

Advances in 21st Century Human Settlements

Amit Chatterjee
R. N. Chattopadhyay

Satellite Towns in Neo-metropolitan Development in India

Lessons from Selected Cities

 Springer

Advances in 21st Century Human Settlements

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Foreword

Satellite Towns in Neo-metropolitan Development in India: Lessons from Selected Cities, co-authored by Amit Chatterjee and R. N. Chattopadhyay, is a welcome addition to the international literature on sustainable urbanization. The study focuses on the contemporary dynamics of metropolitan development in India and traces the spatio-economic restructuring of peripheral areas of metropolitan cities within the larger and continuing process of economic liberalization that was initiated in early 1990s. In doing so, the authors link the contemporary metropolitan development in India with global development agendas, such as the 2030 Agenda for Sustainable Development and the New Urban Agenda, as well as the Government of India's latest set of national urban missions towards achieving sustainable urbanization, including Atal Mission for Rejuvenation and Urban Transformation, Smart Cities Mission, Heritage City Development and Augmentation Yojana, Pradhan Mantri Awas Yojana—Housing for All (Urban), Swachh Bharat Mission—Clean India Mission (Urban) and National Urban Livelihood Mission.

This book attempts to break new ground with regard to sustainable urbanization by putting forward the idea of 'Neo-metropolitan Development', which the authors define as '... the process of transformation from the traditional model of metro-satellite development (mother city with few traditional residential satellite towns) to a new form of multifunctional satellite development where, in association with the existing mother metropolis, several satellite towns with more than one million population each, attain metropolitan status. They are expected to grow in complementarity to each other functionally though in the cluster, some towns may not attain the million-city status' (see Chapter 1 in Chatterjee and Chattopadhyay, 2020). Such an attempt gains significance because the ongoing process of rapid urbanization in India and beyond has now brought forth a plethora of challenges that require policy-makers, planners, scientists, researchers and practitioners to find answers to one fundamental question: How metropolitan cities could be a solution to the challenge of sustainable urbanization?

Modern metropolises are the multifaceted arenas that not only pose complex urban problems but also act as urban laboratories that spur us to co-create innovative solutions along the science–policy–practice continuum. In the twenty-first century, such co-creation process, among others, requires: (i) addressing the priorities of global,

regional, national, subnational and local agendas, (ii) building and strengthening the financial-, technical- and governance-related capacity of local governments, (iii) navigating the institutional rungs of multilevel governance and (iv) building new and strengthening existing successful multistakeholder partnerships. All of this is needed since metropolises are seen as: (i) centres of creativity, innovation and employment opportunities that promise higher incomes, (ii) places with better infrastructure, services and amenities featuring higher levels of urban liveability and (iii) dynamic arenas of investment that attract entrepreneurs and investors. Cities, including metropolises, act as ‘magnets of hope’ (see Singh and Gandhiok, 2019; Tibaijuka, 2006) for millions of people who migrate from rural areas and smaller towns.

In India, the number of urban agglomerations¹ centred around metropolitan cities has increased from one in 1901 to nine in 1971, 35 in 2001 and 53 in 2011. Eighteen new metropolitan cities emerged during the first decade of twenty-first century, the largest number in any decade since 1901. According to the Census of India 2011, there were eight urban agglomerations that had a population of over five million that included Greater Mumbai, Delhi, Kolkata, Chennai, Bengaluru, Hyderabad, Ahmadabad and Pune (Census of India, 2011b).

Like in many other countries, metropolitan cities in India feature a variety of problems related to sustainable urban development. Some of the key features of Indian metropolises include: (i) rapid population growth and unplanned and often haphazard spatial expansion in their peri-urban and surrounding areas as well as satellite towns often involving residential and industrial areas, (ii) land subdivision by agricultural and other landowners—especially in peri-urban areas, (iii) lack of reservation of land for institutional uses (e.g. for health, education and open spaces) and transport-related uses—causing traffic congestion and bottlenecks and (iv) the resulting, almost irreversible, urban morphology with inefficient land uses that make the provision of urban infrastructure, services and amenities a difficult and often (overly) capital intensive task. These urban features add avoidable complexities to the process of urban governance and the quotidian task of delivering urban services. This continuously unfolding process complicates further the intricacies related to inter-jurisdictional coordination.

In this volume, an attempt has been made by Chatterjee and Chattopadhyay to review the planning and development efforts made to create and develop satellite towns around metropolitan cities, including Delhi, Mumbai, Hyderabad, Kolkata and Bengaluru and to assess their role in sharing the concentrated urban activity load of their metropolitan ‘mother’ cities. The spatio-economic links between a metropolitan city and its satellite towns have become so close that one cannot succeed without the other and both function as a single integrated entity. The study also focuses on the process through which relationships among megacity–satellite–fringe villages have developed in the context of the two Indian megacities and their

¹“An urban agglomeration is a continuous urban spread constituting a town and its adjoining outgrowths, or two or more physically contiguous towns together with or without outgrowths of such towns. An Urban Agglomeration must consist of at least a statutory town and its total population (i.e. all the constituents put together) should not be less than 20,000 as per the 2001 Census” (Census of India, 2011a).

regions. The authors argue that Indian metropolitan cities and their environs need meticulous planning with regard to the management of their demographic and related spatial growth as well as rational integration of urban space and economy in the coming decades. Thus, the book highlights the importance of planned development of satellite towns around metropolitan cities for sustainable urban development. The authors also make suggestions for policy-based solutions for the development of selected metropolitan regions along with their satellite towns and newly expanded fringe areas.

In the post-World War II period, many developing countries experienced rapid urbanization and unplanned growth in their metropolitan peripheral areas. In line with the urban planning and policy-making thought of the times, metropolitan planning and policies intended to limit the growth of metropolitan cities and formulate new town or satellite town policies to disperse the metropolitan growth. In this regard, this review of metropolitan planning and development strategies and the related lessons learnt in India could contribute to developing solutions to the common challenges facing similar major cities and metropolitan areas (see Metropolis, 2019). Therefore, the research, analysis and findings contained in this volume are of immense interest to scientists (academics and researchers), policy-makers, planners and practitioners of sustainable urbanization from around the world.

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Bharat Dahiya is Director of Research Center for Integrated Sustainable Development at the College of Interdisciplinary Studies, Thammasat University, Bangkok, and Distinguished Professor at Urban Youth Academy, Seoul, Republic of Korea. He is Series Editor for the SCOPUS-indexed Springer book series, *Advances in 21st Century Human Settlements*.

As an award-winning urbanist, he combines research, policy analysis and development practice aimed at examining and tackling socio-economic, environmental and governance issues in the global urban context. Since early 1990s, Bharat's research and professional work has focused on sustainable cities and urbanization, strategic urban planning and development, urban environment and infrastructure, and urban resilience. Working with the World Bank, United Nations Human Settlements Programme (UN-HABITAT), the Asian Development Bank, United Nations Development Programme (UNDP) and United Nations University Institute for the Advanced Study of Sustainability (UNU-IAS), he initiated, led, managed and contributed to international projects on sustainable urban development in a number of countries.

Bharat conceptualized and coordinated the preparation of United Nations' first-ever report on *The State of Asian Cities 2010/11* (UN-HABITAT and ESCAP, 2010). At the World Bank headquarters, he conducted the first-ever systematic review of the Bank's investments for improving urban liveability, published as a co-authored book, *Urban Environment and Infrastructure: Toward Livable Cities* (2004). For UNU-IAS and the Economic and Social Commission for Asia and the Pacific (ESCAP), he co-authored *Partnering for Sustainable Development: Guidelines for Multi-stakeholder Partnerships to Implement the 2030 Agenda in Asia and the Pacific* (UNU-IAS and ESCAP, 2018). More recently, he co-edited *New Urban Agenda for Asia-Pacific: Governance for Sustainable and Inclusive Cities* (Springer, 2020).

He is a member of the International Advisory Board of the UN-HABITAT's *World Cities Report*. He serves on the editorial boards of *Cities: The International Journal of Urban Policy and Planning*, *Environment and Urbanization ASIA*, *Journal of Urban Culture Research*, *Jindal Journal of Public Policy* and *National Geographical Journal of India*. Reuters, Inter Press Service, SciDev.Net, Nishi-Nippon, The Korean Economic Daily, China Daily, The Hindu, Deccan Herald, Bangkok Post, The Nation, UB Post, The Sunday Times and Urban Gateway have quoted Bharat's work. He has held academic positions in Australia, Indonesia and Thailand.

Bharat completed his M.A. in geography from Jawaharlal Nehru University, and Master of Planning from School of Planning and Architecture, both based in New Delhi. He holds a Ph.D. in urban governance, planning and environment from the University of Cambridge, UK.

Preface

In the first quarter of this Century and the latter half of the previous Century, the metropolises around the world are growing at a very faster rate. Metropolises, particularly in developing countries, are facing several challenges to achieve sustainability. These challenges include unplanned growth, unemployment, poverty, and food crisis, housing shortage, poor traffic management, scarcity of resources, environmental degradation, etc. Nevertheless, metropolises have traditionally been and will continue to be the centres of hopes and dreams for investors, job-seekers, and migrants. Contemporary metropolitan planning had focused on the understanding of region-specific problems and localized solutions. The earlier rate and pattern of growth of population in Indian metropolises indicated that unplanned spatial expansion covering fringe areas and satellite towns around these cities are inevitable. The majority of the Indian metropolises are in economic, spatial, and environmental crises, and rejuvenating them will be the country's biggest challenge in the years to come. These experiences call for immediate attention to either develop a set of planned satellite towns around these megacities and/or promote the extension of the existing metropolitan jurisdiction over the available fringe areas to share their loads of population and activity concentrations. Only the megacity and its satellites, when appropriately planned for extension and densification, can together mitigate this alarming problem of urban concentration in and around the existing megacities.

For comprehension, the book is presented in ten chapters highlighting the metropolitan problems in general and attempting planned development of the existing and extended metropolitan areas through the use of quantitatively and spatially befitting regional allocation models of population and economic activities. Finally, it attempts to offer a policy-based set of solutions for the development of the selected megacities of India along with their satellites, and newly annexed fringe areas. It is expected that these policies and programmes when implemented, will ensure a healthy, equitable, and prospective urban–metropolitan scenario for India in the coming decades. Findings suggest that these new methods

of developing a systematic model encompassing economic growth and spatial sustainability are obviously applicable for Neo-metropolitan Development in the developing world. The study has indicated many clues for further development approaches vis-à-vis the model of metropolitan development through its application in other metropolises in the developing world.

The book is perhaps one of the unique documents of this kind, providing comprehensive research on megacity regions of India focusing on models and policies of development. Further, an attempt has been made to link contemporary metropolitan development issues in India with new international commitments like Sustainable Development Goals, New Urban Agenda and recently launched national missions for sustainable urbanization under the Smart Cities Mission, National Rurban Mission, Atal Mission for Rejuvenation and Urban Transformation (AMRUT), Heritage City Development and Augmentation Yojana (HRIDAY), Housing for All (Urban), Swachh Bharat Mission (Urban), National Urban Livelihood Mission, etc. We are hopeful that the reader would certainly appreciate the metropolitan problems depicted here with the theory and analytical techniques along with their applications in two megacity regions (Mumbai Metropolitan Region and Bangalore Metropolitan Region) for their healthy growth and policy planning. They are also expected to admit the appropriateness of the methods, tools, and policy sets used as a generalised approach for resolving similar metropolitan problems of the developing countries. We are confident that this book would generate interest among the city managers, policymakers, academicians, researchers and students of City and Regional Planning, Urban and Regional Geography and Economics, Urban Studies and Management, etc.

Bhopal, India
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This book entitled *Satellite Towns in Neo-metropolitan Development in India—Lessons from Selected Cities* is purely based on our research work in the last couple of years. There are numerous organizations and individuals to be appreciated and thanked for the publication of the book. We acknowledge the support received from Mumbai Metropolitan Regional Development Authority (MMRDA), Bruhat Bengaluru Mahanagara Palika (BBMP), City and Industrial Development Corporation (CIDCO), Maharashtra Industrial Development Corporation (MIDC), Bangalore Development Authority (BDA) and Bangalore Metropolitan Region Development Authority (BMRDA) officials regarding sharing of data, information and documents. We extend our sincere gratitude to Professor Binayak Choudhury, School of Planning and Architecture, Bhopal, and Professor Soumendu Chatterjee, Presidency University, Kolkata, for their valuable inputs and suggestions from time to time. We record our thanks to the libraries of the following institutions: School of Planning and Architecture (SPA), Bhopal, Indian Institute of Technology (IIT), Kharagpur, Jawaharlal Nehru University (JNU), Delhi and The City and Industrial Development Corporation (CIDCO), Navi Mumbai. We are also thankful to Mr. Bibek, Mr. Sarthak, Ms. Zinnia, Mr. Prakash, Mr. Sumit, Mr. Adwait, Ms. Vallary, and other alumni students of SPA Bhopal, for helping in information collection and cartographic work. The Springer Nature editors and staff, particularly Professor Bharat Dahiya, Dr. Loyla D'Silva, Mr. Sanjeev Kumar Mathiyazhagan, and Ms. Manopriya Saravanan for encouragement, and providing essential support services. We also thank the anonymous reviewers for their thoughtful comments. Our special thanks and appreciation are for Mr. A. R. Patharkar, Former Director of Town Planning, Government of Maharashtra, and Former President of Institute of Town Planners, India (ITPI), Professor V. Devadas, Department of Architecture and Planning, Indian Institute of Technology, Roorkee, Dr. Malgorzata Hanzl, Associate Professor, Institute of Architecture and Town Planning, Lodz University

of Technology, Poland, Ms. Mukta Naik, Fellow, Centre for Policy Research, New Delhi and Professor Bharat Dahiya, Director, Research Center for Integrated Sustainable Development, College of Interdisciplinary Studies, Thammasat University, Bangkok and Distinguished Professor, Urban Youth Academy, Seoul, Republic of Korea for their thoughtful comments and endorsements on this book. The readers must forgive us for any errors of omissions and commissions in this manuscript, which are not intentional but solely ours.

Advance praise for *Satellite Towns in Neo-metropolitan Development in India: Lessons from Selected Cities*

“City planners have always thought that satellite towns, ring towns or counter-magnets are solutions to most problems of metropolitan cities, which constitute a standard planning practice all over the world. Seldom the effects of these policies have been evaluated as comprehensively as has been done in this book.

This book has selected Mumbai–Pune and Bangalore–Mysore regions of India, which are India’s new epitome of development and prosperity. Based on the analysis of exhaustive empirical data and observed ground realities, the authors have concluded that the functions of government are metrocentric rather than city satellite towns and dependence on core metropolitan city has created a multitude of associated problems.

In order to reduce this dependence on core metro city, the authors try to offer policy-based solutions for the development of selected megacities of India along with their satellites, and this book will generate interest amongst planners and policy makers.”

—A. R. Patharkar, *Former Director of Town Planning, Government of Maharashtra, Former President of Institute of Town Planners, India (ITPI)*

“It was my pleasure to review this book that is majorly focused on Metropolises, particularly in developing countries, like India, which are growing at a faster rate giving rise to numerous challenges, including haphazard growth and development, scarcity of resources, environmental degradation, etc. In this book, the authors have clearly established the need for addressing the aforesaid challenges and stated the importance of planned development of satellite towns around megacities by considering both, economic growth and spatial sustainability. Authors have successfully presented the complete picture right from the literature on the growth of Metropolises to policy implications for balanced development. The study has been sequenced coherently. The presentation of the study is perspicuous. Especially this book would bring much knowledge to multi-disciplinary professionals like city planners, policymakers, administrators and researchers. It would be very helpful for academicians of various disciplines like urban planning, regional planning, environmental planning, transportation planning, policy planning, and so on.”

—Prof. Dr. V. Devadas, *Department of Architecture and Planning, Indian Institute of Technology Roorkee, Roorkee, India*

“Chatterjee and Chattopadhyay’s latest work adds its weight to a growing number of recent publications on regional concerns around urbanisation, presenting rich empirical insights from Mumbai and Bangalore that will help scholars rethink development strategies of metropolitan areas in India today. Using the notion of urban carrying capacity as the primary conceptual framework, their robust quantitative models explain connections between spatial and economic patterns in a regional context. The book also sheds lights on how smaller and larger cities relate with each other within a region, and of how balanced development in metropolitan regions can improve outcomes from urbanisation for India. As such, it is will certainly enrich the understanding of students and researchers with an interest in urban processes and outcomes in India, and more generally in the Global South.”

—Mukta Naik, *Fellow, Centre for Policy Research, New Delhi, India*

“The current book addresses an essential and challenging topic of the urbanisation in India and, more generally, in the countries of the Global South. In the Global North, related issues have received lots of attention since the studies of Patrick Geddes, the Regional Planning Association of America, Patrick Abercrombie, Bolesław Malisz, to name just a few, including the most recent studies and practice by Peter Cathrophe.

In addition to this comprehensive theory and practical know-how, the scale and complexity of contemporary migrations and development make them unique and require extensive research. Further problems raise due to the environmental challenges which overlap with climate change risks and as an outcome of informal urbanisation. The study tackles the physical development and strategies for Indian metropolises and does so in a thorough and thoughtful way. It is compulsory reading for all who intend to explore these topics.”

—Dr. Malgorzata Hanzl, *Associate Professor, Institute of Architecture and Town Planning, Lodz University of Technology, Poland; International Society of City and Regional Planners (ISOCARP): Vice-President Publications*

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About the Authors

Dr. Amit Chatterjee has a combined experience of over thirteen years in teaching, research and industry and presently on the faculty of Urban and Regional Planning, School of Planning and Architecture (SPA), Bhopal, India as Asst. Prof. Dr. Chatterjee obtained his masters in Geography from Visva-Bharati University, Santiniketan and further masters in Planning from School of Planning and Architecture (SPA), New Delhi. Dr. Chatterjee wrote his doctoral dissertation on future cities and urban sustainability models from Vidyasagar University, West Bengal. Before joining academics, Dr. Chatterjee served the industry in various capacities and has had the experience for working for mega planning projects in Navi Mumbai SEZ, Maha Mumbai SEZ, Dholera town planning scheme, besides formulating the twin city development plan, city development plan, highway projects in PPP mode slum-free city planning under RAY across various cities in India. Dr. Amit had completed number of international collaborative projects with funding/collaborative agencies like United Nations University-Institute of Advance Studies (UNU-IAS), British Council etc. Dr. Chatterjee is currently engaged in the three research and consultancy projects of SPA: Shelter for All (Ministry of HRD, Govt. of India), National Rurban Mission (Ministry of Rural Development, Govt. of Madhya Pradesh), and Development Plan of Saugor Cantonment Area (Saugor Cantonment Board, Ministry of Defence, Govt. of India). In academics, his research interest is primarily focused on future cities and urban sustainability models. Besides attending seminars at the national and international level, Dr. Chatterjee reviewed papers to reputed journals in planning. Dr. Chatterjee had edited the peer-reviewed journal 'SPANDREL' dedicated to the theme 'Making Cities Smart and Competitive'. His research articles appeared in publications like Routledge, Springer, ISOCARP, etc.

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Abbreviations

AAGR	Average Annual Growth Rate
AMRUT	Atal Mission for Rejuvenation and Urban Transformation
APZs	Area Planning Zones
BDA	Bengaluru Development Authority
BMA	Bangalore Metropolitan Area
BMR	Bangalore Metropolitan Region
BMRDA	Bengaluru Metropolitan Region Development Authority
BMRPB	Bombay Metropolitan Regional Planning Board
BPO	Business Process Outsourcing
CBD	Central Business District
CDP	City Development Plan
CIDCO	City and Industrial Development Corporation
CMA	Chennai Metropolitan Area
CPCB	Central Pollution Control Board
DCR	Development Control Regulation
DP	Development Plan
DRDO	Defence Research and Development Organization
EKW	East Kolkata Wetland
FAR	Floor Area Ratio
FDI	Foreign Direct Investment
FSI	Floor Space Index
GDP	Gross Domestic Product
Ha	Hectare
HIG	High-Income Group
HRIDAY	Heritage City Development and Augmentation Yojana
HUA	Hyderabad Urban Agglomeration
IBM	International Business Machines Corporation
ICT	Information and Communication Technology
IDSMT	Integrated Development of Small and Medium Towns
ISRO	Indian Space Research Organization

IT	Information Technology
ITES	Information Technology Enabled Services
IZs	Interstitial Zones
JNNURM	Jawaharlal Nehru National Urban Renewal Mission
Km ²	Square Kilometre
KMR	Kolkata Metropolitan Region
KSDB	Karnataka Slum Development Board
LPA	Local Planning Authority
LPCD	Litre per Capita per Day
MIG	Middle-Income Group
MLD	Million Litres per Day
MMR	Mumbai Metropolitan Region
MoHUPA	Ministry of Housing and Urban Poverty Alleviation
MoUD	Ministry of Urban Development
MPC	Metropolitan Planning Committee
NCR	National Capital Region
NCU	National Commission on Urbanization
NLUM	National Urban Livelihood Missions
NMSEZ	Navi Mumbai Special Economic Zone
PPP	Public-Private Partnership
REP	Relative Employment Potential
SAFE	Sustainable Accommodation through Feedback Evaluation
SDG	Sustainable Development Goals
SEZ	Special Economic Zone
SPA	Special Planning Authority
TPS	Town Planning Scheme
UAs	Urban Agglomerations
ULBs	Urban Local Bodies
UN	United Nations
UN-Habitat	United Nations Human Settlements Programme
WPR	Workforce Participation Rate

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