this programme throughout the block. It replaces a single tower with a calculated typological or massing diversity that responds to and evolves from the character of its adjacent context. For instance, a density of 200 dwelling units per acre can be achieved through a single freestanding tower floating within the block or a combination of mid- and low-rise buildings that line up the entire street face and establish compatibility with the adjacent fabric. The same density can thus be achieved through the juxtaposition of multiple dwelling types whose various individual density numbers average the eventual target.

The Yuzhnoye Block study for a new town in Russia by Moule and Polyzoides (2011[7]) demonstrates how high densities can be appropriated in diverse building and block scale configurations. Using a consistent block size of 300 feet × 300 feet (2 acres), the study developed four residential block types based on different combinations of four building types:

- Two Towers + Mid-Rise Perimeter Building + Row-House Mews + Corner Loft Building
- One Tower + Mid-Rise Perimeter Building + Row-House Mews + Corner Loft Building
- High Rise + Mid-Rise Perimeter Building
- Mid-Rise Perimeter Building

Each block type accommodates approximately 175 units. Block types that include row houses provide an additional 12 units per block (totalling 187 units). The Corner Loft Building accompanies the row-house building type occupying the corner location and serves as a bookend to provide frontages to both streets. Despite the varying configuration of a given block's building types, the unit count is kept constant by varying the number of stories of the perimeter block. Each version provides a single level of semi-subterranean parking for one car per unit with row houses providing additional at-grade parking spaces (Figure 8.11).

The study further shows how various block types assembled in a grid can generate the specific character of streets and districts. Larger avenues and parkways can take bigger and higher buildings, and smaller neighbourhood streets can repeat the scale of single-family dwellings. A simple DNA of four building types and their combination into a finite variety of block types can generate a rich and complex urbanism, derived as a seamless extension of its adjacent context (see Figure 8.12). Here, various block types are combined to create a type-diverse and contextually compatible high-density fabric.

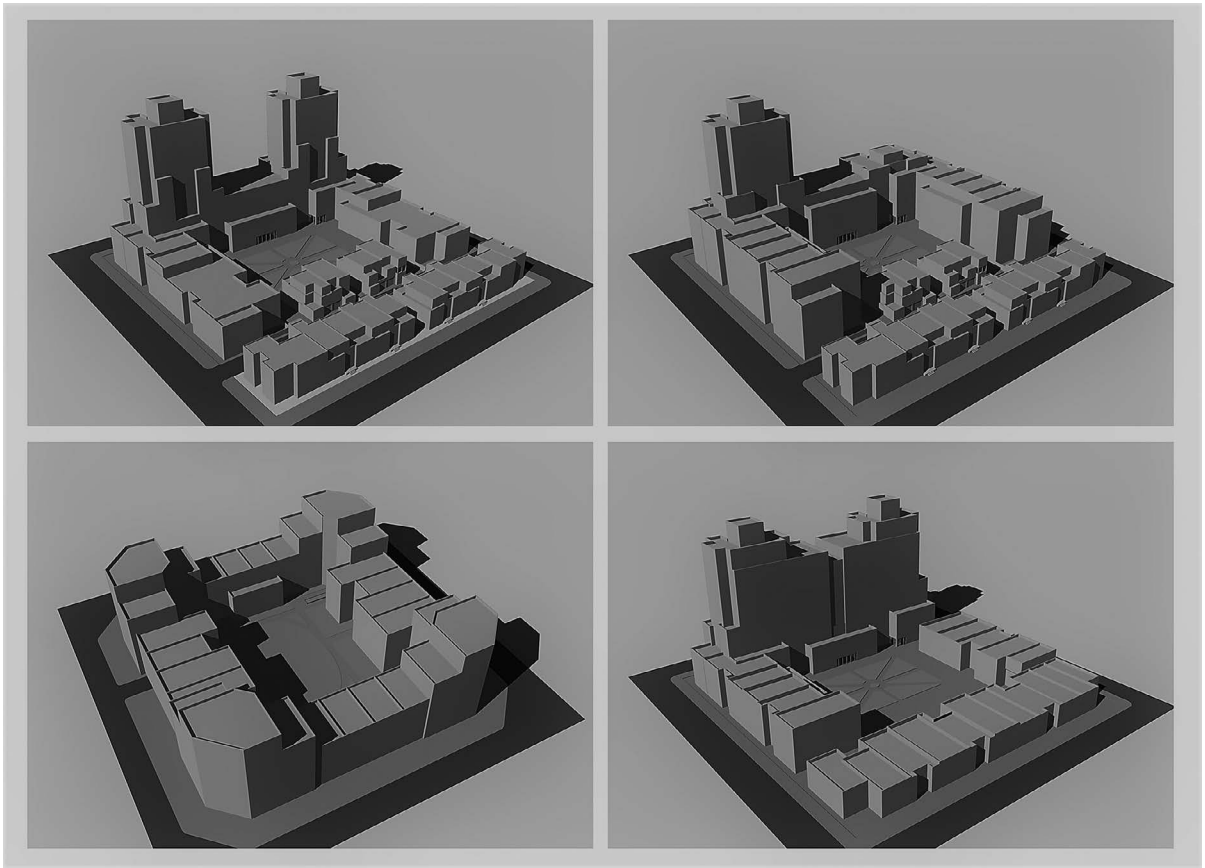


FIGURE 8.11 Yuzhnoye Block Study by Moule & Polyzoides: the targeted number of units is achieved through four different density and massing variations, all creating continuous street walls. Clockwise from upper left – 1. Two Towers + Mid-Rise Perimeter Building + Row-house Mews + Corner Loft Building, 2. One Tower + Mid-Rise Perimeter Building + Row-house Mews + Corner Loft Building, 3. High Rise + Mid-Rise Perimeter Building, 4. Mid-Rise Perimeter Building.

Source: Image courtesy Moule & Polyzoides.

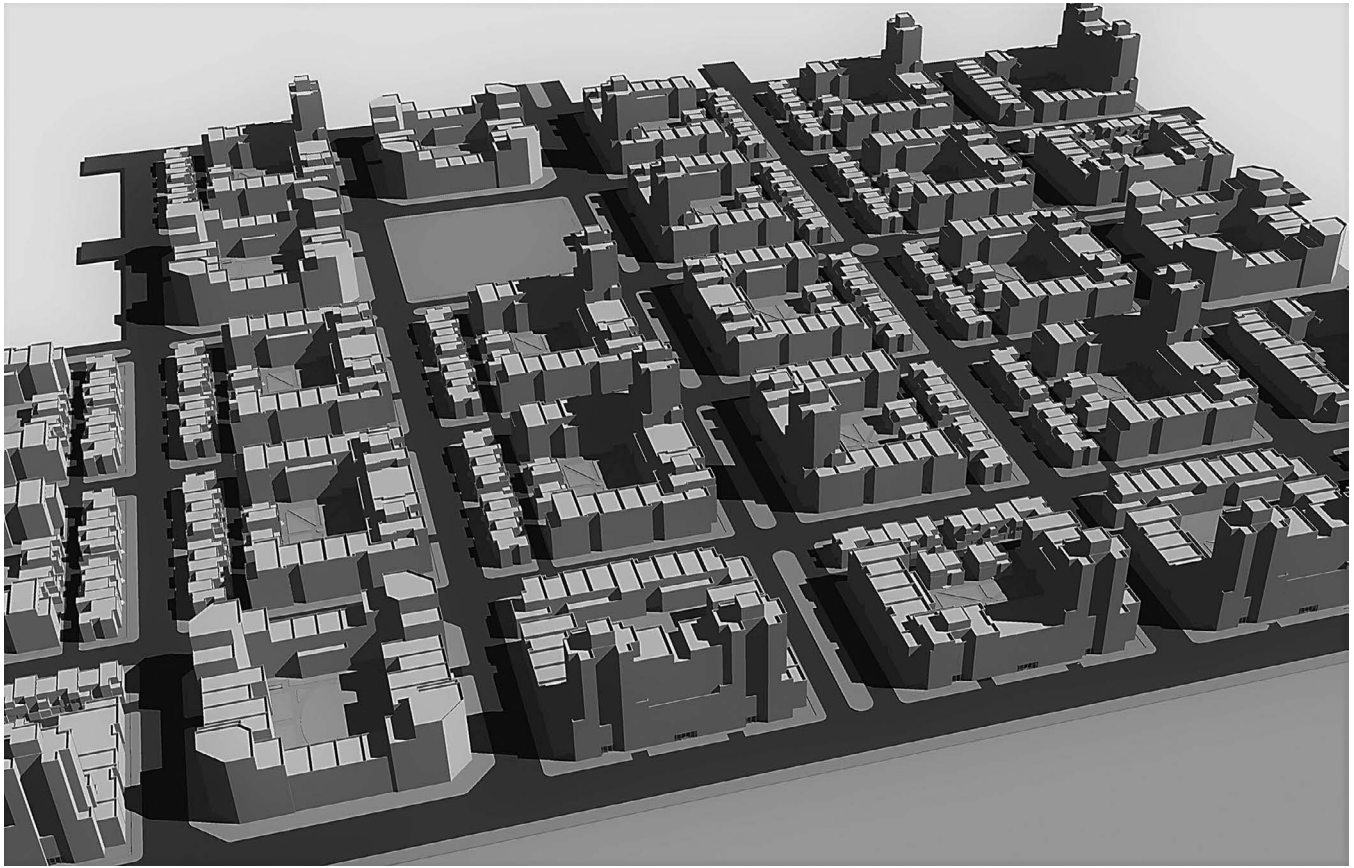


FIGURE 8.12 Yuzhnoye Block Study by Moule & Polyzoides: various block types are combined to create a type-diverse and contextually compatible high-density fabric

Source: Image courtesy Moule & Polyzoides.

Blending density affirms the intrinsic relationship between building footprints and block sizes particularly because towers require appropriate adjacent open spaces to ensure ample light at their base. If a block is too small, tower footprints cannot be combined with other types on a single block as the required sizes of intermediate courts and quads cannot be accommodated. Block sizes, particularly in new urban cores, should therefore be officiated only after examining such potential hybrid combinations and thereby enabling them. In downtown San Diego, the high-rise slab is arranged back to back, with mid-rise stacked flats within the same block. This block type is particularly suited along corridors to transition high densities into adjacent lower density fabrics (see Figures 8.13 and 8.14).

In the Cityfront Place in Chicago, slabs are set back and lined with townhouses, creating a pedestrian scale base, now also known as the Vancouver model.

FIGURE 8.13 Downtown San Diego: the high-rise slab is arranged back to back with mid-rise stacked flats within the same block. This block type is particularly suited along corridors to transition high densities into adjacent lower density fabrics

Source: Image courtesy Moule & Polyzoides.

FIGURE 8.14 Cityfront Place, Chicago: slabs are set back and lined with townhouses, creating a pedestrian scale base – now also known as the Vancouver model

Source: Image courtesy Moule & Polyzoides.

Integrating High Density and Mass Transit

Manhattan, Hong Kong, and Shinjuku work because of their interdependence with an efficient and widely distributed rail transit system. Mass transit in all forms helps balance thoroughfare capacity by reducing automobile reliance and traffic volume and preventing what would otherwise be a perpetual and guaranteed gridlock. Specific locations of high-rises and their synergy with proposed or existing mass transit therefore are critical to the success of high-rise places. The conceptual section through Hong Kong's Central Business District shows that the International Finance Centre (skyscraper to the right in Figure 8.15) and other major office towers form part of the centre of Hong Kong's transport network that boasts of the fastest rail link from the city centre to the international airport of all the major financial centres in the world (see Figure 8.15).

The growth strategy of Curitiba, Brazil, provides important insights in this regard. In 1966, the Curitiba master plan proposed a siphoned urban growth along five structural axes radiating from the urban core.[8] Instead of focusing

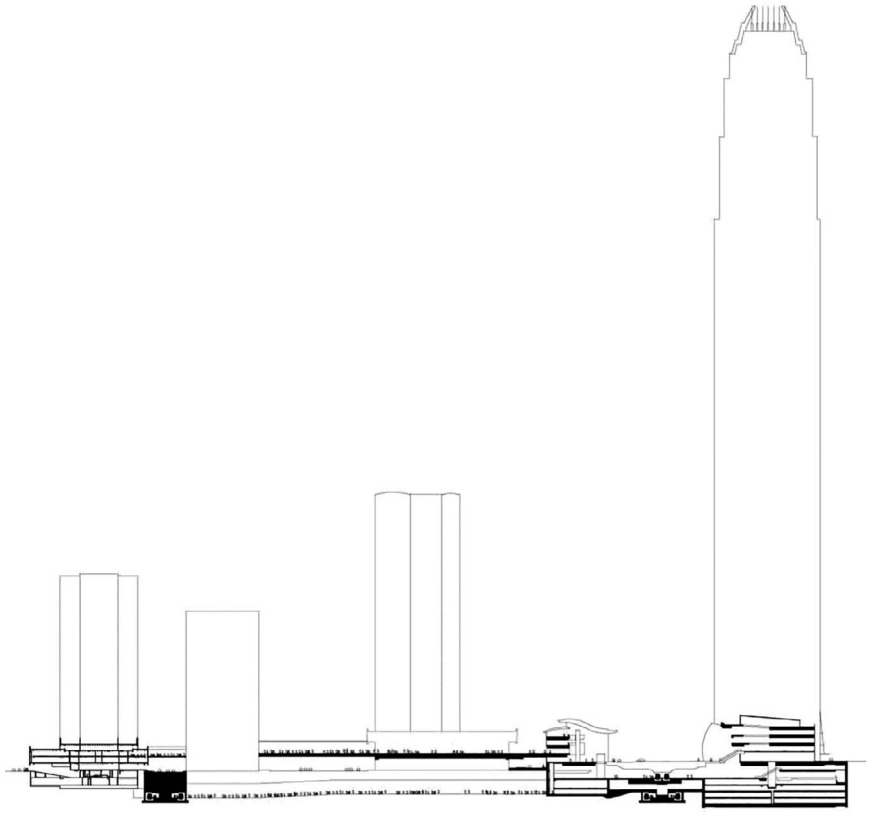


FIGURE 8.15 Conceptual section through Hong Kong's Central Business District: the International Finance Center (skyscraper to the right) and other major office towers form part of the centre of Hong Kong's transport network – that boasts the fastest rail link from the city centre to the international airport of all the major financial centres in the world

Source: Drawing by author.

their infrastructure solely on cars, the planners initiated a rapid bus mass transit system in the central lanes of these corridors that has now gained global attention. What is less known is that the land fronting these transit corridors was simultaneously zoned for high-rise buildings with residential and office uses above and retail commercial uses at street level, guaranteeing that the fabric would not only produce but also attract transit trips. As one progresses outward from these corridors, the residential densities decrease from mid-rise buildings of 8 to 12 stories to low-rise garden apartments of three to five stories to zero lot-line structures such as row houses, duplexes, and single-family detached homes. This conscious FAR reduction has not only helped keep land speculation in check but also allowed diverse products, enabling the middle class to purchase housing within their budgets.

Furthermore, to incentivise the plan's implementation, zoning was changed to permit little to no development in downtown Curitiba while promoting high-density, mixed-use development along these transit axes (see Figure 8.16).

This strategy has not been immune to capital pressures. For example, the fifth of these axes, Conectora 5, failed to catalyse growth for more than two decades. Land along the corridor, originally envisioned for housing workers from the proximate industrial city, was grabbed by influential developers and left dormant for two decades until land values increased. The urbanism along these corridors

FIGURE 8.16 Curitiba, Brazil: Republica Argentina Avenue, one of the BRT corridors, showing high-rises with public transit on the street

Source: Mario Roberto Duran Ortiz Mariordo, Wikimedia Commons.

is a far cry from the controlled consistency seen in the best Western models. Several gated communities and edge cities have simultaneously created new forms of urban alienation. And the master plan's quick implementation against an initially unwilling population was possible due to Curitiba's militaristic government. Curitiba therefore may not be a model to emulate everywhere. However, its successful integration of transit and high density through a non-speculative and formal planning strategy is something other cities should learn from.

Regulating High-Rise Urbanism

This idea of prioritising urban form over land use has now reached its culmination in form-based codes that numerous cities across the United States are adopting as alternatives to conventional zoning. These graphic regulations visualise in advance the interrelated physical characteristics of streets, buildings, and open spaces, all towards a large physical vision. The Land Use Plan is replaced by a Regulating Plan whose various colours indicate not use zones, but development intensity zones ranging from urban cores and corridors to neighbourhoods of various densities. For each zone, specific urban standards specify block by block, street by street, or lot by lot regulations on building placement, parking placement and building profiles with further specifications on permitted building frontages, enabling a predictable urban form with an open-ended architectural character.

The recently adopted Miami 21 zoning code by Duany Plater-Zyberk for the city of Miami, for instance, mandates strict regulations for the minimum base height of towers within the urban core.[9] Façades are mandated to be built parallel to the principal frontage line along a minimum of 70 per cent of their setback length. In the absence of a building face along the remainder of the lot, a street-screen is required to be built co-planar with the façade to shield parking and service areas. When two or three principal frontages meet at thoroughfare intersections, the building corner is allowed to recede from the designated setback up to 20 per cent of the lot length. When the frontage line is more than 340 feet from a thoroughfare intersection, the building is required to provide a pedestrian cross-block passage, just as a vehicular cross-block passage is required once that dimension increases to 650 feet (see Figures 8.17 and 8.18).

Parking is required to be accessed by an alley or from the secondary frontage when available. All parking along a primary frontage, including drop-off drives and porte-cochères, is required to be masked by a liner building or street screen. All parking on secondary streets is likewise required to be masked by a linear building for a minimum of 50 per cent of the length.

Above the eighth floor, maximum building floor-plate dimensions or area footprints are spelt out along with minimum spacing requirements between buildings to ensure adequate light and air. Any high-rise is thus ensured a predictable and carefully regulated base that addresses the public realm in positive ways, with the tower perched above open to architectural expression.

TABLE 5A TOWER (BLOCK-SCALE BUILDING)

A. Requirements. Buildings designed per the Tower standards shall comply with all applicable requirements of Table 5A for the identified zoning district.

B. Description and Intent: A building organized around a central core. The first four floors of this building type are expressed as a base that defines the streetscape. This allows for pedestrian-scale mid-rise buildings to define the street frontage with tall, thin towers or slabs extending higher, ensuring that the massing of tall buildings is in the spirit of Downtown's historic towers, as well as diminishing shadows on the street and on adjacent properties.

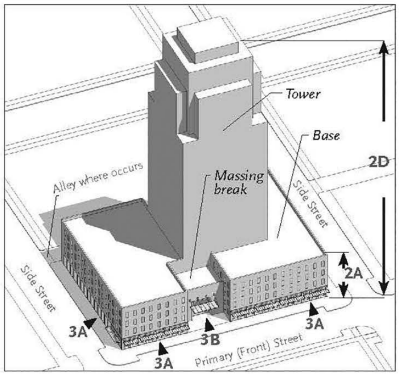
C. Lot and Building Requirements: Each Tower building shall comply with the requirements of Table 5A.

D. Lot and Building Configuration: Each Tower building may be designed and configured on its site in any manner consistent with the requirements of Table 5A. Examples of configurations are shown in Diagram 5A.

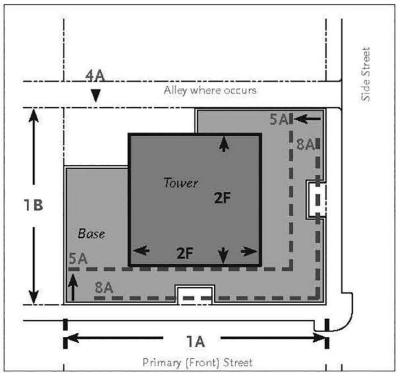
Standard	Zoning District															
	CBD 1	CBD 2	CC	CT	CA/ SS/ SVN	TC	NC	CG	NG	NGP	NGR	NE	SDG1	SDG2	SDA	SD H
1. Lot Size																
A. Width (ft)	400 max			NOT ALLOWED												
B. Depth (ft)	150 max															
2. Building Size and Massing																
A. Base Height (stories)	2 - 4	4 max	4 max	NOT APPLICABLE												
B. Base Length (ft)	400 max, but if over 200 feet, must provide 30 ft x 30 ft massing break															
C. Base Width (ft)	150 max															
D.Tower Height (stories)	15 max	10 max	10 max													
E. Tower Length (ft)	200 max															
F. Tower Width (ft)	120 max															
3. Pedestrian Access																
A. Ground Floor	direct access from sidewalk			NOT APPLICABLE												
B. Upper Floors	direct access from street level lobby															
4. Parking and Service Access																
A. Lot with alley	from alley			NOT APPLICABLE												
B. Lot without alley	via driveway located as close to side yard property line as possible															
C. Corner lot without alley	from side street via driveway located as close to side yard property line as possible															
5. Parking Location																
A. Required parking	subterranean, ground and second floor: min 30 ft from primary property line			NOT APPLICABLE												
	upper floors: allowed to all setbacks															
6. Service Location (dry utilities, above ground equipment, trash containers)																
A. Lot with alley	adjacent to alley			NOT APPLICABLE												
B. Lot without alley	as close to side yard and/ or rear yard property line as possible															
7. Open Space and Landscape (required for residential uses only)																
A. Balcony	50 sq ft min in lieu of or in addition to shared open space			NOT APPLICABLE												
B. Shared	3,500 sf min. if balconies not provided; may be provided on roof															
8. Frontage																
A. Base	90% min. along primary street, side street, and open space frontages per allowed frontage types per Section 6.0			NOT APPLICABLE												
B. Tower	along a public street or open space: per Section 10.0 General Standards															

FIGURE 8.17 and 8.18 Examples of a form-based code showing standards for a high-rise tower

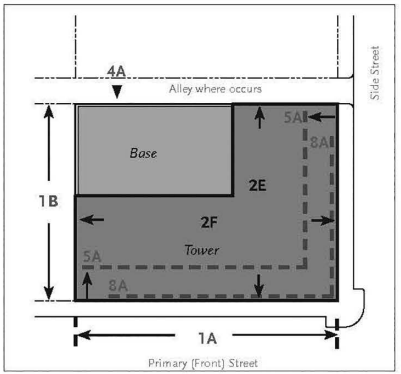
Source: Moule & Polyzoides.



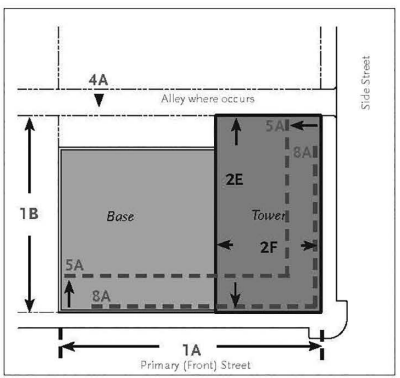
Illustrative Massing Diagram



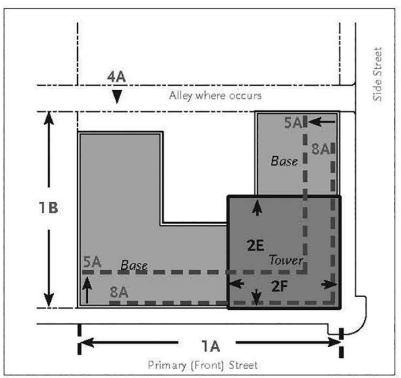
A central tower sits on a base



An L-shaped tower sits towards the front of the site



A linear tower sits towards the front of the site



A narrow tower site at the corner of the site

FIGURE 8.17 and 8.18 (Continue)

In other form-based codes, high-rise typologies, such as the tower and slab, form part of an entire menu of residential types organised by intensity from least to most dense, each with their respective physical characteristics, density (units per acre), or FAR numbers. The code specifies types that are permitted within specific zones of the Regulating Plan; for example, the tower might be allowed on lots facing a corridor but not on lots adjacent to single-family neighbourhoods. The typological menu coupled with zone-specific urban standards provides an alternative planning tool for enabling responsible urban form (see Figure 8.19).

Prospects and Cautions

From Manhattan to Ville Radieuse to Hong Kong, the high-rise city, having existed for more than 100 years, is a tradition by now, even though its civic dimensions might have waned through this evolution. However, alternative regulatory methods towards humanising high-rise dispositions are being increasingly embraced by municipalities and developers, particularly in North America and Europe. Several Asian cities, too, are counteracting the existing urban trends. In 2003, Tokyo initiated a new policy on Urgent Improvement Zones designed at the municipal level to bypass the central government and offer a far more streamlined process for private-sector engagement. Taipei's sprawling laissez-faire style of urban growth, characteristic of so many South-East Asian cities, has begun to settle into a more legible pattern of diverse urban centres and surrounding communities.[10] The Vancouver tower prototype, with the building set back atop a low street-friendly podium, is spreading around and beyond the Pacific Rim.

Still, difficult questions persist. Form-based codes, for instance, work well within the highly regulated jurisdictions of countries such as the U.S. but are far more difficult to implement in countries with relatively ambiguous legal, political, and development systems. Ironically, the circumstantial hyper-densities of several Asian countries present blatant contradictions to such formalised urbanisms. For example, many high-rise places in Asia, despite their seemingly haphazard identities, boast of a vibrant street life many Western cities would aspire to. At Nariman Point in Mumbai's Central Business District, even as franchised business activity dies down in the evenings, street life is re-energised by illegal hawkers, vendors, and daily street fairs.

In several countries where the public realm carries cars, pedestrians, animals, and pavement dwellers, the desire for insular communities is understandable, with street-level units increasingly difficult to sell. In India for example, the prototypical inner-city high-rise model is a fenced and gated world, with towers surrounding a vast central space. With security being a paramount issue across India, the introverted semi-private world of these high-rise communities does have its advantages, with the central space used as a secured playground for children and as

FIGURE 8.19 Residential typology transect

Source: Image courtesy Moule & Polyzoides.

FIGURE 8.20 Contrasting urbanities in Shanghai

Source: Photo by Nicole Friend.

the seasonal setting for numerous communal festivities. Such realisms suggest other readings of the contemporary city, beyond the European and North American idea of building faces as the prominent interface between the public and private realm.

But even so, the methodologies and approaches discussed earlier, might serve to provoke deeper reflections on how to balance the merits of such introverted models with a conscious attention to street and block faces. In India, for instance,

the pragmatism behind introverted projects need not translate into streets becoming residual spaces for cars. Security walls that protect a high-rise enclave can be rethought as low-rise buildings that accommodate non-residential uses such as retail, offices or even informal vending which is so common in Indian neighbourhoods. By substituting a utilitarian street wall with an active fabric, irrespective of its use, streets can be defined as rich and vibrant places without compromising the security of the high-rise worlds behind them (see Figure 8.20).

Concluding Remarks

From a global standpoint, the high-rise city remains a negotiated territory, a juggling act among private interests, political processes, and the public good. While private entities might be entitled to seek their advantage in the urban fabric, the shape of the city should eventually be a collective decision that needs to be supervised carefully. Rethinking high-rise urbanism through regulations and alternative design methods are steps in this direction. But as these steps go beyond their originating Euro-American worlds, one must also listen carefully to the cautions regarding the hazards of overconfidence and false assurances. If non-Western examples teach us anything, it is that high-rise urbanism is not a one-shoe-fits-all model. The high-rise building, as both an architectural and an urbanist prototype, may have been born in the crucible of the West, but today, its numerous global variations are evidence of how and why our cities are different across the world. The future of high-rise urbanism from a global perspective can therefore never be formulaic and universal. Any reflection on how to adapt, enhance and transform the high-rise city must essentially emerge from the administrative and socio-political realities that surround and shape it.

Notes

1 Note: This chapter is an updated version of an original article titled 'Humanizing High-Rise Urbanism: Design Strategies and Planning Tools', *Council for Tall Buildings & Urban Habitat Journal*, 4, 2011.
2 See Le Corbusier, *The City of Tomorrow and Its Planning*, New York: Dover Publications, Inc., 1987. The book was originally written in French under the title *Urbanisme*. It was translated from the eighth French edition as 'The City of Tomorrow and Its Planning' and originally published by Payson & Clarke Ltd., New York in 1929.
3 For more on the Ville Radieuse and its evolution, see Kenneth Frampton, *Modern Architecture: A Critical History*, London: Thames & Hudson, 1992.
4 For more on Ken Yeang's 'bioclimatic skyscraper' idea, see Robert Powell, *Rethinking the Skyscraper: The Complete Architecture of Ken Yeang*, London: Thames & Hudson Ltd., 1999.
5 See Stuart Cohen, 'Tall Buildings Urbanistically Reconsidered', *Threshold Vol. 2, Journal of the School of Architecture*, Rizzoli: University of Illinois Chicago, 1983.
6 The term *blending density* or *blended density* has emerged primarily in the New Urbanism movement as an effective means to merge residential densities in contextually appropriate forms.

7 Vinayak Bharne, 'Humanising High-Rise Urbanism: Design Strategies and Planning Tools', *CTBUH Journal*, 2011, 4: 18–23.
8 For Curitiba more, see Robert Cervero, *Creating a Linear City with a Surface Metro: The Story of Curitiba, Brazil*, Institute of Urban and Regional Development, Working Paper 643, University of California at Berkeley, Berkeley, CA, 1995.
9 For more on Miami 21 Code, see www.miami21.org.
10 For more on recent trends in Southeast Asia, see Peter G. Rowe, *East Asia Modern: Shaping the Contemporary City*, London: Reaktion Books Ltd., 2005.

9

RECLAIMING URBAN PRACTICE FOR INDIA

What Can Design Teach Us?

Aseem Inam[1]

The increasing complexity, rapid change and often unpredictable outcomes of city-design-and-building processes demand new modes of practice that are responsive and adaptive to the specifics of these changing contexts. Just as our cities and regions are growing and changing in leaps and bounds, so must our thinking about the future of our places grow and change in leaps and bounds, because archaic and rigid approaches to urbanism cannot serve what are fantastic new realities. What is particularly interesting is that alternative modes of urban practice can be inspired by and derived from informal strategies that have existed in India and other parts of the global South for millennia and are very much present to this day. To develop such powerful new practices for the 21st century, design – especially in its creative thinking and engagement with the material city – can be a wonderful teacher.

In order to accomplish this, we must engage in the following shifts from being obsessed with disciplinary boundaries and procedural limits towards a much healthier obsession with deeper purpose and long-term impacts. These fundamental shifts include moving from urban design and planning to urban practice; from top-down expertise to collaborative partnerships; and from incremental changes to radical transformations. What we are advocating is not necessarily a shift in terminology – although that would be helpful – but rather a shift in attitude by being more open towards different modes of practice and towards seeking common ground. We call such a practice the 'urban practice' rather than conventional notions of urban design or city planning. In this approach, we emphasise the creative and critical aspects of design as being essential to this approach. In the rest of the chapter, we sketch out this approach.

DOI: 10.4324/9781003296218-11

Reclaiming Urban Practice for India: Rediscovering Homegrown Innovation

There is increasing interest in finally acknowledging the significance of the global South, not only in terms of the sheer size of its population and geographical area but also the fact that some of the world's oldest continuously inhabited human settlements are actually found in Asia, Africa, Central America, and Latin America. In addition to deep historical and cultural traditions in urbanism, the global South also represents distinctive ways of viewing the world. Such acknowledgements have led to research such as revisiting notions of informality and examining the legacies of colonial urbanisms through empirical studies from urban Asia (Bunnell and Harris 2012; Inam 2012).

The term *informal sector* was coined in 1971 by a British anthropologist, Keith Hart, in a study of low-income activities among unskilled migrants from northern Ghana to the capital city, Accra, who could not find wage employment (Chen, 2012: 2). Thus, 'informal urbanisms' were 'discovered' in the global South. Conventional definitions describe *informality* in terms of economic activities that lie outside formal and legal systems of regulation, remuneration and state control (Bunnell and Harris, 2012). In this perspective, a wide range of activities and enterprises are collectively classified in opposition to the formal sector, such as street vendors, jitney drivers, day labourers, pedicab drivers, and small artisans (even criminal activities like the drug trade), as well as the places, people, and housing associated with such activities.

In terms of urban practice, there are some common legal and financial codifications that are relatively clear and that govern places, the ways in which they are produced, and the activities that occur there. In the city, these include regulations such as zoning, financial mechanisms for funding development, and established procedures followed by the real estate development industry, all of which are widely accepted legally and tend to favour the production of certain types of places and associated activities. In contradistinction, the most obvious forms of informality in the global South are informal settlements, more commonly and pejoratively known as 'slums'. These have been seen (and, in many cases, are still perceived in the popular discourse) as places that are separate from or at the fringes of the everyday city. At the same time, there is an increasing body of research that seeks to move beyond the dualism of formal versus informal, focusing on their interpenetration as well as on the ambiguity in understanding these two sectors (Roy, 2011).

In fact, 'informal urbanisms' are not marginalised forms of places and practices; rather, they are central to understanding the logic of urbanism because they constitute debates about what is legal and illegal in the city, what is legitimate and illegitimate, and with what effects. We define *informal urbanisms* as the transactional conditions of ambiguity that exist between what is acceptable and what is unacceptable in cities. Within this discourse, informal Indian traditions of resourcefulness and innovation can be seen as constantly evolving and reinterpreted in the realities of the formal 21st-century city.

One such Indian tradition is *jugaad*, which is a Punjabi variation of the Hindi *jugat* and derives from the Sanskrit word *yukti*, from the root *yug* or 'union', and carries multiple meanings ranging from skilful reasoning, argumentation, trick, cunning device, adaptability, adjustment, being inventive, dexterous, and clever. Kaur (2016: 313) describes:

> The idea of *jugaad*, or frugal innovation, has gained wide popularity within policy circles and business schools as a breakthrough formula – from a quick-fix solution grown in adverse conditions to a six-point business principle – for economic growth generation. I argue that the new jugaad innovation narrative offers an uplifting, potentially emancipatory discourse of mobility in a setting where even after two decades of economic reforms, wealth gap and poverty stubbornly persist. Central to this shift are two processes. First, a dramatic re-signification of the *aam aadmi* (i.e. common man), within a new conceptual scaffolding of India in relation to modern science and technology, where the ability to innovate is portrayed as a natural gift, a deeply ingrained collective Indian trait that even the unlettered common man possesses. Second, the conditions of adversity and absence of public services for Indian citizens are turned on its head to position India as an ideal laboratory condition within which a culture of innovation takes birth. In short, jugaad enables a dramatic transformation of what was once considered unchanging, static and immobile mass into a source of innovation, inspiration and ultimately socioeconomic mobility.

New and alternative modes of urban practice for the 21st-century city must include such open-ended outcomes rather than just rigid and predictable products that, in fact, emerge out of interactions with a specific location and its context, with specific communities and with specific interactive processes. The following sections describe in greater detail how we can design such new practices of transformative urbanism, derived largely from the innovation, resourcefulness, and collective creativeness of 'informal urbanisms' such as the spirit of *jugaad* in India.

Learning Through Design: The Three Case Studies

This chapter illustrates a highly innovative approach for reclaiming urban practice for India in the 21st century through three case studies. These case studies of creative, critical, and collaborative city-design-and-building processes are taken from Brazil, the U.S., and Canada. The processes are based on a three-part guiding framework based on the concepts of 'research as practice', 'informal urbanisms', and 'design projects as means.' Furthermore, each case study is the result of a partnership between urban practitioners, researcher-practitioners, community activists, local government, and, most important, citizens. The case studies are located in the cities of São Paulo, New York, and Toronto, the cities that are rapidly changing and faced with extremely difficult challenges, much like the

cities of India. The three case studies were all initiated by faculty and students at different universities in each city. However, we prefer to use the term *researcher-practitioners* to describe this group because both faculty and students conduct serious research, as well as conduct engaged practice, and both groups approach their work simultaneously as theory and practice rather than through conventional dichotomies of separated realms. As an urbanist and activist-scholar-practitioner, the author played a leading role in each of the case studies that is presented and reflected upon here.

The first part of the guiding framework, 'research as practice,' is embodied in the fact that rather than adopting a top-down approach that is common in urbanism, we spent a great deal of time conducting field research and community dialogue to better understand the challenges and opportunities in each context. The resultant design strategies are thus fine-tuned to the actual needs as well as the potent assets of each area. The second part of the framework, 'informal urbanisms', is based on the premise that rather than proposing predetermined formulas (e.g. masterplans) that are common in urbanism, we look at the existing approaches of informalities as strategies for transformations. For example, in Toronto, we built on the existing informal strategies such as volunteer networks and community organising, informal economies such as street markets and the sale of goods and services by residents, and informal designs such as public space furniture, temporary structures, and community gardens. The third part of the guiding framework involves 'design projects as means' and is based on the fact that rather than designing projects like built structures and open spaces as final products that are typical of conventional urbanism, we view such designs as means as well as ends. Thus, a program of planting trees and flowers is also about long-term youth empowerment, the design of temporary structures is also about nurturing informal businesses and wealth generation, and designing accessible public spaces is also about continuous processes of community building and rebuilding.

São Paulo: The Pier to Pier Lab

The first phase of this project for developing new practices of transformative urbanism was the Pier to Pier Lab, a collaborative workshop between Brazilian and American researcher- practitioners in the area around the water reservoir of Guarapiranga in São Paulo (Inam, Cymbalista et al., 2014). Researchers-practitioners from the Parsons School of Design at The New School university in New York (henceforth referred to as Parsons) and the Faculdade de Arquitetura e Urbanismo da Universidade de São Paulo (henceforth referred to as FAU–USP) collaborated on the project. They investigated the formal and informal qualities at the edges of the reservoir, which are a mix of middle- and upper middle-class suburbs and *favelas* (i.e. informal settlements). Simultaneously, the group proposed a series of strategies that drew from the resourcefulness of 'informal urbanisms' to improve the quality of life in the favelas at the water's edge.

A group of 14 researchers-practitioners prepared background research for two months, and then came together in Guarapiranga for two weeks to conduct intensive field research and brainstorm to produce ideas and design solutions, followed by a two-month period to fine-tune the proposed strategies. We researched ways of bringing communities together using the under-utilised water reservoir and reimagining the reservoir as more than water infrastructure by including its role as the ultimate public space for the surrounding communities (see Figure 9.1). This approach of 'research as practice' was carried out at three spatial scales, that is the São Paulo metropolitan region, the Guarapiranga basin, and the specific sites around the reservoir.

In order to familiarise ourselves with the metropolitan region, Parsons researchers-practitioners conducted a series of investigations about the geography, politics, economy, and demographics of São Paulo before arriving in Brazil. At this early stage of 'research as practice', it was important to understand how Guarapiranga relates to the larger metropolitan area, especially in terms of transportation networks, housing types, and the mix of land uses. From its original role primarily as a source of water supply to future possibilities of integrating the landscapes surrounding it, the reservoir displayed great potential for interventions that would lead to a greater sense of interconnectedness with the inhabitants of the area.

FIGURE 9.1 The Guarapiranga area and its urbanism as seen from the water of the reservoir

Source: Aseem Inam, 2014.

In order to develop an informed understanding of the residents' and visitors' relationships to the place at multiple scales, we conducted direct observations and extensive interviews. We sought answers to questions such as How did people travel to this place? How did they use the spaces? Were these places of congregation, isolation and/or conflict? and How were these places perceived? The goal of the field research was to discover the potential for possible interventions as they appeared in this process, rather than to arrive with a set of preconceived problems and solutions.

One example of what emerged out of this process was Praia do Sol, a public park located on the eastern shore of Represa de Guarapiranga that is quickly becoming one of the most popular recreational spaces on the reservoir. There is a serious issue of access to the park, as most interviewees travelled more than 45 minutes to reach the space and almost none of the respondents lived in the immediate neighbourhood. One family travelled on three different buses for over an hour to reach Praia do Sol. Another example is Parque Baragem, a public park and beach on the northeastern corner of the reservoir, which attracts swimmers, beachgoers, fishermen, and walkers. The place includes a community garden, a composting site, a playground, and a vast vegetated area. Our research found that the pier in this area, the only public one in Guarapiranga, was not functional and thereby safe access to the waterfront was limited. In fact, private residents or establishments like yacht clubs and restaurants owned a majority of the piers. To reclaim the reservoir as a public space, we concluded that more public piers must be created to democratise access to the reservoir.

Our proposals engaged with such places at different scales. At the regional scale, the movement systems proposed by the Pier to Pier Lab improve the existing infrastructure and create new transport systems. The central feature of the movement system is a new network of ferries that connect various piers around the reservoir, especially creating transversal routes across the water (see Figure 9.2). Coupled with this new infrastructure system are pedestrian, bicycle, and bus infrastructure improvements in the neighbourhoods surrounding pier locations. Looking at a long-term future of mobility, the Lab analyzed possible connections to the São Paulo commuter train systems. The name of the lab, 'Pier to Pier' not only refers to the interconnectivity facilitated by the new public piers on the edges of the water of the reservoir but also is a play on the words *peer to peer*, highlighting the non-hierarchical and collaborative nature of this practice.

In addition to considering the physical qualities of the place, the project sought to facilitate the provision of social services in and around the pier and floating square (see Figure 9.3). The services were prioritised to meet the needs of local residents (e.g. health services), to radically improve the quality of life (e.g. economic opportunities for local vendors), and to bring diverse groups of people from different income groups together (e.g. public boating and swimming education programs). In this regard, the project proposed additional piers that are designed to be generous public spaces that extend the public realm onto the water and link the land to the *praças flutuantes* (i.e. 'floating squares' in Portuguese,

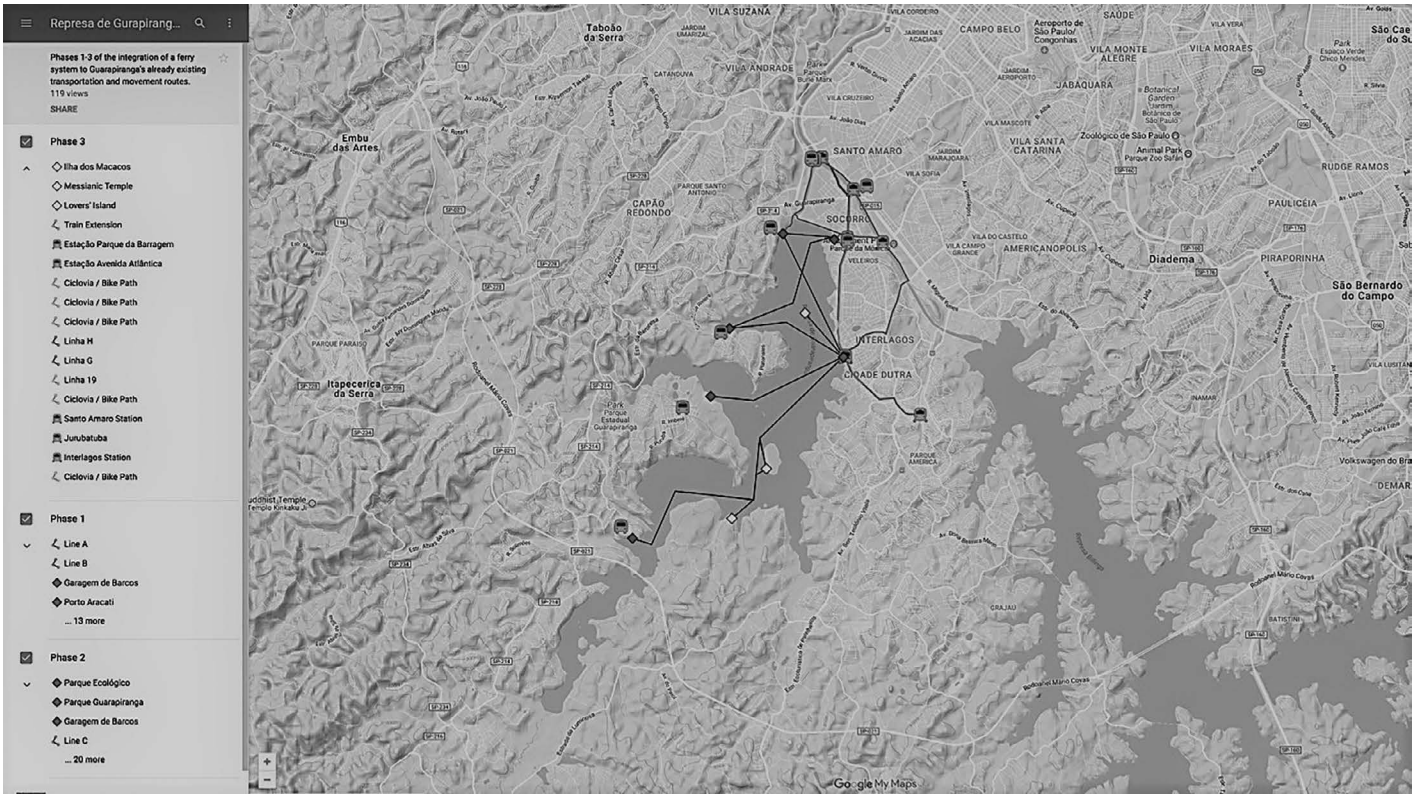


FIGURE 9.2 The team proposed a series of water- and land-based transportation networks to connect to existing train and bus public transit systems

Source: Inam, Cymbalista et al. (2014).

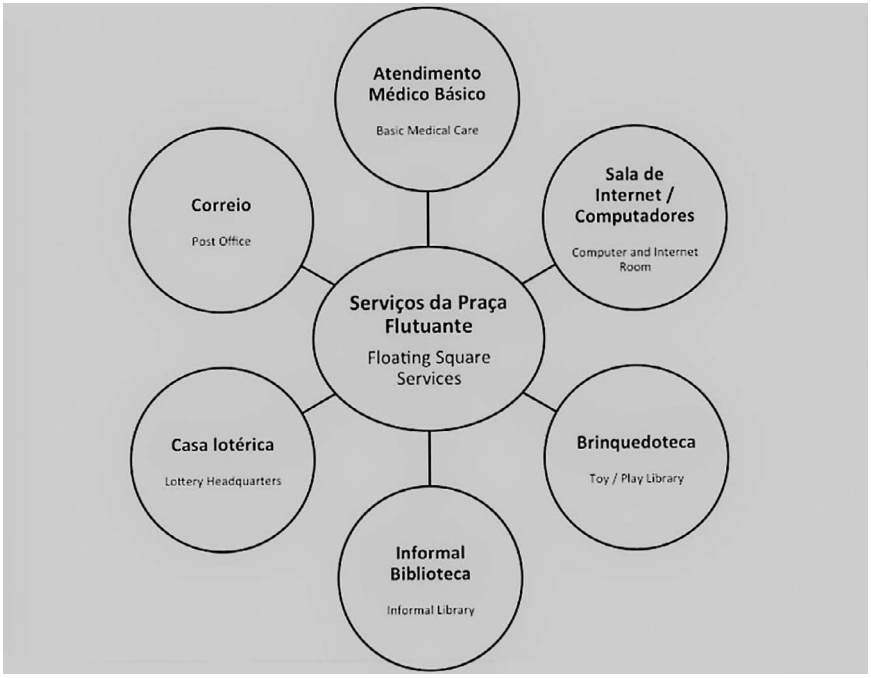


FIGURE 9.3 Proposed services located on the floating squares, which will dock in different locations on different days of the week

Source: Inam, Cymbalista et al. (2014).

described further later). The piers are designed to function as expansions of the waterfront, safe docking locations for boats, and as public spaces in their own right, available for a mix of uses by vendors, swimmers, fishermen, pedestrians, or basic services such as first aid. When attached to the *praças flutuantes*, the piers offer an extension of spaces, activities, and facilities.

Thus, a particularly innovative proposal was the introduction of two *praças flutuantes* designed to float on the surface of the water and rotate regularly between networks of the aforementioned piers around the reservoir. The innovation here is that instead of people from different neighbourhoods having to seek out public spaces, the public spaces would literally come to them. While docked at each pier, each floating public space would provide the neighbourhood with much-needed services (e.g. informal library, computer room with internet connectivity, basic medical care, and legal assistance) and aims to create a seamless expansion of the waterfront's public space by expanding to its connecting pier (see Figure 9.4). The design of this floating place is based on its dual function as public space and service provision.

This type of investigative approach towards 'informal urbanisms' yielded two valuable insights. The first is to understand and to inhabit the ambiguity that exists in between conventionally demarcated notions in the city of formal versus

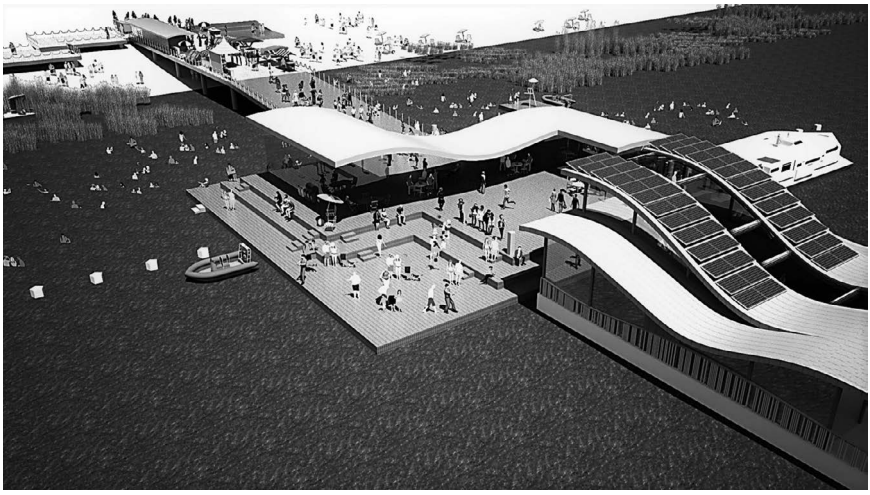


FIGURE 9.4 Proposed new public pier along with a floating public space on the edge of Guarapiranga Reservoir

Source: Inam, Cymbalista et al. (2014).

informal, legal versus illegal, acceptable versus unacceptable, public versus private, and so forth. The second is in terms of emerging urban practices that emerge over time and out of our interactions with each other, with the place, and with the communities. Ultimately, the Pier to Pier Lab project revealed how place-based 'informal urbanisms' are a centrally constitutive part of how the city gets produced, something that empirical research in other parts of the global South has also demonstrated (e.g. McFarlane, 2012).

A vital aspect of this 'research as practice' design approach was the strategic use of language as far as the shaping of places is concerned. All the researchers-practitioners from New York, including the author, learnt Portuguese before arriving in Brazil. Furthermore, the language was used to conduct research, to name strategies (e.g. *praça flutuantes*) and to communicate through the website in which everything is communicated in Portuguese and English (Inam, Cymbalista et al., 2014). This embodies the nature of mutual collaboration in investigating and shaping place, as opposed to ways of knowing and practising that emerge out of the global North and dominate the rest of the world. This form of non-hierarchical horizontal collaboration and mutual learning between the global South and the global North was further articulated in the next project in New York.

New York: Agents of Public Space Lab

In January 2015, the same group of researcher-practitioners from Parsons and FAU-USP gathered in New York for the Agents of Public Space Lab to work on place-based 'informal urbanisms' in the Union Square area of Manhattan (Inam,

Cymbalista et al., 2015). In this, the second phase of the project for developing new practices of transformative urbanism, the focus was placed on street vending and its constitutive interactions with the public realm, which is an integral part of the cities of the global South and global North. As in Guarapiranga previously, the 'research as practice' approach resulted in a project that was open-ended, where goals and outcomes emerged through the workshop in which we conducted research while engaging with street vendors to explore the design of solutions.

To allow for greater inclusivity within the fairly complex realm of street vending and to further explore use of language as urban practice, we introduced the term *Agents of Public Space* (APS). The key term here is *agents*, which implies that those who engage with various aspects of the street-vending system including undocumented immigrants, in fact, possess agency in their work vis-à-vis the city. The APS are citizens of place as embodied in the everyday economic and social transactions they make with the public. The APS in the Union Square area include painters and other artists, theatre performers, dancers, political protestors, costumed entertainers, chess players, artists, and general merchandise vendors such as those selling gloves or umbrellas (see Figure 9.5). The dominant types of APS are those who sell food like gyros and crepes, fruit, juices, and coffee. The

FIGURE 9.5 Street vendors are vital to the life of the public realm that is Union Square

Source: Aseem Inam, 2015.

actively public nature of the place that is Union Square would cease were it not for the catalytic presence of the APS, because it is they who contribute so richly to its sights, smells, sounds, and complex networks of movements.

In addition to the extensive background research, we engaged in intensive field research to study other places with the APS in New York City, including Roosevelt Avenue in Jackson Heights, Queens; Fulton Street Mall in Brooklyn; Chinatown in Downtown Manhattan; and the area near the Metropolitan Museum of Art and Central Park in the Upper East Side of Manhattan. In this manner, the comparative method (e.g. previously with São Paulo and other cities of the global South) was deployed within New York City, revealing similarities and differences among the APS in different areas. For example, in the corridor along Roosevelt Avenue, there was a group of predominantly male food vendors selling halal near Diversity Plaza and predominantly female vendors along Roosevelt Avenue selling Mexican and Ecuadorian dishes. These vendors have an alliance with local street-vending advocacy groups and the City Council, and there is a general feeling of support from the city and surrounding neighbourhoods. In contrast, near the Metropolitan Museum and Central Park, there was a feeling of prejudice against most street vendors outside the museum, as surrounding apartment tenants and security personnel expressed disdain towards them. Some of this may be explained by issues of class, for example lower income neighbourhoods versus higher income ones, and cultures, for example areas dominated by immigrants who are used to street vending while others who may be more used to indoor public activities in museums and theatres.

A vital exercise that emerged from this process of 'research as practice' was the mapping of systems and networks. Thus, the map of power dynamics that we researched and designed of the entire street-vending system elucidates the various informal and formal transactions that take place between the APS and the city around them (see Figure 9.6). What such a mapping exercise highlights is that while some aspects of the APS work are reliant on informal transactions like negotiating with local businesses to use their bathrooms, their day-to-day existence is heavily regulated by various state, city, and private actors. For example, the city issues permits for food carts that require annual renewals and regular inspections. Additionally, the laws concerning where an APS may or may not work vary block by block, by the time of day, and by what is being sold. The enforcers of these rules are themselves unclear on their exact definitions, thus creating grey areas of legality. The APS thereby exist within complex legal and financial systems in which their formality is constantly negotiated.

We also found that it was important to consider the role of the entire city as a resource. To begin such an analysis, we crafted a map of facilities used by vendors, buskers, and other types of APS across the wider New York City region. While storage and supply facilities are present across the entire city and across the Hudson River in parts of New Jersey, they are concentrated within particular neighbourhoods and access to them is accompanied by ambiguous and unwritten rules. An example of this is differing storage rates depending on whether

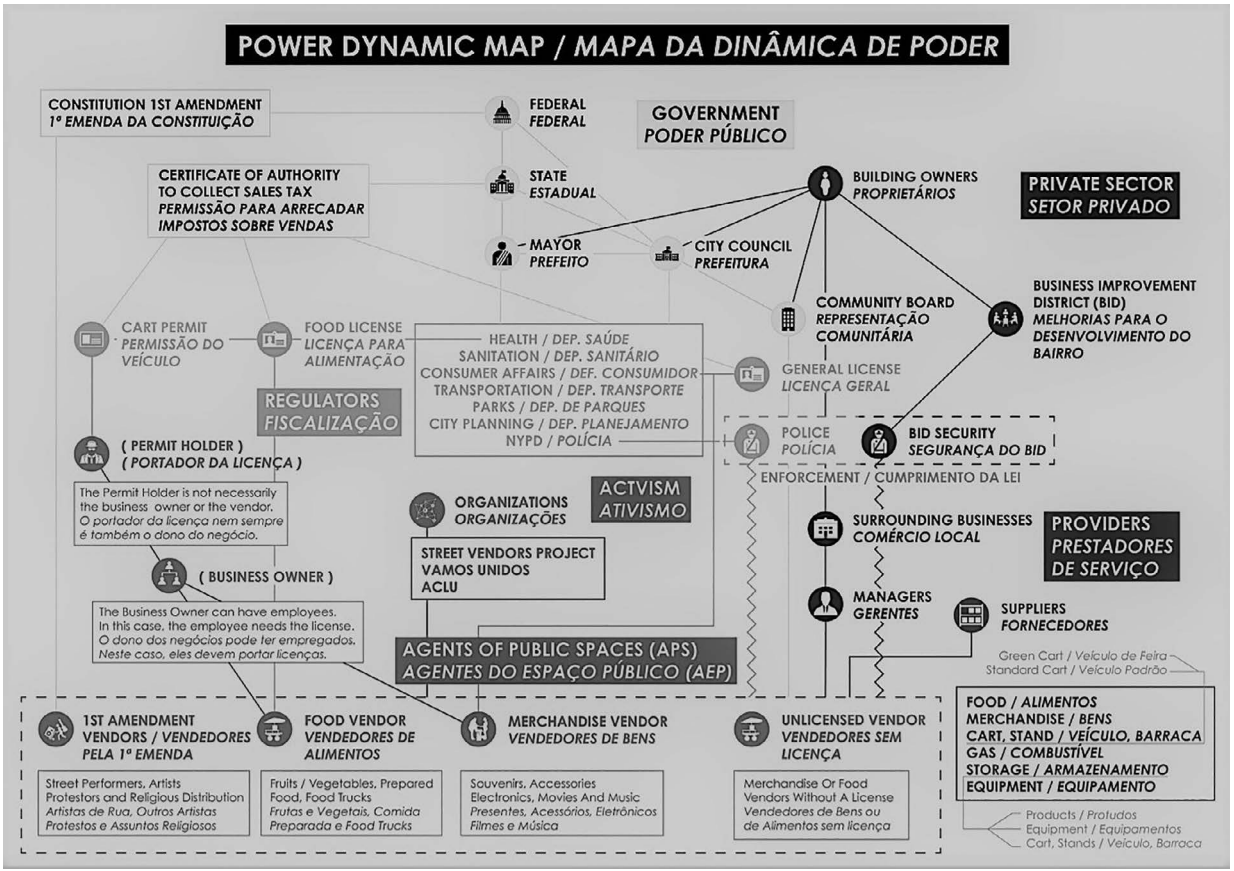


FIGURE 9.6 Map of power dynamics of the street-vending system in and around Union Square, in Portuguese and English

Source: Inam, Cymbalista et al. (2015).

the vendor also procures goods, such as food and food-serving supplies, from the same business. By overlapping lived experiences and personal knowledges with the spatial distribution of these city resources, we can begin to uncover the structure of the wider system with which APS must necessarily engage. The key opportunities for transformative practice, then, is to identify moments (i.e. tipping points) in these larger systems and networks of economic, political, and social transactions for strategic interventions.

The strategic action framework that emerged from this approach was based on place and its relationship to temporal scales. For example, we proposed a series of pop-up classes hosted in Union Square in order to share knowledge, develop alternative narratives surrounding the 'informal urbanisms' of Union Square, and design open-ended interactive scenarios for learning and capacity building. The classes challenge researcher-practitioners to think about the significance of the daily informal and relatively invisible encounters and transactions that reproduce the vibrant urban space in and around Union Square. The curriculum begins with public-lecture-style knowledge sharing within the space of the Union Square Plaza and the Union Square Greenmarket, including the long history of street vending globally and locally, as case studies we documented from India, Egypt, Brazil, Hong Kong, and other parts of New York City showed. From this we then put the question of defining street vending to the public: What is their perception of the APS, and what critical roles do they play in the city? What is the value in holding a broader view and deeper understanding, other than seeing them as marginal? Another short-term proposal was made to imagine 'A Day in Union Square without Street Vendors'. In an attempt to provoke public reflection, grants would be provided to vendors in this project to see how the public would react if they vanished for one day (e.g. at a peak time in the summer). We would mark the spatial absence of the vendors through creatively designed signs and then gather public reactions.

These short-term proposals were designed to work in tandem with more medium- and long-term strategies such as working with existing non-profit groups like Vamos Unidos and the Street Vending Project and with coalitions like Clean Streets Initiatives (see Figure 9.7). The goal with such alliances was to pool ideas and resources towards public policies that recognise and support the vital role the APS play in the city. For example, for street vendors that are located within close proximity to a brick-and-mortar enterprise (e.g. store, café, restaurant), we suggested creating a policy that specifically allows for street vendors to use facilities such as bathrooms or being able to take momentary breaks within heated interiors while it's freezing cold in the winter. These seemingly simple and minor proposals are in fact crucial for the APS to operate and earn adequate income during an 8- or 12-hour workday.

A long-term proposal was the HUB, which would exist both in virtual reality and as a physical place to serve the APS. As a virtual structure, the HUB creates an online guide for the APS and encourages the development of a digital APS network throughout the city in three different forms such as website portal,

FIGURE 9.7 We worked with active non-profit groups like Vamos Unidos

Source: Aseem Inam, 2015.

smartphone application, and printed material. A series of interactive maps would provide public information about the location of licensed storage facilities for carts, merchandise and equipment and the location of food, equipment and merchandise suppliers, and commissaries. The Google Maps platform permits any vendor, the APS, or even supplier (e.g. for buying wholesale material) and garage management (e.g. for storing vending carts) to add their location and contact information. Thus, anyone can find street vendors, supplies, and storage facilities. The information in the app would change as circumstances change over time, for example suppliers that change addresses or new suppliers that emerge.

The HUB is also designed as a physical place to signal the importance of the APS to the city and as a gathering point for the public (see Figure 9.8). In the middle of the triangular plot next to Union Square would stand a three-level extruded triangle encased in transparent glass. Its prismatic structure would glow at night and become a natural gathering place and architectural icon in the city. The lowest level connects to the subway station as an entry point for the APS who utilise the station space for their activities. The main level is a public gathering point resembling a gallery space devoted to the history and significance of the APS throughout the city. The openness at the main level accommodates large events, such as the existing annual street-vending awards in New York City, the Vendy Awards. The highest floor is dedicated to a variety of uses specifically for

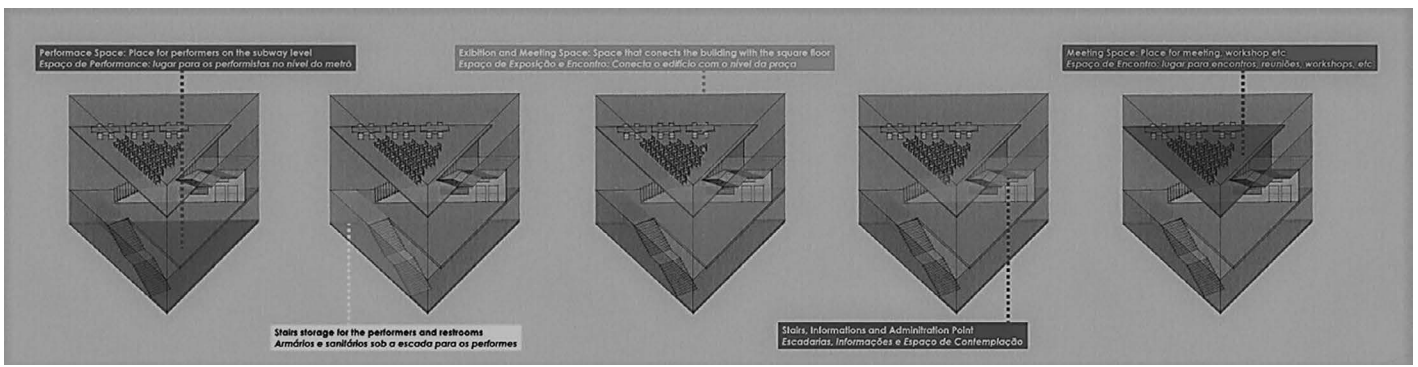


FIGURE 9.8 The multiple levels of the proposed triangle-shaped APS HUB in Union Square serve different public purposes

Source: Inam, Cymbalista et al. (2015).

the APS, ranging from business development classes and organisation meetings to conflict resolution spaces.

In this manner, the APS Lab in New York City explored place-based 'informal urbanisms' in the global North as they relate to street-vending systems. While it might take a somewhat different appearance, informality very much exists in the global North. For example, research has shown that nowhere in the world is more corrupt money handled than in the City of London, running into trillions of dollars in the form of profits from criminal activities and tax evasion every year (McFarlane, 2012: 106). Thus, informality is not just for low-income populations; it can be part of the lives of higher income groups. The next phase of this project for developing new practices of transformative urbanism was conducted with moderate- to middle-income groups in the suburbs of Toronto, Canada.

Toronto: Thorncliffe Park Women's Committee

Toronto contains the second-largest concentration of high-rise buildings in North America, and Thorncliffe Park was conceived in 1955 as one of the first such suburban apartment neighbourhoods in Canada. It was planned to house 12,000 residents originally but now houses nearly twice that number. Due to the proximity of its buildings and a number of walkable destinations, Thorncliffe Park is also one of the most walkable suburban developments in Toronto even though it follows the basic model of Le Corbusier's 'towers in the park'. The residents, most of whom are immigrants, are active in the form of community leadership and organisations. There is also a thriving informal economy. At the same time, the neighbourhood is still largely automobile-dependent with wide streets and many surface parking lots, with a long history of neglected and disconnected public spaces and a lack of investment in building upgrading and community facilities.

The experiment in Thorncliffe Park was designed in the form of a one-year collaboration between the University of Toronto's Department of Geography and Planning, the Thorncliffe Park Women's Committee, and the residents of the neighbourhood. The main purpose of the design project was to investigate the following question: How does one craft an open-ended urban practice? Such open-ended practices are not only intended to be much more finely tuned to the actual accomplishments, needs, and aspirations of specific communities but also open to changing conditions. The vast, if not all, projects in urbanisms are usually highly defined starting with a client, a site, a program, a budget, and an expected outcome. The purpose of such an approach is to be clear and to have shared expectations. However, extensive 'research as practice' exercises, as well as this author's own global professional experience, demonstrate that even the most comprehensive and precisely defined project almost never turns out exactly the way it was originally designed. Much of this is understandable, especially at the urban scale, in which time frames are long (e.g. years and even decades) during which circumstances inevitably change, there are multiple stakeholders with

different and often conflicting interests, and budgets are uncertain and usually surpassed. In this context, it serves to pursue more open-ended, flexible, and adaptive approaches to urban practice.

A unique aspect of this design project was its starting point. Rather than a client brief or a given problem to be solved, the starting point in Thorncliffe Park was what the communities had already accomplished through their initiatives and informal strategies. Our collaborative project built on the existing accomplishments of residents under the remarkable leadership of the Thorncliffe Park Women's Committee. The Women's Committee began in 2008 as a group of largely immigrant women with little money, no political clout, and no business connections. However, they were educated and had professional positions before moving to Canada (Metcalf Foundation, 2015). The Women's Committee and their many volunteers deployed creative informal strategies in the pursuit of urban transformations, including activating previously under-utilised Burgess Park in the geographic centre of the neighbourhood through 'arts in the park' programs, Friday night markets, and installing an open-air *tandoor* oven for baking bread (Ali, 2015; Metcalf Foundation, 2015). Other initiatives included organising and leading walks in the adjacent Don River Valley ravines, training residents for food preparation, and a variety of hands-on activities for the many children who reside in the neighbourhood. Its volunteer network, determined persistence, and cooperative attitude forced the City of Toronto and funding organisations such as the Metcalf Foundation to adapt to the Women's Committee informal strategies.

Another aspect of engaging with 'informal urbanisms' was to fully understand the actual experience of informality in Thorncliffe Park. For example, what are the kinds of informal strategies that residents utilise to improve their lives individually and collectively? To answer these questions, researcher-practitioners interviewed volunteer members of the Women's Committee on a one-on-one basis. The interviews were extremely revealing in terms of their concerns, aspirations, and – as women and immigrants – the ways in which they navigate the neighbourhood as well as the Canadian system of governance. The interviews also revealed the resilience and resourcefulness of residents. For example, many of them supplemented their incomes through informal economic activities such as preparing and selling food to neighbours, bringing home clothes from their countries of origin and selling them to others, conducting sewing classes, and providing math tutoring. In this regard, the primary goal in our partnership with the Women's Committee was to understand the value of social and economic informal strategies as well as to find ways to support and nurture them (see Figure 9.9). For example, through such strategies, residents create informal networks and strengthen their social bonds, which translate into spatial practices such as meeting every morning in the shopping mall near the centre of the neighbourhood. Many residents stated that these informal networks and social bonds are one of the most attractive aspects of Thorncliffe Park.

The second part of the framework for designing new practices in Toronto was 'research as practice'. In this approach, systematic research is conducted from the

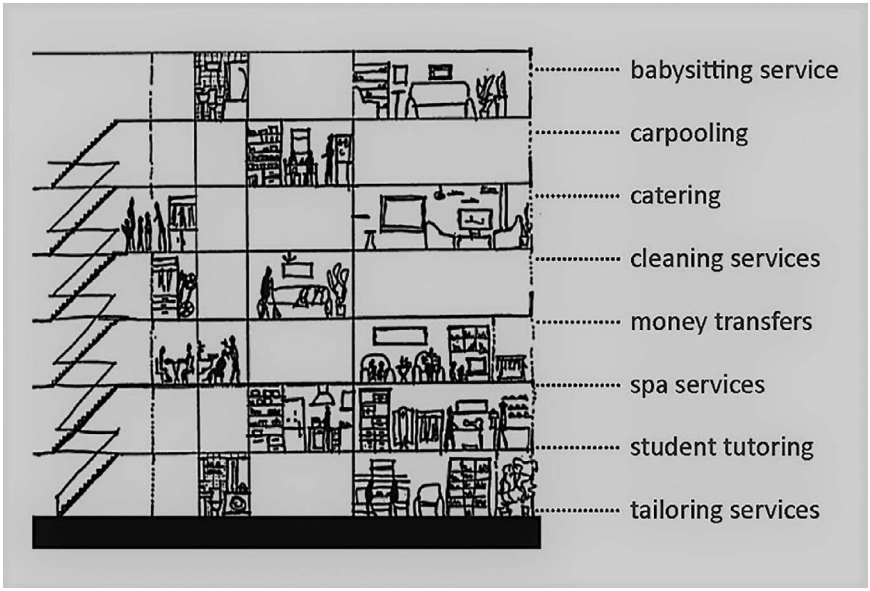


FIGURE 9.9 Diagram analysing existing informal activities in Thorncliffe Park in order to further strengthen them

Source: UT Planning (2016).

beginning as an integral component of the design process in which understanding a situation and strategising about its future inform each other on an ongoing and intertwined basis. In this spirit, researcher-practitioners studied various public and nonprofit programs that the Thorncliffe Park neighbourhood could benefit from, including the following:

- Tower Renewal: This project was initiated by a private firm, ERA Architects, in partnership with the city, based on research they had done on similar neighbourhoods in Europe dominated by tower buildings. The goal of the project was to renew the tower neighbourhoods in Toronto by drawing inspiration from European examples and to adapt them to changing demographics and lifestyles, for example by activating public space, allowing commercial activity in residential buildings, and improving insulation on buildings.
- Tower Neighbourhood Renewal: The project is led by a non-profit organisation, the United Way, and works directly with communities to increase access to programs and services, provides amenities in public spaces, and strengthen community through collective action, especially on issues affecting children and families.
- Section 37 of the Planning Act: Section 37 is a provision of the Province of Ontario's Planning Act to ensure direct benefits from new construction projects. Toronto's city councillors and planning department negotiate cash

benefits for residents to compensate for the effects of increased traffic, increased populations, increased densities, and so forth.

- Residential Apartment Commercial (RAC) Zoning: RAC Zoning is part of the Tower Renewal initiative to allow commercial zoning in certain residential sections of the Thorncliffe Park so as to introduce commercial activities such as stores either on the ground floor of apartment buildings or next to them.
- Recipe for Community: Part of the Tower Renewal initiative in collaboration with the Toronto Foundation, the program creates partnerships with neighbourhoods for projects focused on community development, skills training, and safety. Donors, sponsors, and residents collaborate to invest in four objectives: food, convening, youth engagement, and neighbourhood beautification.
- Neighbourhood Improvement Area: Thirty-one neighbourhoods, including Thorncliffe Park, were selected by the City of Toronto to create improvements in five categories: economic opportunities, social development, healthy lives, physical surroundings, and participation in decision-making.

Researcher-practitioners first presented this research within our group in order to gain valuable feedback and then presented it to city officials and practitioners (e.g. Silvia Fraser, manager of the City of Toronto's Tower and Neighbourhood Revitalization Program, and Ya'el Santopinto, project manager with ERA Architects) to get their comments, and finally to the communities living and working in Thorncliffe Park. The ultimate goal was for communities to not simply accept these programs as they were but to also negotiate benefits that were customised to their particular needs and aspirations and, even better yet, to harness such programs to fulfil their needs through community-initiated processes. This can be a very powerful form of urban practice.

The third part of the guiding framework was 'design projects as means', in which urban space and form are not only ends (e.g. creation of new public spaces, building of new neighbourhoods) but also means (e.g. processes of democratic decision-making and community empowerment). Our Thorncliffe Park initiative was designed to reflect the future of urban practice, which must be transdisciplinary, collaborative, and engaged in order to have a meaningful impact. While being interdisciplinary implies combining or involving two or more academic disciplines or fields of study, being transdisciplinary signifies that persons from two or more disciplines learn to work together across traditional disciplinary boundaries. Thus, practitioners must learn how to engage with design in an urban context and have relevant knowledge of the sociological, political, and economic characteristics of the area. At the same time, practitioners with different backgrounds (e.g. trained as architects, art historians, political scientists, experts in urban studies) must make conscious efforts to learn from and to work with each other. Individual knowledge needs to be increasingly interdisciplinary, while collaboration must be transdisciplinary. On top of that, practitioners must engage with crucial stakeholders who are the people living and working in the neighbourhood. While funding or policy imperatives for projects may

emerge out of other sources such as local governments or private developers, the communities themselves not only have to live with the consequences of urbanism but also can be major sources of ideas, innovations, and stewardship. To be truly engaged implies developing long-term yet fluid partnerships in the field with the communities.

Another aspect of 'design projects as means' was to pursue creativity not only in the design of forms and spaces of the material city but also to pursue it in the design of processes that yield such spatial products. Researcher-practitioners in Toronto were thereby asked to design community workshops that were integral to the design process (see Figure 9.10). For example in December 2015, we designed a three-hour workshop in collaboration with the Women's Committee that was structured around storytelling, informative presentations, and brainstorming potential actions. The goal of the storytelling and asset mapping exercise was for residents to describe their experiences of the neighbourhood and to pinpoint

FIGURE 9.10 One of the community workshops designed by us in collaboration with the Women's Committee

Source: Maria Grandez.

what they considered to be the assets of the neighbourhood, which included the park, school, library, recreation centre, convenient shopping centre, and social networks. The informative presentations described City of Toronto resources that residents could leverage, such as the Tower Renewal, Recipe for Community, Section 37 and RAC Zoning programs as well as design interventions that researcher-practitioners suggested (e.g. lightweight structures for food and retail, use of half-empty parking lots for community activities, a more accessible open space network). Based on these exercises and a gallery display of design offerings, the final section of the workshop was organised to brainstorm potential actions in smaller groups through three themes of economy, community, and accessibility.

Rather than design a project positing a definitive yet conventional three-dimensional outcome, we devoted our creative energies in designing processes of community collaboration and frameworks for community ideas and action. In this manner, the three sections of the final document reflected the themes of the workshop and became framing devices for further action in respect to economy, community, and accessibility (see Figure 9.11). For example, the idea of accessible space networks built on existing community efforts to reinvigorate Burgess Park, to introduce community gardens and to make the adjacent Don River Valley ravines much more visually, legally, and physically accessible by stitching together such disparate efforts while introducing additional initiatives like night markets and pedestrian furniture in public spaces (see Figure 9.12). Another example was to adapt the city's proposed RAC zoning program to meet actual community needs by providing a wide range of spaces for informal economic activities and animating outdoor spaces through commercial and non-commercial activities. These approaches ensured a more strategic and nimble design approach.

In order to truly understand urbanism and its potentialities, one has to go beyond analysis and theorisation, however vital and valuable they may be, and engage directly in practice. A key component is what we call simply, 'making it happen'. This is much more in the spirit of urbanism as ongoing city-design-and-building processes and their spatial products rather than definitive notions of the final implementation. For example, in Thorncliffe Park, one of the critical ways to make the brilliant ideas and creative strategies actually happen for urban transformation was to involve as many stakeholders as possible, including those with access to power and resources at the city level. For the community workshop in April 2016, we took it upon ourselves to individually invite various community groups, city staff, property owners, local scholars, elected officials, and journalists. This effort paid off handsomely as the workshop included active participation from a wide range of community leaders and stakeholders, including Jon Burnside – city councillor, Rob Oliphant – member of Parliament, and Silvia Fraser – manager of the City of Toronto's Tower and Neighbourhood Revitalization Programs. Thus, while conventional representations of urbanism like drawings and models embody the intentions of projects, the actual outcomes almost always vary due to changing circumstances over time. Given this reality, a key aspect of designing new practices is to create nimble yet rigorous frameworks for making urbanism happen, such as building strategic alliances and political coalitions.

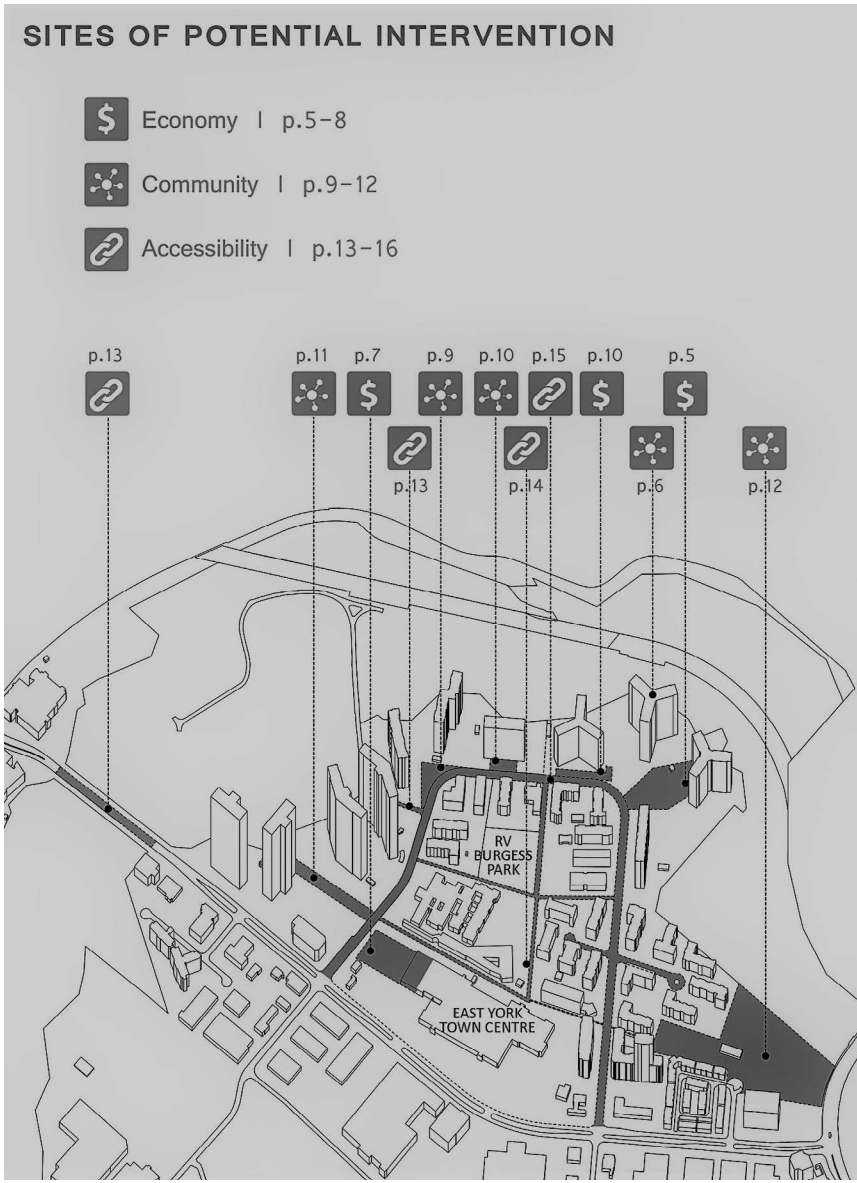


FIGURE 9.11 The overall framework for transforming the Thorncliffe Park neighbourhood was both thematic and spatial

Source: UT Planning (2016).

Conclusion and the Path Forward

What can design teach us in reclaiming an urban practice for India? India can learn from these design strategies and develop its own urban practices by building on its unique assets and deep experiences. The projects for developing new practices

FIGURE 9.12 Our approach was to create connected networks of open spaces in order to improve accessibility both visually and physically

Source: UT Planning (2016).

for transformative urbanism in the cities of Brazil, the U.S., and Canada illustrate how new types of thinking (i.e. theory) combined with new ways of doing things (i.e. practice). The case studies illustrate how such new practices operate in the specific contexts of each city, adapting to the unique political structures, material conditions, and local innovations of each place. Thus, the beginning of such experiments in India would be to understand and engage with the specificities of its own political, economic, and cultural contexts, especially at the local level (i.e. 'research as practice').

As Nijman (2015) suggests, urbanisation as a transforming societal force can be conceived at a macro level in association with macroeconomic developments. On the other hand, urbanisation must also be understood at the micro level in terms of local urban fabrics and institutional contexts. Macro approaches are helpful in answering questions about the speed of urban growth and structural urban conditions; micro approaches are needed to answer questions about the role of agency (i.e. of people in urban environments) within evolving urban structures. Thus, cities are shaped not only by large-scale structural forces at the macro level but also from the ground up on a daily basis by city dwellers at the micro. The true promise of designing urbanisation in India lies at the intersection of these two levels.

India is moving in promising directions, with an increasing recognition of a more people-centred approach to urbanism and urban practice (Shaw, 2017). However, we need to reach far beyond the often-superficial notions of community participation or the often-condescending ideas of 'bringing design to the masses'. Furthermore, the standard approach of importing ideas from British town planning or importing techniques from American city planning has not

worked. Nor has the approach of top-down expertise of pre-packaged ideas been effective in tackling the complex realities of India. As mentioned at the beginning of this chapter, we need something far more radical in order to be effective; we need to embrace the full potential of our democracy, messy, and complicated as it may be. We need to try things out in collaboration with communities, as the three case studies in this chapter have shown, in order to develop our own practices of transformative urbanism with a focus on 'informal urbanisms'.

Taken together, the Pier to Pier Lab in São Paulo, the APS Lab in New York, and the Thorncliffe Park Partnership in Toronto yield a number of comparative insights and implications. The contribution towards reclaiming urban practice for India here is three-fold:

- Examining the distinctive character of place-based 'informal urbanisms' in each context through field research, documentation and analysis.
- Understanding the differences and similarities of conditions in the global South and the global North via comparative analysis, and through a dialectical process by which research and strategy constantly feed into each other.
- Proposing, in a highly collaborative and interactive manner, sets of place-based design strategies and practices that harness the vast and largely untapped potential of 'informal urbanisms'.

In São Paulo, our engagement with place was at multiple spatial scales ranging from the metropolitan region down to the design of the *praça frutuantes*, not only as floating public spaces but also as sites where much-needed services are provided for the surrounding communities. In New York, the engagement with place was more temporal, with the HUB symbolising a virtual network of resources and a physical embodiment of the ways in which street vending is integral to the vibrant city over time. The Toronto experiment generated widespread community excitement and involvement, attracted the support of political leaders, and created both a spatial vision of the future as well as the process to get there (i.e. 'design projects as means'). As these examples demonstrate, while each context is different, there are general principles, described in the next section, which can be interpreted, adapted, and applied to the cities of India.

There are multiple advantages to the practices described in this chapter. First, the starting point of the design process is not the aloof and top-down perspective of the outside expert; rather, these are the ideas of the residents with which expert collaborates and enrich their own knowledges and experiences. The second, the nature of this practice is informality, a flexible and adaptive mode of action that every citizen is familiar with. Informality is also a viable alternative to the sometimes opaque and cumbersome technicalities of overly bureaucratic designs driven by technical jargon such as land-use regulations, complicated instruments such as municipal budgets, and narrow expertise like traffic engineering. While these may be necessary tools of urbanism, they also need to be more transparent and accessible to citizens. Third, 'informal urbanisms' have been an integral part

of urbanism for centuries, well before the professional fields of architecture, urban design or planning were codified and often rendered exclusive. Understood critically and adapted creatively, informality can be a powerful basis for new practices.

Finally, such critical and creative practices for the 21st-century city can be transformative in a number of ways. Unlike top-down, client-driven, or expert-guided design practices, 'informal urbanisms' are modes of practice that are arguably accessible to all. One of the reasons is that informality, or figuring things out, is a commonplace strategy for navigating everyday life and for accomplishing larger goals, whether by children, older adults, or the poor. Another related reason is that informality is truly a democratic – admittedly messy and time-consuming – mode of design, driven by community needs and aspirations. The third, and perhaps most significant, reason is that 'informal urbanisms' are about political empowerment, in which the design process can be a vehicle for fundamental change, such as how vital decisions about the future design of a neighbourhood are made and for whose benefit. For example, here it is residents rather than expert designers, government bureaucrats or private developers who shape the future of public spaces or community facilities. Thus, a crucial aspect of new practices is to help rectify the uneven balance of power that currently exists in city-design-and-building processes and their spatial products. These then are the ambitions of reclaiming urban practice for India through design.

Note

1 Some portions of this chapter were previously published in A. Inam, 'Designing New Practices of Transformative Urbanism: An Experiment from Toronto', *Urban Design International*, 2018, https://doi.org/10.1057/s41289-018-0058-z; A. Inam, 'Extending Place: The Global South and Informal Urbanims', in R. Freestone and E. Liu (eds.), *Place and Placelessness Revisited*, London and New York: Routledge, 2016, pp. 242–256.

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PART III

Movements of People, Goods, Information, Ideas

10

PLANNING AND DESIGN GUIDELINES FOR BUS RAPID TRANSIT IN INDIAN CITIES

Shreya Gadepalli, Christopher Kost, and Pranjali Deshpande-Agashe

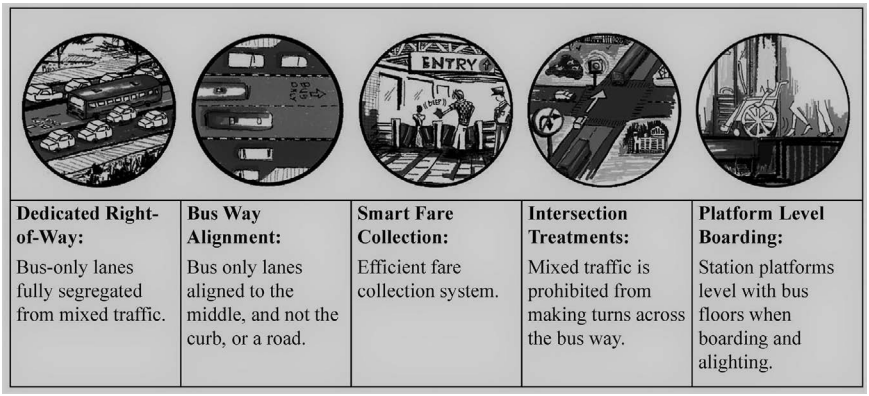
Introduction: The BRT System

This chapter focuses on providing guidance for the planning and design of bus rapid transit (BRT) systems in Indian cities. It is based on learning from cities worldwide as well as those in India that have attempted to create BRT systems. A more detailed version of these guidelines has been approved by the Indian Roads Congress based on the inputs provided by these three authors.

BRT is a high-quality bus-based transit system that delivers fast, comfortable and cost-effective urban mobility through segregated right-of-way infrastructure, rapid and frequent operations and excellence in marketing and customer service. The U.S. Federal Transit Administration defines *BRT* as a 'rapid mode of transportation that combines the quality of rail transit and the flexibility of buses'.[1] A comparatively detailed definition was developed as a part of the Transit Cooperative Research Programme (TCRP)[2] A-23 project:

> BRT is a flexible, rubber-tired rapid transit mode that combines stations, vehicles, services, running way, and ITS elements into an integrated system with a strong positive image and identity. BRT applications are designed to be appropriate to the market they serve and their physical surroundings and can be incrementally implemented in a variety of environments. In brief, BRT is a permanently integrated system of facilities, services, and amenities that collectively improve the speed, reliability, and identity of bus transit. In many respects, BRT is rubber-tired light rail transit (LRT), but with greater operating flexibility and potentially lower capital and operating costs.[3]

DOI: 10.4324/9781003296218-13



Dedicated Right-of-Way:	**Bus Way Alignment:**	**Smart Fare Collection:**	**Intersection Treatments:**	**Platform Level Boarding:**
Bus-only lanes fully segregated from mixed traffic.	Bus only lanes aligned to the middle, and not the curb, or a road.	Efficient fare collection system.	Mixed traffic is prohibited from making turns across the bus way.	Station platforms level with bus floors when boarding and alighting.

FIGURE 10.1 Basic elements of a bus rapid transit

Source: The BRT standard: www.itdp.org/library/standards-and-guides/the-bus-rapid-transit-standard/.

The success of BRT depends on sound corridor selection and a set of physical and operational elements that improve the speed of operations, increase capacity and enhance safety. These elements include the following (also see Figure 10.1):

- Dedicated median bus lanes that are physically separated from mixed-traffic lanes, as these are crucial for ensuring buses can move quickly and avoid congestion;
- Dedicated fleet of high-quality buses and high-quality stations with platforms that match the level of the bus so that passengers can enter and exit quickly and easily without climbing steps;
- A smart fare collection to enhance passenger convenience and improve efficiency; and
- Well-designed intersections with fewer phases in each signal cycle and restricted turns of mixed traffic across the busway.

Much like a modern metro rail system, high-quality BRT systems adopt an ecosystem approach where all elements including rolling stock (buses), stations, terminals, passenger information, and fare collection are designed to function seamlessly with each other. The coordinated provision of these elements is critical to maintaining superior performance and excellent customer service. The integration of these features accounts for a proven track record of BRT systems in not only serving existing public transport users better but also attracting users from personal motor vehicles. An efficient street-level BRT can do the following:

- Result in a manifold increase in the people-carrying capacity of urban roads;

- Serve a wide range of demand from 2,000 to 45,000 persons per hour per direction (pphpd) at a capital cost that is typically one-tenth of an elevated rail system to one-twentieth of an underground rail system;
- Be implemented quickly in a span of three to five years;
- Cause a mode shift from personal motor vehicles to public transport (The Indian BRT systems like Janmarg in Ahmedabad and Rainbow in Pune have experienced mode shift about 8 to 12 per cent during the initial period); and
- Reduce emissions of harmful local pollution and greenhouse gases by attracting passengers from more polluting modes.

Structure of the BRT System

Road-based public transport priority in urban areas can take a variety of forms, ranging from simple kerbside bus lanes to high-capacity BRT and LRT corridors. Each of these approaches and technologies can have a role to play, depending on travel patterns, the expected level of demand, and the available capital budget. However, cities should exercise caution when planning for high-demand corridors as basic solutions such as kerbside bus lanes or busways will provide a below-average level of service.

Bus Lanes

Bus lanes typically consist of painted demarcations on the kerbside of a carriageway. Buses stop at normal bus shelters along the side of the road. Personal motor vehicles are generally restricted from using the bus lanes but may enter the lanes to access properties and to make left turns. Well-enforced kerbside bus lanes may offer a modest speed improvement over mixed-traffic bus operations. However, kerbside lanes experience several drawbacks.

- The lack of physical delineation makes it difficult to prevent unauthorised entry into the bus lane.
- The frequent entry of vehicles making left turns into properties or side streets can slow down buses.
- Personal and delivery vehicles may use bus lanes for parking and drop-off.
- Stepped entry increases boarding and alighting times and makes the system less accessible.
- High bus speeds adjacent to the footpath pose a safety hazard for pedestrians.
- At intersections, mixed-traffic turning left comes into conflict with buses moving straight.
- Kerbside bus lanes require a more generous kerb radius at intersections, in case buses have to make a left turn. This increases the accident risk at intersections, especially for pedestrians.
- Unless physically separated, cycle tracks are provided and cyclists are forced to travel in the bus lane next to the fast vehicles. Apart from compromising cyclist safety, this arrangement also slows buses down.

Cities such as London, São Paulo, and Singapore have created networks of kerbside bus-only lanes. These lanes are somewhat useful in increasing bus speeds when effectively enforced and paired with congestion pricing, parking control and other measures to reduce personal motor vehicle traffic. However, in cities where enforcement and travel demand management measures are weak, the benefit of painted bus lanes is marginal. Buses tend to leave the bus lanes for mixed-traffic lanes in order to avoid parked vehicles and slow-moving traffic. The capacity, as well as speed, of buses in such lanes tends to be low.

Busways

Busways give the existing city buses priority with dedicated lanes, often in the median. The dedicated lanes may contribute to modest savings in travel time. However, busways miss many of the benefits of a mass rapid transit system. Elements that typically signify a busway are as follows (see also Figure 10.2):

- The focus is on physical infrastructure, for example, dedicated bus lanes, with less attention given to the overall ecosystem including seamless interface between stations and buses, route rationalisation, passenger information, electronic fare collection, intersection priority, and information technology systems.
- Buses of varying configurations in terms of length, position of doors, size of doors, floor height, and presence of steps operate on the dedicated bus lanes. Poor docking at stations, narrow doors and steps make boarding or alighting inconvenient and slow, leading to higher dwell times at stations and longer journey times for passengers.
- When bus lanes are located on the kerbside of a road, they face constant interruption from vehicles making left turns onto adjacent properties and side streets.

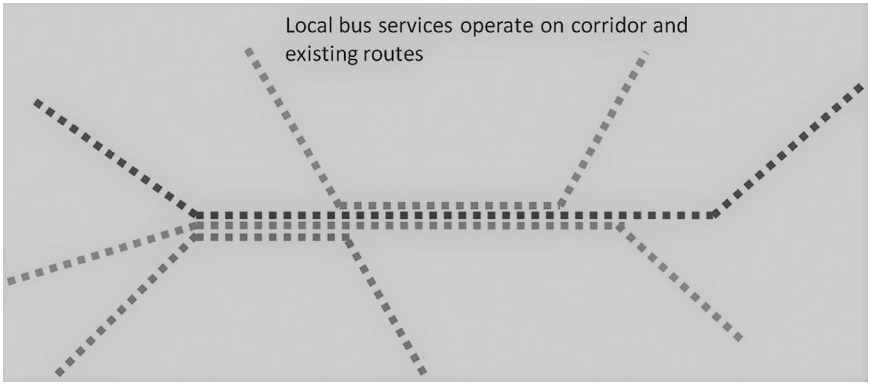


FIGURE 10.2 Inadequacies in busways dedicated lanes for buses

Source: Authors (2017).

- Kerbside lanes tend to be encroached by parked vehicles. They also introduce the risk of conflicts between pedestrians and buses if pedestrian traffic spills over to the busway. All these conflicts reduce safety and inhibit system speed, making the system less attractive for customers. They also limit the overall capacity of the corridor.
- Little effort is made to train bus drivers on correct docking and safe driving.
- Retention of existing operator(s) running the same routes that they did previously, and the lack of route rationalisation can result in higher than necessary bus frequencies and long dwell times that potentially choke the busway.
- Operational interruptions are caused by frequent breakdowns of old buses in the busway.
- Old, cash-based ticketing inside buses rather than cashless ticketing, primarily at the station, potentially leads to inconvenience to passengers and operational delays.
- A lack of comprehensive branding and customer information along with the poor image of the existing buses that operate in the lanes make the system unattractive to potential customers.

While many cities in the world have attempted to create basic busways, the experience of passengers has not been significantly different from that in regular bus services in the city. Some cities, like Bogotá, Colombia, and Lima, Peru, started with busways but rebuilt those corridors as part of their BRT systems to overcome the low quality of service, long travel times, and a poor image of the busways. While the original busways had high throughput, exceeding 20,000 pphpd in some cases, commercial speeds were often below 10 km per hour (also see Figures 10.3 and 10.4).

Furthermore, a BRT system can be classified into two types: closed or hybrid. BRT systems, whether closed or hybrid, share key features such as dedicated median lanes, level boarding and off-board ticketing. However, they differ in

FIGURE 10.3 Closed bus rapid transit systems in Quito, Ecuador (left), and Bogotá, Colombia (right)

Source: Karl Fjellstrom, ITDP China.

FIGURE 10.4 Lack of level boarding and onboard fare collection in Seoul, South Korea

Source: Authors (2017).

how they provide service beyond dedicated trunk corridors. While closed systems operate feeder services with separate vehicles, hybrid systems extend trunk services beyond dedicated corridors, providing direct service with the same vehicle

Closed BRT Systems

Closed BRT systems tend to mimic rail-based mass rapid transit systems. The key elements of a closed BRT system are as follows:

- Specially designed trunk buses operate only in dedicated BRT lanes.
- Separate trunk-and-feeder routes connect at terminal stations. This typically reduces the required fleet. Although it increases the number of passenger transfers, the financial performance of the system improves owing to better operational efficiency.
- Fare collection at the stations reduces boarding and alighting delays, improves system efficiency and enhances passenger convenience.

Compared to kerbside bus lanes and busways, BRT corridors add design elements that lead to a significant increase in capacity. In particular, passengers can board and alight through multiple wide doors without internal steps. Level boarding reduces the time that buses need to stop at each station, allowing a corridor to handle a larger number of buses each hour. In addition, off-board fare collection reduces delays caused by fare collection and payment verification inside the bus. Together, these design features enable BRT systems to handle high passenger throughput ranging from 12,000 pphpd with a single lane per direction to 45,000 pphpd with passing lanes, which is often compared with commercial speeds of 20 km per hour or above.

Bus operation reforms typically accompany the implementation of closed BRT systems. Often, the private sector is contracted to provide day-to-day services for various elements including bus operations, fare collection, system maintenance, and security. While closed BRT systems are similar to metro systems in many respects,

the key difference is that the BRT systems allow flexible routing; that is services can combine two or more trunk corridors, thereby reducing the number of transfers compared to a metro system in which passengers must interchange between lines. However, closed BRT systems tend to have more transfers than busways and regular city bus services due to the trunk feeder configuration (see Figure 10.5).

Closed systems can be employed when the demand is very high on trunk corridors but declines significantly on the feeder branches. Services within the trunk corridor are highly efficient and punctual since they are almost unaffected by the remaining traffic. Passenger transfers between trunk and feeder services should be facilitated with efficient interchange terminals to mitigate the inconvenience to the transferring passengers. Such transfer terminals may require differential platform heights in order to provide level boarding to feeder, as well as trunk, buses (see Figure 10.6).

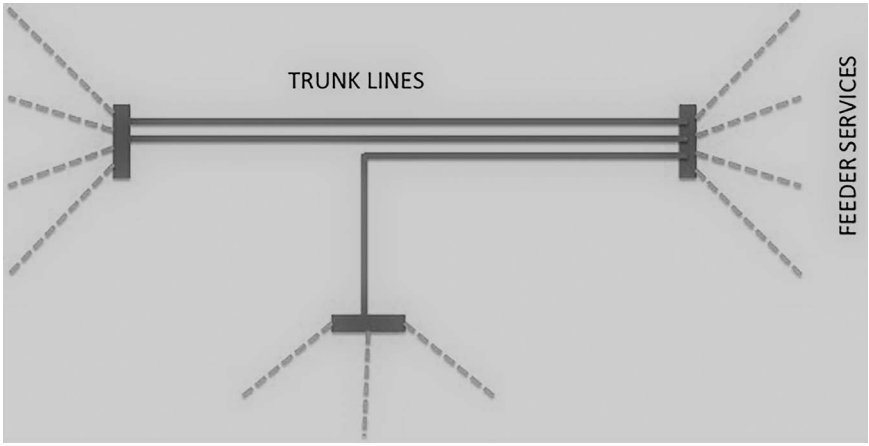


FIGURE 10.5 Rationalization of routes in a closed system for operating trunk-and-feeder services

Source: Authors (2017).

FIGURE 10.6 The Janmarg system in Ahmedabad, India, with doors on either side of the rapid transit bus

Source: Authors (2017).

Hybrid BRT Systems

Hybrid BRT systems combine the benefits of a closed BRT system with the flexibility of busways. The routes operated by the BRT fleet are extended beyond the network of dedicated corridors, thereby providing passengers with direct connections and reducing the need for transfers. Otherwise known as 'direct services', these extended routes are most effective if the extended portion of the route is relatively short and uncongested. Otherwise, delays on the service extensions could result in irregular bus arrivals once buses enter the BRT trunk corridor.

Recognising the potential for improved customer service from hybrid configurations, many BRT systems, even those that began as closed trunk-and-feeder systems, have begun introducing direct services. BRT systems with hybrid services include the Guangzhou BRT (Guangzhou, China), Rainbow BRT (Pune-Pimpri Chinchwad, India) and Rea Vaya BRT (Johannesburg, South Africa). Hybrid systems can have a wide range of capacities ranging from 2,000 pphpd to 30,000 pphpd at commercial speeds of about 20 km per hour.

While some hybrid systems retain the existing bus route network and simply operate those routes in the new physical infrastructure of the BRT network, the introduction of BRT presents an opportunity to improve customer experiences by rationalising the routes. Rationalisation can simplify complicated route networks, reduce wait times, and minimise the number of passengers who need to transfer one or more times to reach their destinations. The rationalisation process should be informed by the data obtained from travel demand surveys (see Figures 10.7 and 10.8).

Role of the BRT

BRT versus Road Expansion

Cities often try to address congestion by building wide roads, flyovers, and elevated roads. Such investments on car-centric infrastructure bring, at best, short-lived mobility benefits as private cars are inefficient users of precious road

FIGURE 10.7 Parked vehicles and standing delivery trucks compromising the utility of kerbside bus lanes

Source: Authors (2017).

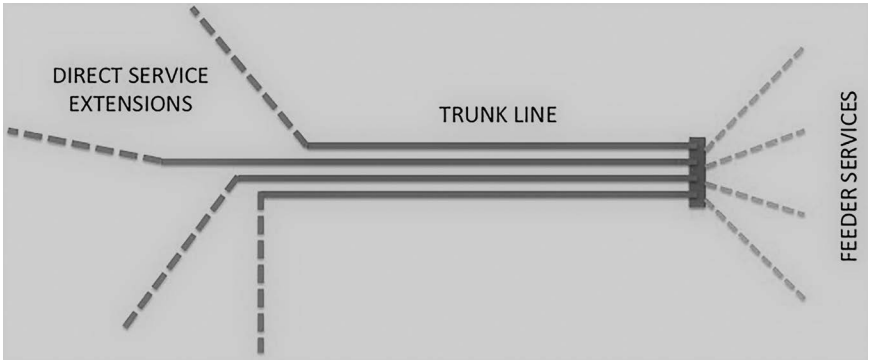


FIGURE 10.8 Hybrid bus rapid transit system with buses operating in the trunk line corridor and the feeder area

Source: Authors (2017).

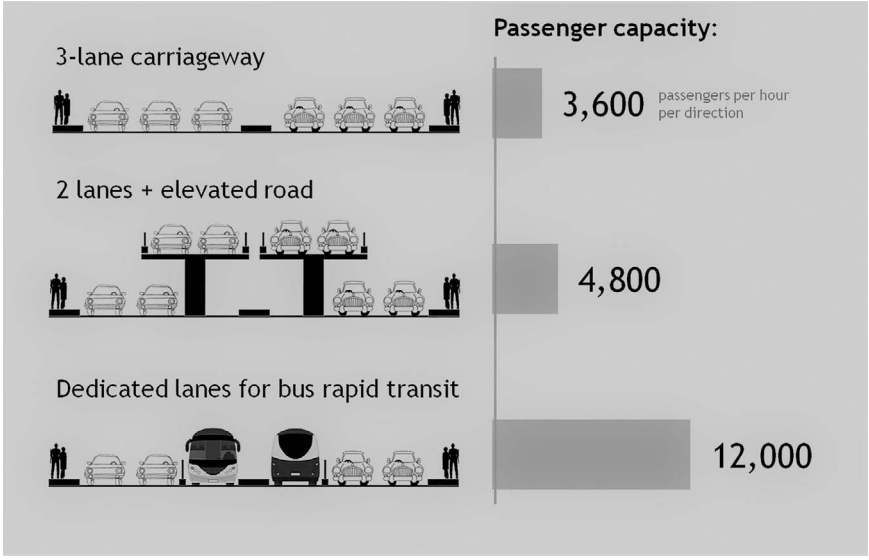


FIGURE 10.9 Allocating dedicated road space for bus rapid transit is an effective way to increase passenger throughput

Source: Authors (2017).

space. A single lane filled with cars typically carries only 1,000 to 1,200 pphpd, compared to 2,000 to 12,000 pphpd in a single BRT lane. With the addition of a passing lane at BRT stations and express services, the capacity can go up to 45,000 pphpd. In the long run, studies have found that there is a near one-to-one relationship between expansion in road space and the ensuing road congestion; that is more and more people shift to a new road until they have used up all the additional road space.[4] As a result, speeds plummet to the same level experienced prior to the road expansion project but with a larger number of vehicles stuck in traffic (see Figure 10.9).

The only way to achieve a lasting increase in the capacity of the transport system of a city is to invest in modes that use road space efficiently, namely, public transport, walking and cycling. Cities should devote a major share of transport funding to cost-effective, sustainable transport infrastructure and services, including BRT.

On streets with moderate to high demand for public transport, that is more than 2,000 pphpd, cities should start to plan for BRT integrated with other mass rapid transit services across the city. Furthermore, the allocation for BRT corridors must be made on new arterial streets being planned and implemented. Ideally, dedicated lanes for BRT should be created before traffic congestion sets in. However, even in situations in which a public transport corridor is congested with traffic, it is equitable to dedicate lanes for BRT to cater to the existing as well as future demand for mass rapid transit.

LRT

LRT is an electric rail-based technology operating either as a single rail car or a short train of cars, typically on an exclusive right of way at street level. Modern LRT systems feature many of the same features as BRT, including platform-level boarding, off-board fare collection and real-time passenger information.

Street-level LRT can provide high-quality service on corridors with moderate demand, provided that it incorporates the same key features that characterise BRT systems, that is dedicated lanes, level boarding, and off-board fare collection. LRT lacks the flexibility of BRT, and its capacity is limited to about 15,000 pphpd. However, the capacity of an LRT system with a single track per direction is higher than that of a single lane per direction BRT system, which peaks at about 12,000 pphpd.

BRT systems with express services can serve higher demand but require an additional passing lane at the stations to enable overtaking. LRT systems generally cannot accommodate passing tracks, so system capacity is limited to the number of people that a single track can serve. Operations are restricted to the network of LRT tracks, akin to a closed BRT system. Surface LRT systems cost 8 to 10 times as much as BRT systems. Therefore, for most urban corridors, either a closed or hybrid BRT system is more cost-effective than LRT.

Higher capacities can be achieved if LRTs are grade-separated, but the cost of LRTs with frequent grade-separated elements begins to approach that of heavy rail metro systems. In sum, the high cost of implementing LRT paired with capacities that are equivalent to those of BRT systems typically mitigates against their implementation in cities with limited capital budgets.

Grade-Separated Heavy Rail

A key element of transport planning is the calibration of transport services to the travel patterns and demand level along the corridor in question. A service that is undersized relative to expected demand may result in overcrowding and delays. On the other hand, a system with too much capacity represents an inefficient

allocation of resources that could have been used to improve other transport services or to meet other basic needs in the city. Therefore, sound transport planning must seek to provide the required capacity in each of a city's transport corridors in a cost-effective way.

High-capacity, rail-based modes such as metro rail systems can provide high-quality service on high-demand corridors. However, demand on major corridors in many Indian cities falls in the range of 2,000 to 10,000 pphpd, well below the level needed to justify the large capital investment required for a metro rail system, which is a minimum of 20,000 pphpd, and well within the range that can be handled by a BRT system with a single lane per direction. The existing arterial streets in Tier 1 Indian cities already have more than 100 buses per hour or 6,000 pphpd, which makes a strong case for BRT. Various alternatives exist:

- For large cities with a population of more than 5 million, a balanced public transport network might include metro rail services in some of the city's highest demand corridors, while the remaining corridors in the city can be served by BRT, as shown in the Urban and Regional Development Plans Formulation and Implementation Guidelines, Volume 1 and Table 8.19 (Ministry of Urban Development).
- In medium-sized cities with a population of 1 to 5 million, BRT typically can provide sufficient capacity to serve the city's entire mass rapid transit network.
- Cities smaller than 1 million typically do not need a rapid transit system. Bus and paratransit services are sufficient to serve the demand. However, cities whose population is expected to reach 1 million within the next five years should start planning for a BRT system.

Nevertheless, BRT is a very cost-effective option for cities with an existing population of up to 2 million, and it should be one of the first considerations in mass rapid transit system development in any city. It is suitable for cities where a mass rapid transit system needs to be developed quickly and incrementally as conditions and funding, as noted in the Smart City Indicators (Draft; Bureau of Indian Standards). Figure 10.10 shows how two cities planned for mass rapid transit development based on demand.

Planning for a BRT System

Network Selection

An initial step in the BRT planning process is to identify the network of corridors where BRT could be implemented. Network selection is a function of multiple considerations, including the following:

- Existing and future passenger demand patterns,
- Presence of severe congestion,

FIGURE 10.10 Correspondence between the choice of rapid transit technologies and the expected level of demand (left)

Source: Authors (2017).

- Need to offer equitable access of the system to people across all socio-economic groups,
- Potential to minimise passenger transfers,
- Potential to minimise land acquisition, and
- Right-of-way availability.

Passenger demand is a key factor for corridor selection. The BRT system should be located where it will benefit a large number of people relative to the expected investment. While cities are often averse to developing BRT corridors in congested areas where traffic volumes near the capacity of the carriageway, it is precisely these locations that have a significant number of passengers on public transport – a combination of buses and informal public transport vehicles such as shared autos and mini buses – and could benefit most by the creation of a BRT.

As has been observed in many cities across the world, the creation of BRT benefits not just public transport passengers but also people travelling by other modes due to the streamlining of vehicular traffic. However, the primary goal of creating a BRT is to maximise the ability of a corridor to transport people rather than vehicles. This goal has also been noted in the National Urban Transport Policy (2006) of the Government of India.

BRT should not be seen as a solution for solving traffic congestion. Even in cases where BRT is created on less congested corridors, personal motor vehicle traffic growth results in congestion on the mixed-traffic lanes, abutting BRT lanes, within a few years. Instead, it should be viewed as an effective option for those who wish to travel rapidly, safely, and comfortably even when there is congestion on mixed-traffic lanes of the carriageway.

The only known solutions for controlling traffic congestion are measures that control the demand for the use of personal motor vehicles through physical restrictions or appropriate user charges such as market-based parking fees and congestion pricing, along with appropriate enforcement measures.

Demand Assessment

Demand is generally assessed through three basic types of surveys:

- Frequency-occupancy (FO) survey: An FO survey records how frequently each bus or taxi route runs and the approximate occupancy of each vehicle.
- Boarding-alighting (BA) survey: A BA survey is an onboard count of how many passengers get on and off the vehicle at each stop along the route.
- Transfer surveys: A transfer survey is helpful to get a better sense of full passenger trips, including trips that involve more than one segment linked by a transfer from one route to another.

A city may opt to gather more data using other types of surveys, depending on the system complexity, project timeline, and availability of funds. Data from travel demand surveys can be processed using a basic spreadsheet model or travel-demand modelling tools such as CUBE, Transcad, or Emme. Key model outputs include the passenger load on different parts of the corridor and the expected entries and exits at each station. These demand data are used to determine the alignment and frequency of BRT services. Eventually, they also inform the sizing of stations, terminals and other physical infrastructure elements. A four-step model is useful to estimate mode shift. However, it is equally valid to use the rule of thumb to make decisions on network selection.

A BRT corridor should be long enough to provide a meaningful impact on travel times and passenger convenience. If warranted by passenger demand, BRT corridors must continue all the way into congested parts of the city. There is limited utility in building BRT infrastructure in uncongested outer roads while sending buses into mixed traffic as soon as they reach congested areas. New streets that are developed in the periphery of the city may be designed to be BRT ready, with space reserved in the centre for future BRT, especially in the case of streets with a right of way of more than 36 metres. This is most effective when such reservations are made in the statutory development plan of the city or region. BRT infrastructure can be created once the demand is high enough to justify dedicated infrastructure (see Figures 10.11 and 10.12).

BRT Configuration and System Capacity

System capacity refers to the maximum number of people or vehicles that can be moved in a single direction on a BRT corridor. It is important to match the system design to the required capacity, as a design with inadequate capacity can lead to delays, overcrowding, and a poor image of the system. Among the factors that determine the capacity of a BRT system, the configuration of the lanes and stations is essential.

With a variety of configurations to handle varying levels of passenger demand, BRT capacities are competitive with rail-based modes. For example, LRT systems typically can accommodate up to 15,000 pphpd with a single track per direction – a level easily achievable with BRT. Monorails are lower capacity systems, handling about 8,000 pphpd on the busiest known systems. BRT with passing lanes, which can carry up to 45,000 pphpd, is comparable with all but the world's highest capacity metro systems.

(a) Single Lane per Direction

A BRT system with one lane per direction in station areas can handle about 70 regular buses an hour, or about 5,000 pphpd. This configuration is appropriate for the corridor demand in many Tier 2 Indian cities. Above these volumes, bus congestion at stations, caused by bus dwell times at stations, results in delays and slower commercial speeds. The capacity of a system with one lane per direction

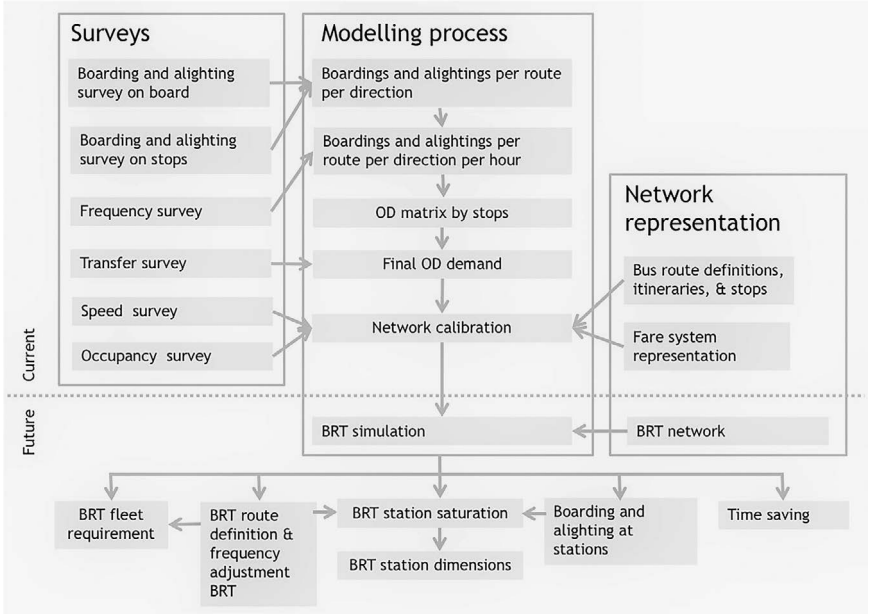


FIGURE 10.11 Demand analysis for a bus rapid transit project

Source: Authors (2017).

FIGURE 10.12 A bus rapid transit system in Ahmedabad's congested Walled City area

Source: Authors (2017).

can be increased to about 9,000 pphpd by adding articulated buses or 12,000 pphpd by using bi-articulated buses.

(b) Passing Lanes at Stations

In situations with higher passenger demand, passing lanes at stations can increase the capacity of a BRT system. For instance, the Transmilenio BRT system in

Bogotá (Colombia) can carry up to 45,000 pphpd through the use of articulated and bi-articulated buses, passing lanes at stations, and up to 60 per cent of services operating as express routes that stop only at limited locations. Another example of a system with passing lanes is that of Guangzhou BRT (China), which carries 27,000 pphpd (see Figures 10.13 and 10.14).

For passing lanes to function effectively, stations must be long enough to accommodate separate stopping bays, also called sub-stops, which can function independently of one another. Multiple sub-stops increase the number of buses that can dock at a station without causing congestion and permit different types of services to operate from the same station.

In cases in which adequate space for long stations is not available, another possibility is to create stations with docking positions on both sides of the station for

FIGURE 10.13 A single-lane bus rapid transit system in Mexico City (left)

Source: Photos courtesy of ITDP and WRI India Sustainable Cities.

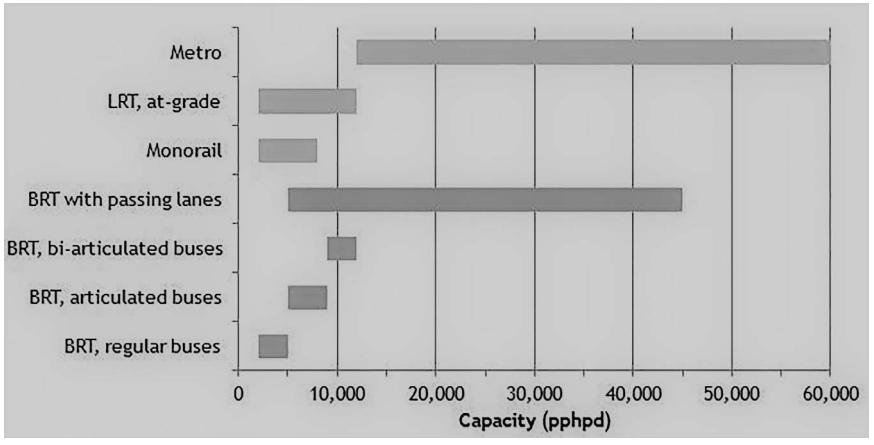


FIGURE 10.14 Capacity of mass rapid transit systems

Source: Authors (2017).

a single direction. The additional docking bays allow the system to handle higher bus frequencies without experiencing slowdowns due to congestion at stations. BRT systems in Lanzhou and Yichang with dual-side docking are able to handle frequencies of 80 to 100 buses per hour with competitive commercial speeds of 20 km per hour or more.

(c) Bus Convoying

Some systems with a single lane per direction increase capacity by operating buses in convoys of two or more vehicles operating in a closely bunched pack. In some cases, convoys are able to transport up to 20,000 pphpd in a single lane. However, at volumes above 13,000 pphpd, convoys experience a major deterioration in commercial speeds. They are also difficult to manage and often cause confusion amongst passengers. Very few cities across the world utilise convoying as a technique. If space is available, it is preferable to increase capacity through the use of passing lanes and stations with multiple sub-stops.

BRT System Design

Dedicated Bus Lane Alignment

A common misconception is that the kerbside alignment of bus lanes reduces the crossing distance for bus passengers. In fact, the overall crossing distance for a round trip is the same whether bus stops are located on the outer edges or centre of a road. If bus stops are located on the kerb, a passenger can board from the same side for travel in one direction but has to cross the entire road to travel in the other direction. If stops are located on the median, the passenger has to cross half of the street each time. The total crossing distance remains the same (see Figure 10.15).

FIGURE 10.15 Median busways alignment avoids conflicts Ecovia, Quito, Ecuador (left) and Rainbow, Pune (right)

Source: Authors (2017).

Station Alignment

Common BRT station typologies include the following:

- A single centrally located station serving both directions of service;
- Side stations on the outer edges of a median busway, each serving a single direction of service; and
- A pair of two-sided stations, each serving the same direction of travel.

A single central station serving both directions is the configuration employed in most high-performance BRTs. This alignment has several advantages (also see Figure 10.16):

- Optimal use of street space: Central stations require a single entry area and a single set of turnstiles, whereas two bilateral stations each require their own entries, thereby increasing the total length of the stations.
- Easier customer transfers between routes: Central stations make it easier for customers to transfer from one bus route to another without having to exit the station and cross a street, irrespective of the direction of the two routes.
- Easier docking: Bus drivers have an easier time docking at stations located on the driver's side of the bus.
- Lower construction and maintenance costs: Central stations are smaller and are up to 40 per cent less expensive to build and operate than two bus stations on either side of the central bus lanes.

Side stations on the outer edge of the median busway are sometimes employed to permit the use of an existing fleet of buses with kerbside doors. However, in such cases, system designers and operators should ensure that only high-quality, low-entry buses are permitted in the BRT corridor. Furthermore, these buses must be maintained well and replaced at the end of their rated life, typically 7 to 10 years. Well-maintained buses break down less and tend to last longer, resulting in a lower cost of operations.

A common pitfall is to open the corridor to multiple types of vehicles with different internal floor heights and mismatched door locations. Doing so renders the system inaccessible to many users, makes boarding slower and less convenient and generally detracts from the system's image. Moreover, the cost savings from the use of an existing bus fleet are relatively small in comparison to the overall capital cost of a BRT system. Therefore, it is advisable that a new fleet of compatible, high-quality buses is procured along with the creation of suitable BRT infrastructure.

A recent innovation in BRT design is to develop two station buildings, each with boarding areas on both sides serving a single direction. Found in systems in Lanzhou and Yichang (China), this arrangement increases the number of vehicles that can dock at the station while maintaining a reasonable level of saturation. Both of these systems utilise buses with low-entry doors on both sides.

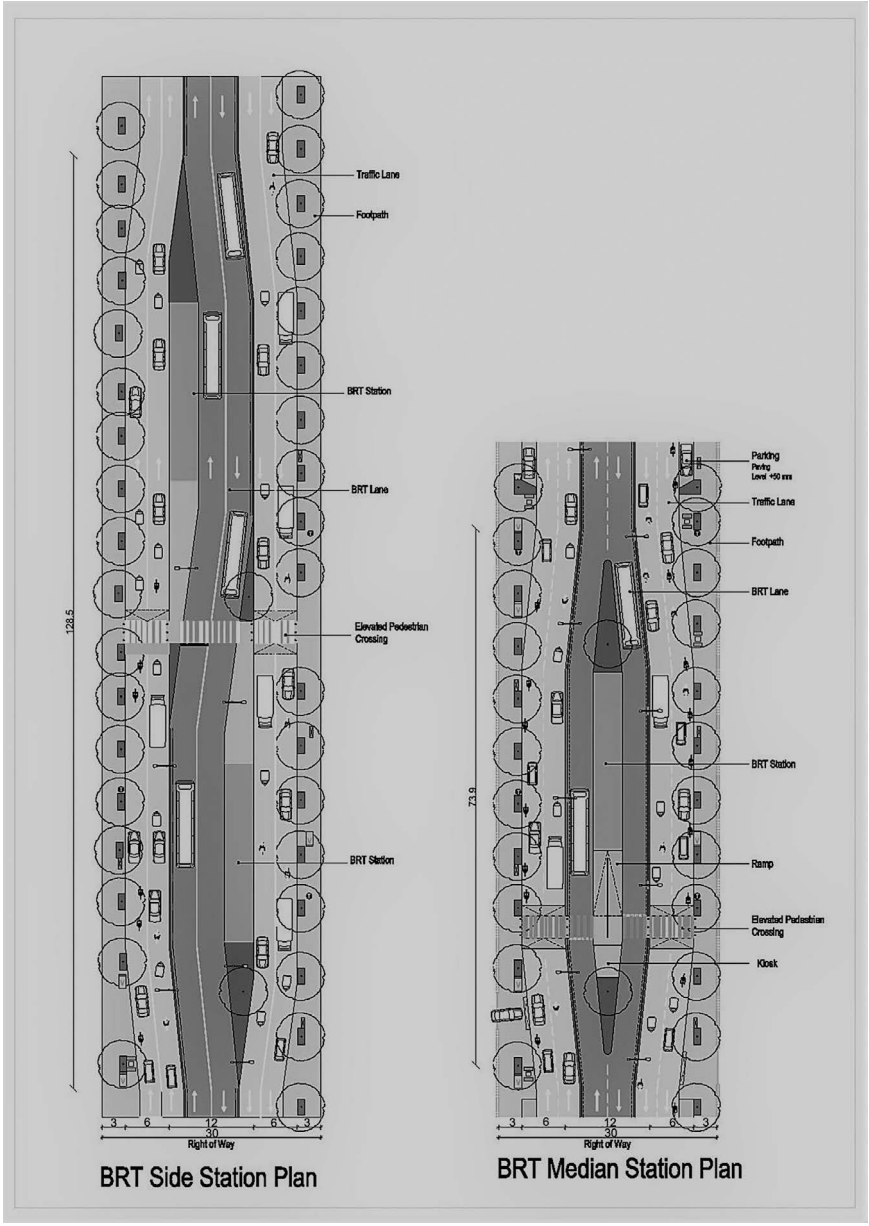


FIGURE 10.16 Median stations need less road space than side-aligned stations

Source: Authors (2017).

FIGURE 10.17 Bus rapid transit stations with dual-side docking for buses in a single direction

Source: Karl Fjellstrom, ITDP China.

Potentially, dual-side stations could also introduce multiple dock heights. High-entry buses with median side doors would dock on the left side of the station, while low-entry buses with kerbside doors would dock on the right. An internal ramp would connect the two boarding areas. The high-entry vehicles could be articulated or bi-articulated buses that provide trunk-only services, while the low-entry vehicles could provide direct services outside the corridor. A high level of detailing and utmost design and safety precautions is essential when adopting such a composition (see Figure 10.17).

Station Design

Stations play a major role in shaping a passenger's overall experience of using a BRT system. They need to have sufficient capacity to handle anticipated ridership and should offer a safe and comfortable space that eases the wait. Beyond functionality, stations are important in defining the image of the BRT system. A prominent, attractive station has the potential to inspire the communities around it and demonstrate that BRT is a lasting investment in the urban environment.

The use of open station architecture allows for natural ventilation and lighting. However, the station roof should provide protection from rain and sun. An overhang is preferred to shelter passengers who are boarding or alighting. Stations should be built with durable, low maintenance materials to minimise maintenance costs. They must also provide adequate seating and lighting along with static as well as real-time passenger information (see Figure 10.18).

For operations during evening and night hours, adequate lighting with an illumination level of 150 lux should be provided to ensure the safety of BRT passengers. The intensity of lighting at station ends should be reduced to mitigate changes in brightness experienced by drivers pulling into the station.

FIGURE 10.18 Requirements of the bus rapid transit stations

Source: ITDP China & Author (2017).

Bus Station Interface

Buses and stations must be designed together to ensure that the BRT system is accessible to all. To reduce boarding and alighting time, the station platform level should be built at the same level as the bus floor. Internal steps render a system completely unusable by persons in wheelchairs, and even small steps can cause significant delays for older adults, those with disabilities, or people with suitcases or strollers. To accommodate such users, the BRT systems require modern buses with a floor height that matches the height of the station floor.

The reduction or elimination of the vehicle-to-platform gap is also a key to customer safety and comfort. The gap between the station and the bus should not be more than 5 cm. Physical measures such as Kassel kerbs or alignment markings can help guide bus drivers closer to the station. In addition, alignment markings can be placed on the bus dashboard and in the bus lane. Ultimately, good bus docking is a function of the level of driver training and system monitoring. To further improve safety, many BRT systems make use of sliding doors at stations. Doors give a degree of security to commuters, protect against weather, reduce accident risks, and prevent fare evaders from entering the BRT system. Kerbs and alignment markings help buses dock at BRT stations (see Figure 10.19).

At-level boarding in Ahmedabad and Lanzhou made boarding and alighting safe and easy, particularly for older adults, those with disabilities, and people with special needs. It also improved system speeds by minimising the time taken for boarding and alighting (see Figure 10.20).

BRT vehicles should be designed with a sufficient number of wide doors to facilitate rapid boarding and alighting at stations. Regular 12-metre buses should have at least two doors on the station side, while articulated buses should have four doors. Each door should be at least 1.2 metres wide. Where doors are situated together, they should be separated by at least 400 mm. However, it is recommended that there be a greater gap between the two doors of the bus for better internal circulation and lower ingress and egress times.

FIGURE 10.19 Kassel kerbs in Cape Town (left) and alignment markings in Johannesburg (right)

Source: Photos courtesy of UN-HABITAT.

FIGURE 10.20 At-level boarding in Ahmedabad (left) and Lanzhou (right)

Source: Authors (2017).

FIGURE 10.21 Alignment of bus and station doors designed to accommodate all types of vehicles

Source: Authors (2017).

In the case of buses with median doors for trunk corridor operations, doors should be also provided on the left side of the bus to enable the system to operate direct services that extend beyond the dedicated corridor. BRT vehicles need to comply with the urban bus design standards as developed by the Ministry of Urban Development, Government of India. The alignment of bus and station doors should be designed to accommodate all types of vehicles that are expected to ply on the corridor in current and future phases (see Figure 10.21).

FIGURE 10.22 Wide doors in bus rapid transit buses

Source: Authors (2017) & Karl Fjellstrom, ITDP China

Wide doors on the station side of buses allow for fast boarding and alighting, as shown with an 18-metre articulated bus in Transmilenio, Bogotá, and a 12-metre bus in Rainbow, Pune (see Figure 10.22).

Distance Between Stations

Stations should be placed at an average spacing of 500 metres to ensure that bus stops are accessible to adjoining neighbourhoods. With greater station spacing, the increased time spent walking to stations more than offsets any gains due to higher bus speeds. Stations that are too close result in lower bus speeds. Given that spacing may vary from station to station depending on local conditions, systems should aim at spacing in the range of 300 to 800 metres.

Street Elements and Design Configurations

BRT corridor design requires careful planning covering cross-section designs, busway placement, intersection treatments, and station positions. BRT corridors function best if they are designed to meet the needs of all users, including public transport users, pedestrians, cyclists, and personal motor vehicle users. Various elements of the BRT corridor and their suggested dimensions follow:

- A BRT lane for one-way movement should have a width of 3.5 metres. The width of a passing lane, where required, should be 4 metres.
- A divider, a minimum 0.5 metre wide, should separate BRT lanes from mixed traffic. These should be expanded to at least 1 metre at street-crossing points by marginally reducing carriageway and BRT lane width.
- Median stations that serve both directions of BRT services should have a minimum inner clear width of 3.5 metres. The outer width would be minimum 4 metres. Station width may have to be expanded based on passenger demand. If adequate width is not available, the boarding areas for the two

directions may be staggered to reduce conflicts between passengers waiting to board and those alighting and wanting to exit.

- The width of all BRT elements at station locations without passing lanes should be 12 metres. In the case of systems that require a passing lane, the total width of BRT elements at the station expands to 16 metres. Since passing lanes are not required at non-station locations, the width of BRT elements drops to 8 metres in both cases.
- Footpaths are essential for safe pedestrian access to BRT stations. Footpaths with a minimum clear width of 1.8 metres should be provided on either side of the carriageway. A tree line next to the footpath with a minimum width of 1 metre should be included at all locations.
- Cycle tracks may be provided along the corridor for the safety and convenience of cyclists where adequate right-of-way is available.
- In the case of BRT, since a majority of large vehicles (buses) do not use the carriageway, the carriageway width may be reduced from 7 metres to 6 or 6.5 metres.
- At non-station locations along the BRT corridor, parallel parking may be provided at the edge of a carriageway or a service lane, depending on the chosen street cross section.

Tables 10.1 and 10.2 provide a matrix of various elements and street widths, along with suggested dimensions for each element. On corridors marked for the future development of BRT, a median of 12 metres should be reserved for BRT infrastructure. This median reserve provides space for two-way BRT lanes and stations. The exact position of stations can be determined at a later point based on passenger demand, operational requirements, and intersection locations.

BRT requires wider cross sections at stations. Elsewhere, a multi-utility zone that provides space for on-street parking and bus stops can occupy the extra 4 metres of right-of-way that is available between stations. Walking and cycling provide last-mile connectivity to BRT stations, and space for these modes should not be compromised in station areas. BRT lanes require physical separation to prevent the entry of mixed traffic. Physical delineators should be paired with adequate signage and road markings to alert personal motor vehicle users that they may not enter the lanes. A typical BRT configuration on a street with a 36-metre right-of-way shows the cross section at a BRT station on the upper side and cross section at non-station location on the lower side.

A BRT corridor with all elements – BRT stations and lanes for both directions; two-lane carriageways, one for each direction; footpaths with tree cover and cycle tracks at both edges – can be accommodated on streets with a right of way of 36 metres and above. Parking may be provided on such streets at non-station locations. A typical BRT corridor configuration for a 36-metre right-of-way is illustrated in Figure 10.23. A minimum of 30 metres right of way is required to develop a BRT corridor that serves both directions of travel on the BRT as well as motor vehicles with the carriageways of two lanes per direction (see Figure 10.24). This section has safe walking space, an essential element, but not cycle tracks or service lanes.

TABLE 10.1 Bus Rapid Transit (BRT) Corridor Elements

Street Element	*Specifications*	*Minimum Width (m)*	*Maximum Width (m)*
BRT lane	One-way lane	3.5	4.0
BRT lane	Two-way lane	7.0	7.5
BRT station	Median station	4.0	*
BRT lane	Passing lane at station	4.0	4.5
Buffer between BRT and mixed-traffic lanes		0.5	*
Pedestrian refuge		1.0	*
Carriageway	Mixed-traffic lane (per lane for carriageways with two or more lanes per direction)	3.0	3.5
Parking	Parallel parking for cars; perpendicular parking for motorcycles and bicycles	2.0	2.5
Cycle track	One-way	2.0	*
Cycle track	Two-way	3.0	*
Footpath	Clear width	1.8	*
Footpath	Total width including furniture zone and frontage zone	3.3	*
Kerbside bus stop for BRT direct services and other buses		2.0	*
Tree line	Next to the footpath or in the parking lane	1.0	*

Note: *Width as per requirements.

TABLE 10.2 Bus Rapid Transit (BRT) Corridor Specifications

Street Element	*Specifications*	*Minimum Height (mm)*	*Maximum Height (mm)*
BRT lane	BRT lane between stations	0	0
BRT lane	BRT lane at station	0	150
BRT Station	Station height	At the same height as the bus floor	
Carriageway	Tabletop crossings	100	150
Footpath		100	150
Cycle track		100	100
Bus stop	Kerbside bus shelter	150	150

Note: Heights are mentioned with respect to carriageway level.

Introducing passing lanes at stations allows the system to accommodate a larger number of passengers. A 36-metre-wide street can accommodate passing lanes but with the omission of cycle tracks or service lanes. Figure 10.24 shows a configuration with a 30-metre right of way and no passing lanes. Figure 10.25

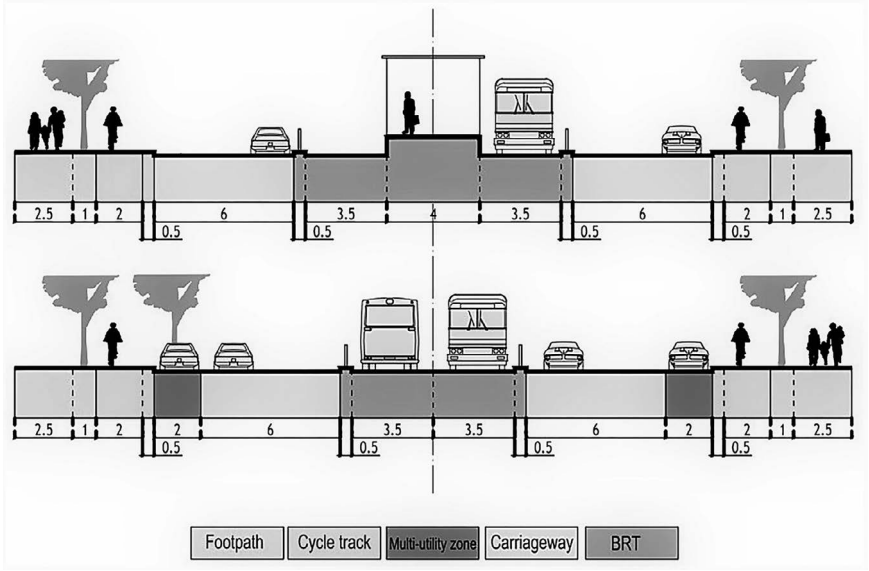


FIGURE 10.23 A typical bus rapid transit configuration on a street with a 36-meter right-of-way

Source: Authors (2017).

shows a configuration on a 42-metre right of way that has a BRT passing lane. This configuration shows a shared space at the street edge that is primarily meant for pedestrians but can be accessed by motor vehicles at very slow speeds to access properties and parking. An additional dedicated footpath is also present at non-station locations in this cross section.

Successful design interventions in Latin American cities such as Quito, Medellin, and Mexico City have demonstrated that BRT can be implemented even on narrow streets, especially in old city areas and heritage districts. Figure 10.26 gives suggested cross sections for streets with a right of way of 16 to 24 metres (Figure 10.27). While one or more elements are omitted in these configurations, safe walking space, an essential element, is ensured in all the sections. For example, an 18-metre right-of-way with only one-way movement is possible for BRT as well as other vehicular traffic. In the case of a 16-metre right-of-way, two-way movement of BRT is accommodated, but there is no space for other vehicular traffic in either direction.

Parking Management

Unmanaged corridors with chaotic illegal parking, unrestricted street vending as well as encroachments by various activities are the norm on most streets in Indian cities. While many cities have taken steps to regulate and manage street

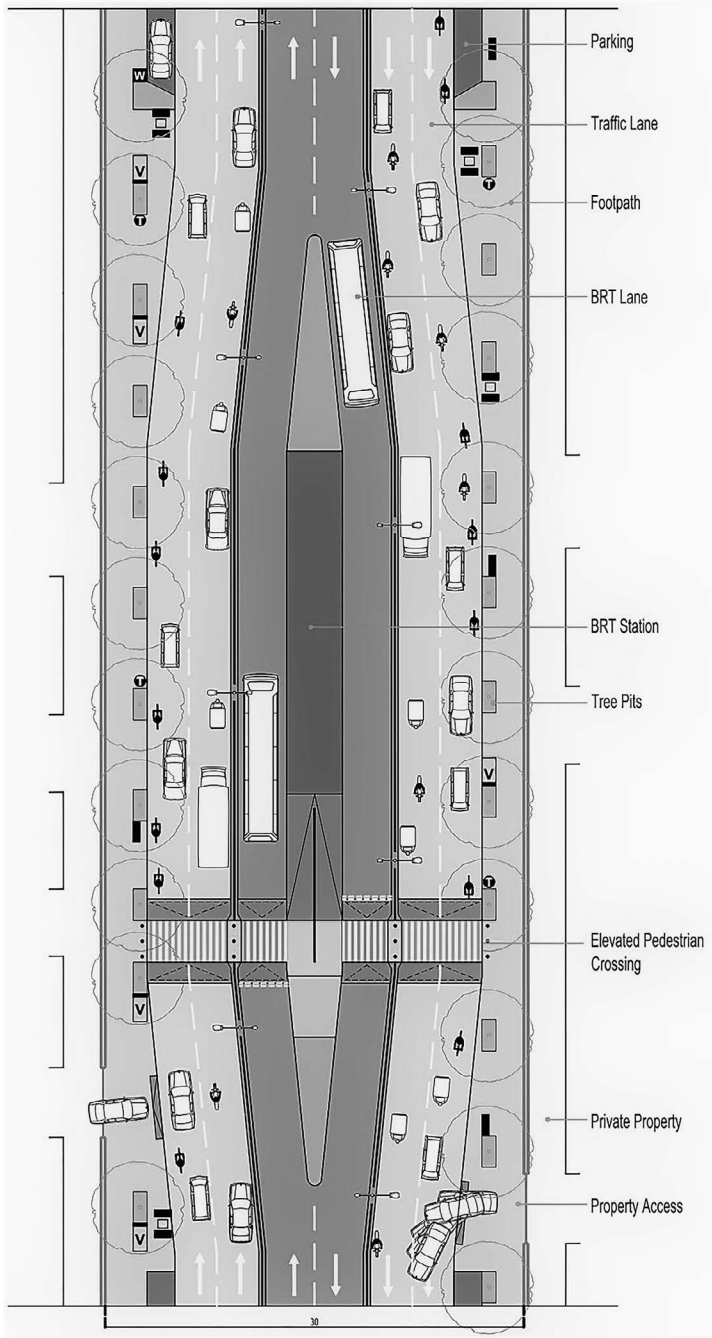


FIGURE 10.24 Plan of a typical bus rapid transit configuration without passing lanes (30-metre street)

Source: Authors (2017).

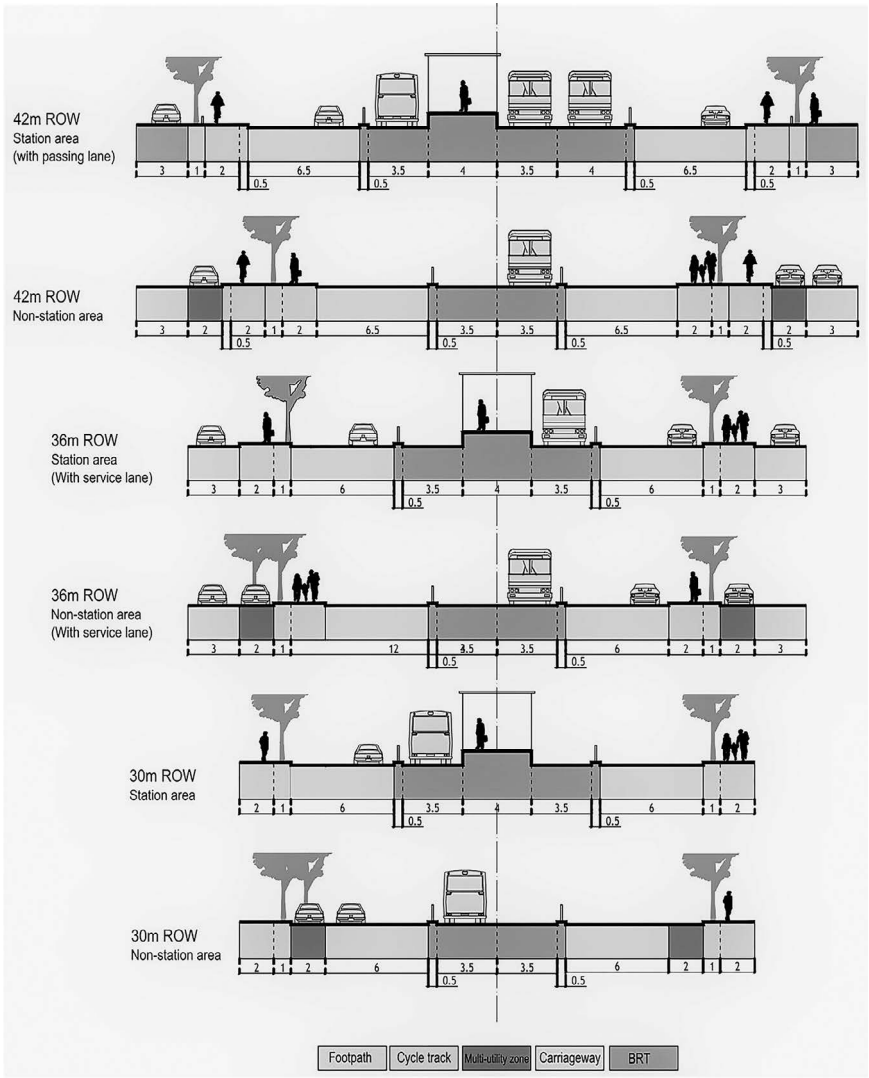


FIGURE 10.25 Plan of a typical bus rapid transit configuration with passing lanes (42-metre street)

Source: Authors (2017).

vending through clearly defined policies, on-street parking remains haphazard and unmanaged. The principles of parking management for cities follow:

- **Prioritise sustainable modes of transport:** Cities must make transport planning decisions that give priority to facilities for sustainable modes of transport over parking, both on the street as well as off the street, such as intermodal facilities. Rather than creating park-and-ride facilities, cities must provide

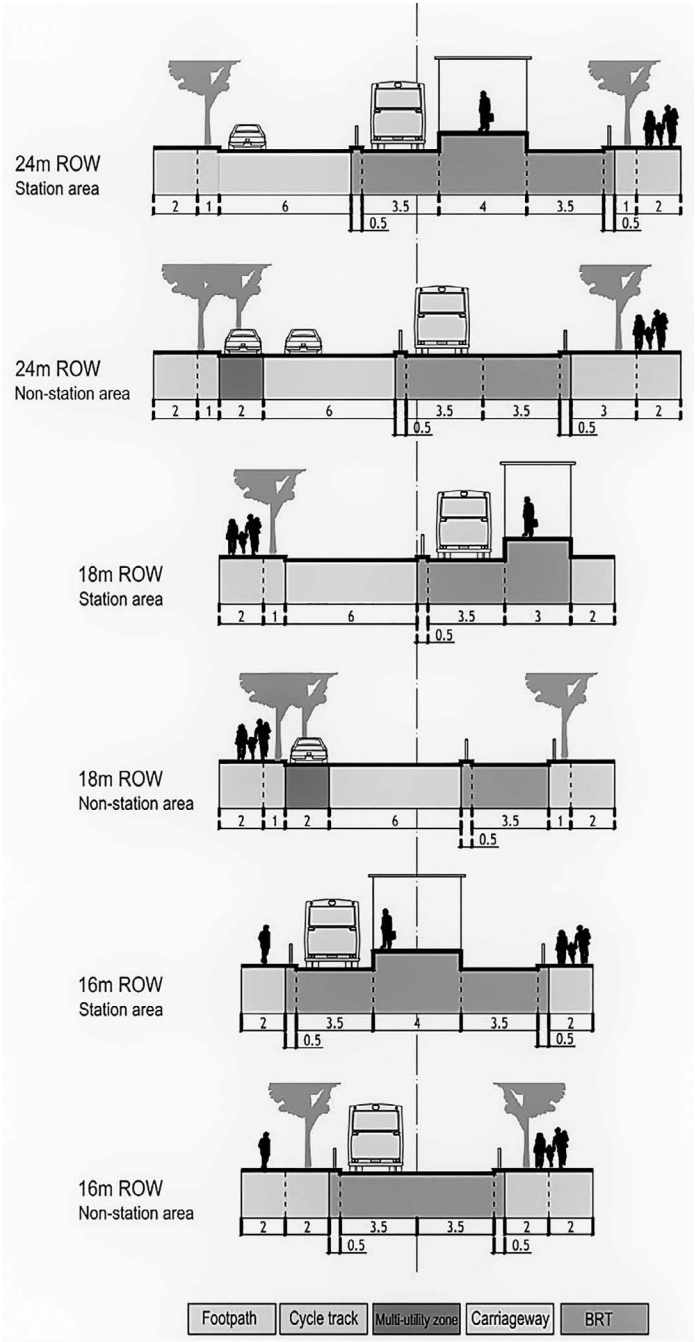


FIGURE 10.26 Bus rapid transit cross sections for a right-of-way of 16 to 24 metres

Source: Authors (2017).

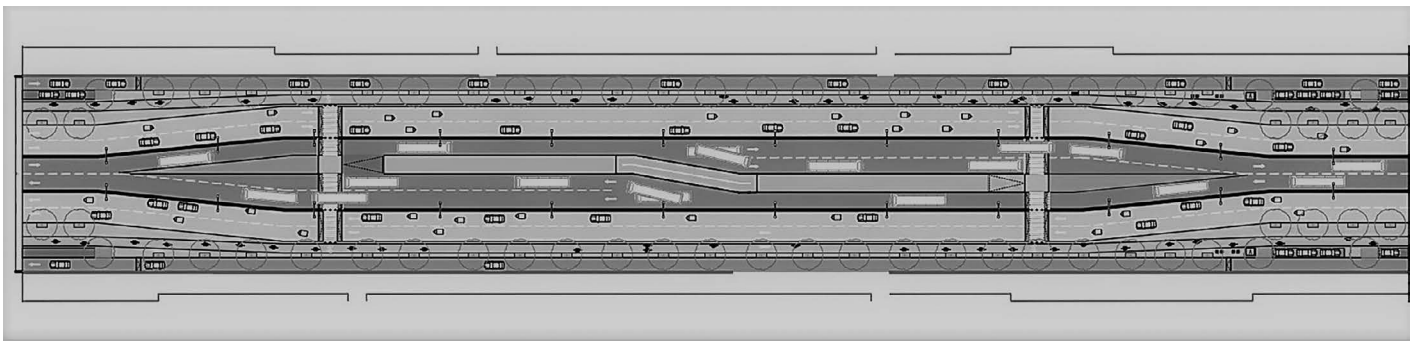


FIGURE 10.27 Plan of a typical bus rapid transit configuration without passing lanes (24-metre street)

Source: Authors (2017).

feeder connections and improve intermodal integration between various public transport modes. Cities must prioritise sustainable modes of transport such as walking, cycling, and public transport in their financial plans.

- **Price parking to manage demand:** Instead of trying to increase parking supply, cities must treat parking as a commodity that should be priced in proportion to demand. While determining parking rates, cities must ensure that streets with higher parking demand must have higher parking fees. Parking rates must be based on location, time of the day, duration of parking, and category of the vehicle defined by size and type. Prices must be higher for on-street parking compared to off-street parking to encourage people to use off-street facilities and free up road space for other uses.
- **Manage and enforce on-street parking first:** Even when off-street parking is available to users of personal motor vehicles, it is often underutilised due to low or no cost of on-street parking and poor enforcement. Thus, cities must manage and enforce on-street parking effectively before building any off-street parking facilities.
- **No subsidy to parking:** Cities must not subsidise on-street or off-street parking for personal motor vehicles, including multi-level parking, implicitly or explicitly. Where the private sector develops off-street parking for personal motor vehicles, it must bear the full cost of the land, construction, maintenance, and operations and recoup its investment directly from parking users without any form of cross-subsidy using public funds. Cities must ensure that users pay for the full cost of parking facilities based on the opportunity cost of land, capital cost, operations, maintenance costs, and temporal demand.
- **Parking revenue for sustainable modes of transport:** Cities must earmark the revenue from parking management for investments in sustainable modes of transport. Specifically, they must develop mechanisms whereby a good portion of the parking revenue from an area of the city is spent on improving walking, cycling, and public transport facilities within that area. Estimates show that revenue generated by 1 km of paid parking can pay for not just the creation and maintenance of high-quality footpaths along the stretch but also the addition of up to 10 new buses to serve the area.
- **Limit parking supply:** Cities must limit the total parking supply, including public and private off-street and on-street parking, based on the capacity of the road network in the zone. They must set caps on the total quantum of parking available in each zone. The construction of additional off-street parking spaces (public as well as private, including multilevel car parking) facilities must be balanced with a reduction in on-street parking. For example, in 1996, the city of Zurich, Switzerland, capped its parking supply at 1990 levels to prevent the addition of extra parking in the city centre that might result in increased congestion.
- **Create active street frontage:** Parking in the front setback creates an undesirable separation between footpaths and activity within buildings. Furthermore, stilt parking on the street-facing edge of buildings creates inactive

and potentially unsafe spaces. Cities must modify building regulations to ensure active edges and prohibit parking in the front setbacks.

Cautions While Implementing the BRT System

The following factors should be considered when planning, constructing, and operating a BRT system.

Network Length

Some cities construct small segment(s) of dedicated BRT corridor(s). These do not give desirable results. Short and sometimes disconnected corridors provide limited benefits to commuters, create a negative image of the system, and run the risk of being considered a failure. When planning a BRT system, a reasonable network should be identified. While the implementation can be done in phases, the systems should be expanded in a time-bound manner to benefit a substantial number of people.

Branded and Dedicated High-Quality Fleet

For BRT to act as a high-quality system that serves the public well and wins their confidence, it should have an attractive fleet of buses with uniform specifications and branding. The BRT system should be projected as a metro on the road with buses built to a quality similar to metro rail coaches.

BRT Lane and Not a Bus Lane

BRT is the coming together of multiple design and operational elements to create a seamless user experience and enhance efficiency. For example, the bus floor height should match the station floor height to facilitate step-les boarding and alighting. Some cities allow buses of all types into the BRT corridor, including various types of city buses, intercity buses, school buses, and company buses. Such decisions have the effect of converting the BRT corridor into a mere bus lane, and this significantly reduces the efficiency of the system. To maintain efficiency, we should provide seamless customer experience and create and maintain a strong brand amongst the public. Only specially designed buses that belong to the system must be allowed in the corridor. Attempts must be made to rationalise city bus routes to reduce or eliminate overlaps with BRT services.

Median Alignment of BRT Lanes

Medians are the most appropriate locations for BRT lanes since they provide rapid and uninterrupted movement for buses. Kerbside bus lanes that are frequently obstructed by parked or stopped vehicles and vehicles turning left onto

side streets or properties, as well as other slow-moving traffic, and are therefore inappropriate for BRT.

The concern about access to median stations is unfounded. Bus passengers routinely cross streets to access bus stops that happen to be on the other side. Rather than crossing the entire street width around half the time, a BRT passenger has to cross only half the street width at all times. Hence, a BRT passenger has to cross no more than a passenger of a regular city bus service. Furthermore, frequent and safe street-crossing opportunities are a defining feature of a good urban road. BRT stations integrated with signals provide a safe opportunity to cross the street to reach the stations in the median.

BRT Station Location

BRT station locations on the corridor are very critical. While proximity to passenger demand location is important, it should be noted that the stations should not be placed right at the intersection. Systems with stations located right at the intersection do not provide sufficient queuing space for buses. Moreover, they occupy lanes that could be added for the queuing of mixed traffic, thereby maximising the throughput of the intersection. Setting back the stations by 40 metres or more addresses this issue.

Intersection Design

Intersections are complex and can easily become bottlenecks. In many Indian cities, traffic police routinely override automated signals, hoping to help move the traffic but exacerbating the situation. Very long traffic queues, running hundreds of metres, become a routine affair. In fact, signal cycles are as long as 8 to 12 minutes in the case of some poorly managed BRT systems. Vehicles often have to wait for even up to three such long cycles before they are able to clear the intersection, resulting in undue delays to both personalised vehicles and buses. Intersections must be simplified, but in physical design and in operations. The number of signal phases should be reduced, and so should the cycle time.

Overlap With Rail-Based Mass Transit Systems

It is essential to analyse the desire lines of commuters in situations where a BRT line might overlap with an existing or proposed metro or other forms of urban rail lines. While rationalising services is a laudable effort to improve the utilisation of resources, one must not forget the primary goal of maximising public transport passenger convenience. In cases in which the overlaps between the rail line and specific BRT routes are small and removing the BRT route would cause one or more needless transfers, this might potentially push passengers away from public transport altogether. It is advisable to allow an overlap of systems. However, all attempts must be made to integrate such systems to create seamless connectivity and maximise customer options.

Bus Operations Monitoring

Owing to a lack of monitoring operations, there may be bus bunching at stations and at intersections, resulting in a reduction of speed, crowding at stations and overall degradation of efficiency. Poor bus maintenance results in breakdowns during operations. GPS-enabled BRT buses should be monitored and controlled using two-way communication systems to reduce bunching and maintain desired headways.

BRT Fleet Expansion

Some systems fail to augment the fleet size to cope with increases in demand, and if the demand stagnates, it may lead to promoting greater use of personal motor vehicles, which will eventually lead to a demand for the removal of BRT to gain them more road space. Therefore, cities must ensure that the BRT bus fleet is continuously augmented to match the existing demand and to meet additional capacity to attract new users.

Interdepartmental Coordination

Any mass transit system needs the close involvement of various government organisations in the city and region. Typically, the BRT systems in India need the involvement of municipal corporations, traffic police, regional transport office, sometimes state or national highways departments, and the existing bus operating company or department. Cities that lack interdepartmental coordination end up with poor system performance because of issues like two city bus systems on the same corridor, which confuses passengers and results in unnecessary competition; traffic police allowing private vehicles to use the bus lane during peak hours; or lane segregation missing on part of the corridor due to land encroachment issues, and so on. Cities must bring together all stakeholders, especially different public offices, to ensure their support and ownership of the system.

Supporting Infrastructure

A good BRT system needs supporting infrastructure like passenger terminals, depots, and maintenance areas. A lack of passenger transfer stations and waiting areas results in discomfort to passengers, an increase in operations, and an increase maintenance costs. The BRT system must have the supporting infrastructure that is typically provided in rail-based mass rapid transit systems.

Fund Allocation

Public transport systems, whether BRT or otherwise, often need subsidies from the government to provide affordable mobility options to citizens. However, many Indian BRT systems find it very difficult to obtain the necessary funding to meet operational losses or augment the fleet. At the same time, these cities manage to

spend large sums of money on short-term options such as vehicular grade separators and the construction of off-street parking blocks that only facilitate the use of personal motor vehicles that cause many negative externalities such as traffic congestion, pollution, and unsafe road conditions. Cities must financially support public transport systems, especially bus-based systems such as BRT that can service the needs of the majority of the population.

Skilled Manpower

BRT systems need regular planning and monitoring. They need competent professionals from the fields of transport planning, finance, law, and human resource management. They also need trained drivers and other staff for functions, such as ticketing and security, to provide quality service to passengers. The establishment of a special purpose vehicle or a special department to plan, manage, and monitor the operations of BRT with sufficient skilled manpower is essential. To maintain high standards of quality of service, drivers and other operations staff must be trained and skilled in their respective trades and functions.

Notes

1 E. Thomas, *Rapid Transit Bus*, presentation at the Institute of Transportation Engineers, Annual Meeting, Chicago, August 2001.
2 TCRP is a cooperative effort of three organisations: the Federal Transit Administration; the National Academies, acting through the Transportation Research Board; and the Transit Development Corporation, Inc., a nonprofit educational and research organisation established by the American Public Transportation Association. For more information, visit www.tcrponline.org (accessed on 24 February 2022).
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PART IV
Future-Proofing Cities

11

CONCLUSIONS – URBAN AND REGIONAL PLANNING FUTURES

Integrating Infrastructure, Governance, Technology, and Design

Ashok Kumar

Future is central to planning as most development plans, by whatever name they are known, imagine, predict, and prepare for the future through a set of policies, proposals, strategies, tactics, and governing institutions. The primary purpose of all planning is to control the passage to the future to the extent possible. As Simone Abram and Gisa Weszkalnys argue that 'planning is a way of managing the present, of governing and organizing the relationships between the state, citizenry and other entities, whether non-departmental public bodies, non-profit agencies or commercial organizations'.[1] They argue that all attempts to control the passage to future partly fail: 'The future promised in plans seems always slightly out of reach, the ideal outcome always slightly elusive, and the plan retrospectively always flawed'.[2] This does not mean we abandon planning. On the contrary, we continue to improve planning policies and tactics. Drawing on performativity scholarship and literature on social studies of science, Simone Abram advances her argument by viewing planning as

> a kind of compact between now and the future, a promise offered by the state that may be more or less convincing to the subjects and objects of planning, one that can be more or less actualised. It may include some element of moral obligation that ties the present to the future and to the past too.[3]

She further argues that instead of complaining about unfulfilled promises of planning, we need to comprehend how people dealt with those unfulfilled promises. According to Hillier and Gunder planning is '"intrinsically concerned" with what the future city should look like, or the impact of a development proposal on the existing built form, on neighbouring uses and people'.[4]

DOI: 10.4324/9781003296218-15

Another way to imagine the future in planning is to shift the focus from land-use planning to spatial planning, which seeks to advance the integration of various aspects of planning collaboratively and investigates the operations of power in planning institutions. Seen from integrative and collaborative perspectives, spatial planning views cities as a complex made up of multiple facets and variegated processes, necessitating their coherence and embeddedness. Viewing this way, integration becomes the crux of spatial planning. At least four components of spatial planning stand out. First, spatial planning seeks to promote the integration of various sectors, which are the substantive concern of planning as a practice, for example, housing, trade and commerce, traffic and transportation, infrastructure, tourism, and so on. These sectors are treated as an integrated system. Second, spatial planning also seeks to integrate the processes of decision-making, spatial conflicts, discourses and narratives, and others within a planning organisation and with other organisations impacting planning. The first two components of spatial planning when taken up together for understanding and analysing the city and region make the third component. The third aspect of spatial planning treats space in all its multifarious manifestations including 'perceived space', 'conceived space', and 'lived space'.[5] Spatial planning decentres 'conceived space' in which planning interventions could be made without bothering about environmental consequences for humans and the environment due to these changes. The fourth aspect worth considering is the exercise of power that is manifestly spatial.

By concentrating on infrastructure, governance, technology, and design to assess the quality and extent of urbanisation and their relationships with the environment, this book has elucidated the four aspects of spatial planning. Urban thinkers of the 21st-century emphasised provisioning, revamping, and maintenance of infrastructure. Government regulations and the market entrepreneurial efforts built and modernised infrastructure. Innovations were at the centre of technological development, which became a central feature of city building in this century, most prominently manifested through the recent smart city movement. Alongside technological developments and applications, we also saw greater innovations in design. Joining up these four aspects remains a work in progress. This book brings together these themes in one volume.

This chapter performs three specific tasks. The first part of this chapter brings together all the analytical insights emerging from various chapters. The second part of this chapter is to demonstrate why integrating the future with the present, and more specifically, integrating infrastructure, governance, technology and design is so crucial to transcending the challenges of urbanisation. However, spatial integration must be purposive for the good of society and the environment. The third task, in the form of concluding remarks, attempts to explicate the nature of planning practice if we succeed in integrating planning, infrastructure governance, technology, and design. In the last part of this chapter, we therefore argue for the ethic of human needs rather than the needs of surplus capital accumulation.

Insights From the Chapters

As urbanisation continues to deepen in India, becomes the most potent force on planet Earth, and most of us start living in urban areas, the future of humankind is decidedly going to be urban. As great opportunities are presented by cities, most serious challenges are also presented by cities, climate change being the most impactful events of the current global society. The future of the city is the future of human civilisation. Not looking into the future now would be perilously iniquitous. Humans have the capability to sustain the city and at the same time they also have the capability to comprehensively destroy it as Dipesh Chakrabarty considers 'the new geological epoch when *humans exist as a geological force*'.[6] We can expect a better future if we succeed in controlling the geological force of humans and sustaining the city. In a small way, we could do this by keeping future promises made in the development plans. Therefore, in this book, cities are taken seriously and are viewed as saviours of human civilisation.

Several roadblocks on the path to sustainability remain. It is repeatedly explained that building, delivering, and maintaining any aspect of the built environment needs an effective state. Marxian thinkers argue that the state alone cannot build great cities and generate high quality of life for its residents. Markets generate surplus value, and this accumulated wealth is relentlessly put to use to create more surplus value. Some part of this surplus value is also used for staying ahead in competitive markets, for creating new knowledges leading to innovations. Like the state, markets alone also cannot sustain on their own without usurping the state powers of regulation and legitimisation. Nothing of value can be produced without the use of human labour power.[7] As we experience, the unending accumulation of surplus value under the capitalist system, plans make promises to all but only fulfil the promises made to the elite, for others, promises become elusive. This book shares the view that we have to move away from a largely market-centric planning practice to a largely state-led planning aimed at enhancing the quality of urbanisation.

Eleven chapters make this book. Analytical insights emerging from the preceding 10 chapters are presented in this part of the volume. In the second chapter of this book, Prasanna K. Mohanty argues that the governance of India's cities and regions is impaired by fragmented organisational structures; overlapping functional domains; inadequate financial resources relative to expenditure on allocated responsibilities and tasks; limited vertical, horizontal, and diagonal communication and coordination among various organisations; a lack of accountability; and little or no public participation in decision-making processes. While rejecting cloistered decision-making processes, Mohanty recommends integrating economic and spatial planning because each reinforces the other. Based on five identified challenges facing the Indian city, he makes eight recommendations focused on restructuring the master planning system, integrating economics with planning, according a leading role to transportation, addressing land market constraints, promoting inclusionary zoning and housing, searching for effective

models of land assembly, finding innovative ways to finance development plans, and building governance capacities. Accountable and effective governance will enfold and help resolve a majority of urban challenges.

While we seek to create efficient governance systems in urban areas, equity is equally important. We believe that future scholarship on urban governance needs to provide more space and a critical gaze on the fairness of decision-making processes, equal opportunities and equitable outcomes. The efficiency of governance should be measured by equitable outcomes. Do all residents have access to safe and affordable drinking water? If such questions can be affirmatively answered, governing organisations are equitable. Deeper analyses in neoliberal critiques of current public policies are partly useful; however, new pathways must be devised to develop radical proposals for efficient and equitable governance systems. In this direction, technology has already reduced rent seeking by creating transparent governance systems as embodied in examples such as online property tax payments and building permission grants. We need to radically move forward to eliminate rent seeking by making governance accountable.

In our view, the most radical step would be to design public policies for the majority of low-income and lower middle classes and to stop making public policies in relation to basic services solely for middle and elite classes and for the benefit of the businesses. We agree with Cardoso, Sobhani, and Meijers, who argue that '[w]e ask whether cities deliver satisfiers that make them good places to cater for the full range of human needs in a similar way to how they cater for economic needs'.[8] In their view, 'subsistence, protection, affection, leisure, understanding, participation, creation, identity and freedom'[9] makes a good summary. Businesses must make money; however, they can earn profits elsewhere. The editors of this book argue that critical services such as low-income housing, school education, basic health, drinking water, sanitation, public transport, and other such services should be removed from the purview of neoliberal policy regimes. If the public sector provides critical services, such as commuting from home to office, then air travel could be readily privatised. City planning has a central role to play in identifying and developing adequate land for public services and coordinating the provisioning of services like water and sanitation, among others. For all other endeavours, no reasonable people could effectively object to neoliberal policies. A consensus appears to be emerging on the pivotal role that city planning could play even in the times of neoliberal policy dominance.[10]

In Chapter 3, Mathew Idiculla critically investigates the 74th amendment to the Constitution of India along with an analysis of the recommendations made by the Expert Committee on BBMP (the Bruhat Bengaluru Mahanagara Palike) Restructuring set by the Government of Karnataka before recommending a new multi-tier governance framework. He argues that a city-region approach to governance can only work if it is accompanied by smaller units of governments below it. Hence, it is important to consider a multi-tier institutional structure for urban and regional governance.

City planning and urban studies scholarship is full of critical analyses of urban public policies.[11] The fourth chapter contributes to this growing literature, as D. S. Meshram and Swati Meshram focus on one of the central government's most prominent urban policies – the Smart Cities Mission. In the last decade, the Government of India has preferred to prepare urban planning and development policies in mission mode. Since 2015, the Ministry of Urban Development has launched several missions, most of which emphasise infrastructure and housing. Notable among these are the Swachh Bharat Mission (Urban), Atal Mission for Rejuvenation and Urban Transformation, the Smart City Mission, and Heritage City Development and Augmentation Yojana. The Smart Cities Mission was initiated by the Government of India in 2015 with the aim of transforming selected 100 existing cities. Chapter 4 finds that the smart city idea is not easily captured and comprehended, although the emphasis on the use of information and communication technologies for economic growth and better quality of life is quite uniformly attested worldwide. The governance of smart cities is placed in the hands of civil servants through the establishment of 100 special-purpose vehicles. One of the primary weaknesses of this mission is that it does not utilise existing governing capacities in the form of town and country planning organisations in most states and union territories as well as urban local bodies. Master plans have been completely ignored, thereby replacing integrated planning practice with ad hoc project-based planning. The Smart Cities Mission also replaced spatial master development plans with project-centric smart city proposals, which has set back the profession and practice of city planning by decades. Sidelining and undermining the city planning practices that the state governments built in the last seven decades is unhelpful for making cities smart. Even if all smart city projects are implemented, integration among various elements of the city cannot be achieved without master development plans.

Integration is necessary but insufficient on its own. We do have to ask whether the central tenets of the Smart Cities Mission – replicability, high visibility, and high-end technology – are sufficient to fulfil political, economic and environmental commitments in India and worldwide. For example, to what extent can these missions help us achieve the Sustainable Development Goals (SDGs) by 2030? How far is it possible to make a city the pivot of economic growth by simply focusing on a small number of great projects? Replicate, if you will. Then we need to explore possibilities of whether innovative pathways like replacing coal-based electricity with solar energy can be rapidly used for the entire city rather than concentrated only in small areas. The eradication of poverty and the generation of large-scale employment opportunities for the working classes is a political commitment of the state as well as the central government. Can urban missions replicate the successes of the Mahatma Gandhi National Rural Employment Guarantee programme in alleviating these problems?

Here, the prime minister's latest address at the COP26 UN climate change conference at Glasgow on 2 November 2021 is relevant in which he argued that global climate change presents an eminent threat to human and non-human

civilisation. On this, the prime minister outlined India's commitment to climate change. He committed the country to achieve net-zero emissions by 2070. He also stated that the country shall reduce total projected carbon emissions by 1 billion tonnes by 2030. The prime minister also said that from sources of drinking water to affordable housing, all need to be made resilient against climate change. India shall bring its non-fossil energy capacity to 500 GW by 2030 and shall meet 50 per cent of the country's energy needs through renewable energy sources.

Water governance is the object of analysis in Chapters 5 and 6 as one of the most significant challenges to urban development which cuts across several critical areas like climate change, sustainable development, and, most important, the basic survival of humankind. Life without water is impossible to imagine, and drinking water forms its core. Both chapters concentrate on water governance, first in Delhi and then in areas transitioning from rural to urban status. In Chapter 5, Ashok Kumar investigates water governance in Delhi. Highlighting the roles played by public, private, the third sector, and communities, Kumar shows how water governance is critical to water supply and demand. From procuring fresh water from states outside of Delhi to the protection of aquifers to sustain water sources, such as rivers, lakes, and ponds, and supply sufficient quantities of high-quality water for various purposes is highly dependent on the ways that water is governed in cities and regions. He argues that water governance is both a technical and political endeavour, involving power relations among several actors, including the state, private sector, the third sector, and local communities, alongside local leadership, such as resident welfare associations and women's collectives, among others. Who gets access to water is not entirely based on the availability of a quantity of safe and affordable drinking water but rather on who governs this resource. Water governance largely works at the intersectionality of various elements – such as typology of settlements – which is generally spelled out in terms of formal and informal settlements, social and religious identities, gender and caste identities, income and class identities, and diverse histories, among other factors. In Delhi, water governance has produced inequitable geographies of water supply to variegated publics. Chapter 5 explains these inequities in the form of various kinds of exclusions and considers future possibilities for creating an equitable water supply for Delhi's residents.

In Chapter 6, James L. Wescoat, Jr. begins asserting that universal access to safe drinking water is a reachable goal for the world's population, including the broad range of rural, rurban, peri-urban, and urban settlements in India. The quantity of water required is not too large, financial costs are not excessive, and the social costs of not achieving this fundamental human need are too high to accept in future settlements. Indeed, water provides a good lens on the quality of life in future cities. The extension of safe, reliable, affordable, and equitable water services to a majority of households worldwide was a great 20th-century achievement that provides cause for optimism in all countries. Of course, there are multiple challenges to accomplishing universal access to safe drinking water. Rapid informal and peri-urban growth, massive leakages and

minimal maintenance, socio-economic conflict, and groundwater depletion and degradation constrain planning for universal sustainable water infrastructure. Past accomplishments cannot be taken for granted because urban water systems can, and have, unravelled through processes known in India as 'slipback', whereby a recently constructed physical infrastructure fails before its design life has been reached. Wescoat particularly explores emerging approaches to planning for universal access to drinking water in rurban settlements, which involve a combination of field research, survey research, quantitative database analysis, and Geographic Information System visualisation. The chapter presents case studies of district-, block-, and *gram panchayat*-level drinking water planning in Maharashtra and Gujarat that highlight different paths towards universal access.

Chapters 7, 8, and 9 focus on the production of the built environment and its relationships with planning instruments like zoning, technology-embedded high-rise urbanisms, and learnings from collaboratively produced human habitats. Density remains the central feature of Chapters 7 and 8. As Colin McFarlane argues, comprehending the relationships among densification, de-densification, and re-densification is foundational to understanding city transformations and futures. He identifies four windows to understand these three forms of density-related complex relationships:

> First, the ways in which density transforms over time is a *fundamental expression of the geographical transformation of urbanisation*. These processes are central to the history of the city and urbanisation. Second, de/re-densification are *relational processes* driven by political, economic, and social change and conditions. A whole set of drivers enter into the making of this relational process: economic cycles of (dis)investment, ideologies of planning and design, ideals of modern living, social differences of gender and race, and so on. Third, de/re-densification are both *temporal and spatial*: they are shaped by history and place, and in turn, are productive of space and time, and they bring together different temporal trajectories and places across the city, region, and world. In the case of Glasgow, this includes migrant labour as well as processes of colonial extraction that helped drive the industrial revolution in the nineteenth and early twentieth centuries. And fourth, these transformations are *ecological*, carrying significant environmental impacts that connect sites in and beyond the city. (italics in the original)[12]

For policymakers and residents, the critical question is how city planners and communities can accommodate more people in a limited space. In Chapter 7, Poonam Prakash seeks to answer this question by examining zoning. Prakash begins with the fact that land-use classification has generally been premised on the functional segregation of uses, which is particularly implemented to mitigate the adverse impacts of industrialisation. The Indian city has historically exhibited mixed-use characteristics; however, over time, segregated land-use zoning

has become one of the characteristics of modern city planning. A segregated zoning system was externally imposed most prominently during the colonial period, which is most visibly manifested in New Delhi, the capital of the British Raj. Postcolonial cities have continued to adopt this system over the last seven decades. However, there are few systematic studies on the adaptation processes of land use zoning in Indian cities. Drawing on examples of land-use zoning from large and mega Indian cities, Chapter 7 traces the evolution of land use classification systems in India with the purpose of comprehending its implications for the future of the Indian city and city planning more generally. Fast-changing technological developments in the last few decades have led to a shift in the extent, type, and nature of activities that can be accommodated alongside each other in Indian cities. We view that this change has profoundly affected the existing land-use zoning system, and the future of functional zoning is increasingly under question because cities are increasingly finding it difficult to prepare land-use plans in an era of market-led planning. Prakash provides a critical overview of these changes and underscores their implications for the future of cities and urban planning, proposing to improve city design by replacing the existing regime of zoning.

Chapter 8 by Vinayak Bharne examines skyscrapers, a common feature of large cities in developed and developing countries. Scholarship that comprehends the virtues and vices of skyscrapers has swelled over the years. Ken Yeang's bioclimatic skyscraper manifestos are among the most visible manifestations of the work concerning reforming high-rise buildings as architectural objects. However, relatively little has been said about rethinking the urbanism of skyscrapers. Bharne concentrates on the conscious assemblages of towers and slabs towards coherent urban form, their positive role in street making, intrinsic relationships with block sizes, combinations with other mid-rise and low-rise typologies to recast high density in urbane forms, and the planning tools that enable them as subjects. A central question this chapter seeks to answer is how high-rise urbanism can be empowered to foster a rich urban life without compromising the ambitions and aspirations of its builders.

Chapter 9 by Aseem Inam advocates for collaborative learning-based communicative urban practice. Inam argues that action planning sets in motion a reflective urban practice. Case studies of several initiatives discussed in this chapter demonstrate that to be impactful they have to be designed to be interdisciplinary, transdisciplinary, collaborative, communicative, and intensely engaged. Illustrations show that design strategies were not imposed but rather collaboratively evolved by all stakeholders in different contexts and situations. Even policy purposes and design objectives were collaboratively evolved rather than crafted by trained designers and city planners. To break new ground in urban practices, people were encouraged to work across traditional disciplinary boundaries and learn from other disciplines in multidisciplinary teams, thereby fuelling the production of new insights and knowledges. With a clear focus on informal urbanisms – popular urban practices across cities of developed and developing

countries – Inam refuses to lump together all informal urban practices under the umbrella term *informal urbanism* and rather illuminates the diverse nature of informal urbanisms in varying environments. Thus, informal urbanism is not merely valorised but also analytically comprehended. We can advance this argument further by agreeing to the suggestion made by Paulo Guerreiro who views informal urbanism as 'programmed spontaneity': 'The variability of volume, typological differentiation and the proposal of diverse relationships with the landscape attempt to integrate different types of people and to reject monothematic, monocultural, and monoformal spaces. The suggestion of informality soothes the fear of uniformity'.[13]

It goes without saying that Indian cities are being radically transformed in multiple ways. However, the transport sector has played a critical role in this process. Regional and national road networks are being constructed to connect the entire country. According to the National Portal of India, the *Bharat Pariyojana* programme was launched

> for the highways sector that focuses on optimising efficiency of freight and passenger movement across the country by bridging critical infrastructure gaps through effective interventions like development of economic corridors, inter corridors and feeder routes, national corridor efficiency improvement, border and international connectivity roads, coastal and port connectivity roads and green-field expressways.

Work on the development of wet and dry ports is being undertaken on a war footing. Under the special economic zone programme, one of the largest ports, Mundra Port, has been built by the Adani Group, a private industrial house, and major airports in mega-cities have been modernised with private-sector participation. Metro rail networks are being built with and without public-sector participation. Whereas Kolkata and Delhi Metro are under the control of the public sector, Mumbai is being built by one of the country's largest industrial conglomerates, Reliance Industries. Bengaluru, Hyderabad, Chennai, Ahmedabad, Kochi, and others all have partly operational metro rail systems that are at various stages of development. However, public transport systems in Indian cities are far from being fully developed. Most important, bus transit systems are inefficient or nonexistent, particularly in smaller towns and cities. Mission programmes such as the Jawaharlal Nehru National Urban Renewal Mission have tried to improve bus transit systems with only partial success. Thus, mobility forms the core of the 10th chapter of this volume, in which Shreya Gadepalli, Christopher Kost and Pranjali Deshpande-Agashe focus their gaze on bus rapid transit (BRT) systems in Indian cities. BRT systems have been built in several Indian cities, among which Ahmedabad is the most successful illustration and Delhi, where the system was eventually abandoned, represents the most glaring failure. Chapter 10 provides a comprehensive analysis of the BRT system, including a discussion of its structure and its role in Indian cities. The authors present a useful analysis of planning and designing

of the BRT that can pave the way for policymakers if they choose to adopt the system. They highlight several potential benefits of a successful BRT, such as saving parking spaces and improving the physical environment by reducing the use of pollution-causing private transportation modes. In this chapter, the BRT is presented as an option rather than a solution for rapid, safe, and comfortable travel.

Integration and Collaboration in Spatial Planning

Urban and regional planning attempts to comprehend several substantive and processes orientated aspects simultaneously, crucially, requiring analysis and comprehension of multiple relationships among these aspects. Spatial integration acts like the glue aimed at piercing and opening up these connections and establishing new links in order to make sense of planning challenges before proposing planning policies and tactics. All well-prepared development plans manifest connections and interconnections between substantive and processes orientated aspects of planning, be they regional plans, sub-regional plans, master plans, or layout plans, among others.

Linking infrastructure and spatial planning is not new to planning. Neuman and Smith[14] explained that infrastructure was used as vehicle to shape urban form in earlier attempts to plan cities. For example, the City Beautiful movement used roads, parkways and open space to shape urban form. The Plan of Chicago or the Burnham Plan is a classic illustration. The plan provided an extensive rail system, a bi-level boulevard for commercial and regular traffic, and a sprawling network of parks. Transit-oriented development and smart cities present the most dominant current approaches to linking infrastructure with spatial planning. Alison Todes argues that 'linking strategic spatial planning and infrastructure development rest on the premise that infrastructure plays important roles in shaping the spatial organization of cities, their sustainability and inclusiveness'.[15] According to Colin McFarlane and Jonathan Rutherford talk about the pivotal significance of infrastructure in constructing the modern city and 'a site of capitalist production and exchange, as constitutive of social relations of inequality, and as a space of environmental transformation'.[16] As Johan Woltjer and Niels Al show,

> [l]inkages between water management and spatial planning occur in different ways. Water pollution is often created on land. Urban development is often restricted, or motivated, by the presence or lack of water. Some kinds of land uses, such as dense urban development, can actually cause flooding. Agricultural or industrial land uses may deplete ground water, degrade water quality, or drain naturally wet areas. Clearly, water management and spatial planning are inherently connected. Yet they are traditionally separated for policymaking.[17]

Therefore, spatial integration is paramount to planning because the proposed development plan is nothing but one among many mechanisms of displaying

integration of land uses at a regional or urban scale with various infrastructure sectors. Other mechanisms could include inter-sectoral integration and policy integration or organisational integration. Before very briefly illuminating spatial integration with a specific focus on book chapters, it is important to analyse various dimensions of spatial integration.

Dimensions of Spatial Integration

Recent planning scholarship has critically focussed on spatial integration. Scholars like de Boe *et al.*[18] and Sue Kidd[19] provide a theoretical grounding for comprehending spatial integration in planning. Prior to this, a number of other scholars have worked on spatial integration, prominent among them being Nunn and Rosentraub, Cowell and Martin, Knox, Kidd and Fischer, Kidd and Shaw, Crozier, and Hull.[20] We summarise these works to arrive at the dimensions of spatial integration.

Sectoral Integration: This form of integration means integration among different public policy domains and their associated actors within a given territorial area. This can be further subdivided into two categories, 'cross-sectoral integration' and 'inter-agency integration'. Cross-sectoral integration implies integration of different public policy domains within a territory, and inter-agency integration implies integration among public-, private-, and voluntary-sector agencies within a territory.

Territorial Integration: Territorial integration occurs when integration takes place between public policy domains of different territories. Cross-boundary issues get resolved through this kind of integration. While *vertical integration* is defined as the integration between different spatial scales of spatial planning activity, *horizontal integration* means the integration of spatial planning activity between adjoining areas or areas with some shared interest. The objective is to encourage interactions and complementarities across territories with a view to minimising the negative impacts of development. For example, when the Government of the National Capital Territory of Delhi, along with other agencies, is looking for appropriate land for relocation of polluting industries or solid waste management sites outside of Delhi but within the National Capital Region (NCR), in such situations, the first conflict occurs when the Delhi government finds that the NCR or concerned state and local governments do not have such policies to receive polluting industries or solid waste management sites. To resolve these planning conflicts, interactions and discussions among various local bodies and state governments take place in order to find out suitable land for locating polluting industries or landfill sites. It is through territorial integration, which encompasses vertical, as well as horizontal, integration, that planning authorities could resolve cross-boundary spatial conflicts.

Organisational Integration: Organisational integration involves cooperation between concerned 'parties' and their willingness to cooperate among themselves. Organisational integration has three dimensions: first is strategic integration,

TABLE 11.1 A Framework for Comprehending Spatial Integration

Types of Integration	*Subtypes of Integration*	*Explicating Subtypes of Integration*
Sectoral Integration	Cross-sectoral Integration	Integration of different public policy domains within a territory
	Inter-agency Integration	Integration of public-, private-, and voluntary-sector activity within a territory
Territorial Integration	Vertical Integration	Integration between different spatial scales of spatial planning activity
	Horizontal Integration	Integration of spatial planning activity between adjoining areas or areas with some shared interests
Organisational Integration	Strategic Integration	Integration of spatial planning with other strategies, programmes, and initiatives within a territory
	Operational Integration	Integration of spatial planning with the delivery mechanisms in all relevant agencies within a territory
Societal Integration	Regional Integration	Integration of growing and declining regions or areas for balanced development and redevelopment
	Social Integration	Integration of diverse religions, ethnicities, and castes through spatial planning initiatives

Source: Adapted from Kidd and Shaw (2007: 318); Kumar (2009: 32).

that is the integration of spatial planning with other strategies, programmes, and initiatives within a territory; second, operational integration, that is the integration of spatial planning with the delivery mechanisms in all relevant agencies within a territory; and third, disciplinary or stakeholder integration, that is the integration of different disciplines and stakeholders within a territory.

The five chapters on governance and introductory chapter explicitly seek spatial integration across three dimensions discussed earlier (see Table 11.1).[21] Governance is viewed as a system of interrelated processes and policy domains to effectively deliver planning or infrastructure or transport. Chapter 4 on the Smart Cities Mission heavily relies on the idea of convergence, which is nothing but spatial integration. Substantive areas like water, covered in Chapters 5 and 6, also explicate governance as a vehicle for delivering equitable water to all citizens. Chapters 7, 8, and 9 focus on planning techniques for effective space management and inclusivity, which cannot be integrated into built human habitats without an integration of techniques, technologies, and designs in urbanisms. A focus on the BRT system shows the improbability of its effective implementation without appropriate design as well as integration with other modes of transportation.

Conclusion

Spatial integration is a methodology and a process to achieve certain societal goals. These goals are represented by great challenges, which could be surmounted

with appropriate policies and programmes. For nearly three decades, planning theory has been engaged with spatial justice.[22] However, planning practice has been slow in adopting the progressive agenda of needs fulfilment for political and economic practicalities hinged on the capitalist system of production and exchange. For too long, neoliberal hegemony has triumphed, side-tracking real human concerns.

In a recent paper, Cardoso, Sobhani and Meijers attempt to resuscitate the progressive agenda to build a just city by seeking to promote urbanism that is spearheaded by human needs. Instead of asking whether cities make good places for investment and relentless accumulation of capital, they prefer to ask whether cities deliver those material goods and immaterial conditions that serve 'the full range of human needs'.[23] These authors argue that the Human Scale Development as a human-needs framework offers five advantages. First, human needs are presented as a spectrum of needs satisfiers starting from 'individual attributes' to 'available economic goods, personal or collective agency and societal interactions, which come together and interact, more strongly and more problematically, in cities'.[24] Second, human needs are presented as parts of an interlinked system, which should be evaluated as interconnected bundles of satisfiers and dissatisfiers. In such an interlinked system, human needs are satisfied by concentrating on simultaneities, complementarities, and trade-offs. At the heart of the non-hierarchical view of human needs is the fact that individuals satisfy their needs and aspirations within a complex and dynamic ecosystem of interactions within asymmetrical power relations among groups. Third, satisfiers or dissatisfiers are rarely singular, satisfying one human need at a time. Satisfiers or dissatisfiers are largely synergetic, satisfying a number of human needs at a time. They could be inhibiting, that is fulfilling some needs and restricting others. They explain that

> neighbourhood associations satisfy the need for participation, and may synergistically stimulate affection, leisure, creation and identity needs satisfaction; intrusive urban policing satisfies the need for protection but can reduce opportunities for freedom and participation; and typically urban fashions and fads pseudo-satisfy a perceived need for identity but may, in the end, harm the very need they were aimed at.[25]

Fourth, previous attempts to build the just city were overly theoretical and non-pragmatic. The human needs perspective is aimed at concentrating on planning practices that promote empowerment of civil society through participation and nurturing of social actors. Community organisations could assess their human needs according to their priorities and not according to a broad-brush top-down framework. Fifth, this framework regards 'human needs are constant and universal, while satisfiers vary according to time, place and context'.[26] Universal needs could be used as parameters for comparative assessment among cities while contextual satisfiers render human needs fulfilment on the basis of economy, history, polity, and culture.

Dealing with surmountable challenges of inequities and inequalities among residents, permanently reducing violence towards nature, including all residents in framing planning policies, enhancing capacities of planning organisations to coordinate and communicate within regions, and valorising social and religious identities for seeking peaceful coexistence of humanity underpins the bright future of urban and regional planning practice and likewise the future of cities and regions in India. Following the Human Scale Development as a human-needs framework, we argue that competition among wealth creators is the best for the country when everyone could enjoy available wealth to fulfil their needs. In our view, the central theme of planning practice in India should be to develop a city of contentment and needs fulfilment where its people are at peace with each other and most significantly with nature. The peaceful coexistence of humans with the environment takes us back to our traditional way of life in the midst of modernity, a preferred style of living. In this vein, Ash Amin views the good city as place cultivating 'an urban ethic imagined as an ever-widening habit of solidarity built around different dimensions of the urban common weal'. This is the city 'based around four registers of "repair", "relatedness", "rights" and "re-enchantment"'.[27]

Notes

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