

Exploring Urban Change in South Asia

Jenia Mukherjee *Editor*

Sustainable Urbanization in India

Challenges and Opportunities



 Springer

Exploring Urban Change in South Asia

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Jenia Mukherjee
Editor

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Foreword

Urbanization is a global reality. Its benefits are no longer questioned nor are in any doubt. The erstwhile debate on the pace of urbanization, often perceived to be high, or the size-class distribution of urban population where concentration of population in larger cities was seen as inimical to growth and development or a search for a city of an “optimal size” which was a serious academic activity in the 1970s appears to have settled down, or even if one takes into account an occasional paper or two on any of these themes the debate is not on the front burner. Indeed, a large number of emerging and developing countries are working towards making cities “productive”, “competitive”, “efficient”, “vibrant”, “bankable,” and “smart”, in part under the impact of globalization where cities are competing to gain an entry into the international market place, and in part, on account of the normal urge to make better use of the opportunities cities offer.

What is, however, interesting is the replacement of the erstwhile debate with newer concerns requiring countries to make the process of urbanization “sustainable”, “inclusive”, “environmentally-sensitive”, “equitable,” and “just”. Some see it as a reaction to globalization-led urbanization; Susan Fainstein, for instance, puts it bluntly—“efficiency or effectiveness to what end?” (Fainstein, 2010). David Harvey takes it further and writes: “The fundamental mission of the neo-liberal state is to create a good business climate, and therefore to optimize conditions for capital accumulation no matter what the consequences for employment as social wellbeing” (Harvey, 2005: 19). Others link it to the worldwide thrust to sustainable development beginning with the 1987 Report of the World Commission on Environment and Development and continuing, the most recent articulation being the UN Sustainable Cities Programme.

This book titled as Sustainable Urbanization in India: Challenges and Opportunities is set in the above context, capturing what Dr. Jenia Mukherjee, the editor of this book, calls the dialectical tensions between the Indian cities’ insane rush to become world class cities and the numerous local processes and ground-level realities. The book stems out of the contradictions that the editor and other contributors see between compact and energy-efficient and self-reliant cities

and the critical issues arising out of a total absence of and access to even the most basic infrastructure and services.

The book is a collection of case studies of cities which shows that each city has its own trajectory of growth and development, vulnerability, and resilience. The case studies are an exploration into the local politico-economic-ecological contexts and realities, providing a narrative of urbanization and urban processes which is vastly different from what one is familiar with.

The 15 case studies that constitute the book is a seminal contribution to an understanding of the urban phenomena, as seen from the lens of cities. I commend the efforts of Dr. Jenia Mukherjee for compiling the case studies and distilling out of them a set of critical perspectives on India's urbanization processes.

Om Prakash Mathur
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Preface and Acknowledgements

The book is an outcome of the conference *Sustainable Urbanization in India: Challenges and Opportunities* that was held between January 15 and 16, 2015 at the Institute of Development Studies Kolkata (IDSK), jointly in association with the Indian Institute of Technology Bombay. The conference plan evolved as a part of a larger program organized by the International Social Science Council (ISSC) in 2013. I was selected as one of the 20 World Social Science Fellows by ISSC and was offered the opportunity to participate in the World Social Science Seminar on *Sustainable Urbanization: Innovative Approaches to Understanding Urbanization in the twenty-first Century*, held between March 25 and 30 at the Universidad Andina Simon Bolivar at Quito, Ecuador. It was recognized that the multidimensional perspectives capable of addressing the complex interactions in space and time among the social, economic, political, cultural, physical, and environmental dimensions of urbanization was the need of the hour; these interactions constitute the driving forces behind the type, extent, and intensity of urban growth and conditions for the transition to a more sustainable future. The Fellows were assigned the task of developing these interdisciplinary perspectives and to take these forward in their upcoming research works. Five days of discussion followed on sustainable urbanization, some of it in a traditional academic setting, based on work submitted by Fellows and parts of the discussion also focused on interactive research visioning and action planning. As the post-seminar research activity, I proposed to address the issue of sustainable urbanization within the Indian context. The need to move beyond binary explanations exposing the contradictory nature of urbanization between the developed and the developing world that had already made significant scholarly intervention was thoroughly felt and instead reflecting on Indian cities using polycentric approach and analysis was found to be hugely relevant within the huge, complex and diverse Indian urban scene. The major objective of the 2015 conference was to identify city-specific sources of challenges and explore strategies and potentials to make the process of urban transition both sustainable and equitable. The non-linear, bottom-up, multi-sectoral process-based local contexts explored through different case studies across north, south, east and west Indian cities critically questioned the universal provisions laid out in ‘sustainable urbanization’,

the post-2015 development agenda of the United Nations, and suggested ways that seemed to be important for transcending theories into actions. In the meantime India's dramatic launch of the 'Smart City Mission' paved the way towards the formulation of the book proposal and project from selected papers presented in the conference as it re-emphasized the significance of in-depth identification of challenges and exploration of potentials through nuanced readings and coverage of micro-political processes using pluralistic prisms and conceptual lenses.

I would like to thank and acknowledge the International Social Science Council and the World Social Science platform for giving me the opportunity to learn and grasp various components of contemporary urbanization across different cities of the globe through research training conducted by urban experts and mentors like Adriana Allen and Mark Swilling and interactions with the other 19 Fellows, especially Irene Sotiropoulou, Ferne Edwards and Moises Lino e Silva. Ongoing association with Adriana Allen and her colleagues from the Bartlett Development Planning Unit, University College London, UK in other projects and researchers had helped me to sharpen the edge of my understanding especially related to peri-urbanization of poverty in the Global South. Prof. Allen also participated in the 2015 conference at IDSK, chaired a session and gave important feedback on why and how to pursue the book project. Other eminent experts on the subject who participated in the conference, encouraged young researchers/paper presenters and made it a success were Darshini Mahadevia (who provided the keynote address), Om Prakash Mathur, Prabhat Datta, Annapurna Shaw, Mahalaya Chatterjee, Arun Bandopadhyay, Asish Ghosh, Gopa Samanta, Sutapa Chatterjee Sarkar, and Uttam Bhattacharya. I would specially like to thank Om Prakash Mathur for agreeing to write the foreword for the book. D. Parthasarathy from IIT Bombay was kind enough to accept the proposal of jointly hosting the conference. His students organized a fiery panel on urban ecology and environmentalisms, and without their support and enthusiasm neither this conference and nor this book would have been possible; special thanks to Sneha Sharma and Neha Singh whom I had met time and again in different conferences between 2014 and 2016 and discussed organizational details of the conference and structure of the book. I would like to offer my heartiest gratitude to late Prof. K.C. Sivaramakrishnan who gave a special presentation, launched his book *Governance of Megacities: Fractured Thinking, Fragmented Setup* on the first day of the conference and encouraged us to pursue the book project. Prof. Rene Veron, University of Lausanne had guided me and provided me materials to have a better understanding of the political ecology framework. The entire IDSK team including faculty, staff, and librarians had been helpful during various stages of organizing the conference and evolution of the manuscript. The Director of the institute Prof. Achin Chakraborty had been a wonderful guide and supervisor since January 2015; he had offered every help possible for organizing the conference, participated and presented a conceptual paper in the conference and provided significant academic insights to improve and finalize the manuscript. Amiya Bagchi, Emeritus Professor, IDSK, and Ramkrishna Chattopadhyay had always been great source of knowledge and inspiration. I would like to thank

Sreepat Jain for his insightful suggestions and comments regarding publication of the manuscript. Finally, I would like to thank all the contributors for being immensely helpful and cooperative since the inception of the project.

Kharagpur, India

Jenia Mukherjee

Contents

1	Indian Urban Trajectories: Addressing ‘Sustainability’ across Micro-political Settings	1
	Jenia Mukherjee	
2	Towards Sustainable Cities in India	23
	Annapurna Shaw	
Part I Governing Investments and Infrastructures		
3	Structural Limits to Equitable Urbanization	41
	Achin Chakraborty	
4	Alternative Provision of Tenure Security and Rights to the Urban Poor: A Case Study from Ahmedabad	53
	Atanu Chatterjee	
5	State, Governance and Urban Poor: Insights from Visakhapatnam City	79
	Debapriya Ganguly	
6	Performing Governance in Urban Patna	95
	Sheema Fatima	
7	Sustainability of Urban Fringe Development and Management in NCT-Delhi: A Case Study	109
	Ramakrishna Nallathiga, Suhani Taneja, Anusha Gupta and Bitul Gangal	
Part II Managing Wastes and Wetlands		
8	Evaluating Municipal Solid Waste Management in Indian Cities: A Comparative Assessment of Three Metros in South India	137
	Shaik Sajith and Avinash Y. Kumar	

9	Electronic Waste in Urban India: A Major Sustainability Challenge	161
	Anwasha Borthakur	
10	How Expensive is the Decay of East Kolkata Wetlands? An Estimation of Opportunity Cost for Kolkata	181
	Debanjana Dey and Sarmila Banerjee	
11	Urban Ecologies in Transition: Contestations around Waste in Mumbai	207
	Sneha Sharma and D. Parthasarathy	
Part III Exploring Ecologies and Environmentalisms		
12	Sustainability or (Sustain)ability? Environmentalism and Shades of Power in a Metropolis	227
	Amit Jain	
13	Gentrification and Rising Urban Aspirations in the Inner City: Redefining Urbanism in Mumbai	239
	Dwiparna Chatterjee and D. Parthasarathy	
14	Communities in a ‘Protected’ Urban Space and Conservation Politics in Mumbai’s Sanjay Gandhi National Park	257
	Amrita Sen and Sarmistha Pattanaik	
15	Urban at the Edges: Mumbai’s Coastline Urbanisms	279
	Hemantkumar A. Chouhan, D. Parthasarathy and Sarmistha Pattanaik	
16	Contested Urban Waterscape of Udaipur	295
	Neha Singh, D. Parthasarathy and N.C. Narayanan	

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Abbreviations

ACC	Actual Capital Cost
ADB	Asian Development Bank
ALM	Advanced Locality Management
AMC	Ahmedabad Municipal Corporation
AMRUT	Atal Mission for Rejuvenation and Urban Transformation
AP	Andhra Pradesh
ARTD	Association for Regional Tribal Development
ASP	Activated Sludge Process
BBMP	Bruhat Bengaluru Mahanagara Palike
BC	Backward Caste
BEAG	Bombay Environment Action Group
BJP	Bharatiya Janata Party
BMC	Brihanmumbai Municipal Corporation
BOD	Biological Oxygen Demand
BPM	Business Process Management
BPT	Bombay Port Trust
BSUP	Basic Services for Urban Poor
BUSP	Basic Urban Services for the Poor
C&T	Collection & Transportation
CAG	Conservation Action Trust
CAGR	Compound Annual Growth Rate
CBD	Central Business District
CBO	Community Based Organisation
CDP	City Development Plan
CESC	Calcutta Electric Supply Corporation
CFC	Central Finance Commission
CIDCO	City and Industrial Development Corporation
CII	Confederation of Indian Industry
CMFRI	Central Marine Fisheries Institute
CMPO	Calcutta Metropolitan Planning Organization
CoC	Corporation of Chennai
CPA	Critically Polluted Areas

CPCB	Central Pollution Control Board
CPHEEO	Central Public Health and Environmental Engineering Organisation
CPWD	Central Public Works Department
CRF	Citizen's Reference Framework
CRZ	Coastal Regulation Zone
CSE	Centre for Science and Environment
DCB	Delhi Cantonment Board
DDA	Delhi Development Authority
DMIC	Delhi Mumbai Industrial Corridor
DTDC	Door to Door Collection
DWF	Dry Weather Flow
EC	Environmental Clearance
EEE	Electrical and Electronic Equipment
EKW	East Kolkata Wetlands
EKWMA	East Kolkata Wetland Management Authority
EPA	Environmental Protection Act
EPA	Environmental Protection Agency
EU	European Union
E-waste	Electronic waste
FD	Forest Department
FDI	Foreign Direct Investment
FSI	Floor Space Index
GAP	Ganga Action Plan
GHG	Green House Gas
GHMC	Greater Hyderabad Municipal Corporation
GIS	Geographical Information System
GoG	Government of Gujarat
GoI	Government of India
GPS	Global Positioning System
GVMC	Greater Visakhapatnam Municipal Corporation
HTI	High Tide Line
IBM	International Business Machines
ICM	Integrated Coastal Management
ICT	Information and Communication Technology
ICZM	Integrated Coastal Zone Management
ICZMP	Integrated Coastal Zone Management Plan
INTACH	Indian National Trust for Art & Cultural Heritage
IT	Information Technology
IT-BPM	Information Technology-Business Process Management
IUCN	International Union for the Conservation of Nature
IUDP	Integrated Urban Development Project
IWMED	Institute of Wetland Management and Ecological Design
JNNURM	Jawaharlal Nehru National Urban Renewal Mission
KEIP	Kolkata Environmental Improvement Project
KMC	Kolkata Municipal Corporation

KMDA	Kolkata Metropolitan Development Authority
LTL	Low Tide Line
MCD	Municipal Corporation of Delhi
MCZMA	Maharashtra Coastal Zone Management Authority
MDG	Millenium Development Goals
MGD	Million Gallons per day
MHADA	Maharashtra Housing Area Development Authority
MHT	Mahila Housing Sewa Trust
ML	Million Liters
MMR	Mumbai Metropolitan Region
MMRDA	Mumbai Metropolitan Regional Development Authority
MoEF	Ministry of Environment and Forests
MoUD	Ministry of Urban Development (India)
MPCB	Maharashtra Pollution Control Board
MPLAD	Member of Parliament Local Area Development
MSW	Municipal Solid Waste
MSWM	Municipal Solid Waste Management
MT	Metric Tons
MTPD	Metric Tons Per Day
MUD	Ministry of Urban Development
NA	Non Agricultural
NBC	National Building Codes
NCR	National Capital Region
NCRPB	National Capital Region Planning Board
NCT	National Capital Territory
NDMC	New Delhi Municipal Corporation
NEERI	National Environmental Engineering Research Institute
NGO	Non-Government Organization
NGT	National Green Tribunal
NH	National Highway
NMSEZ	New Mumbai Special Economic Zone
NNE	North North–East
NUSP	National Urban Sanitation Policy
O&E	Operation and Expenses
O&M	Operation & Maintenance
OBC	Other Backward Caste
OP	Oxidation Pond
OSRT	Off Site Real Time Monitoring System
PA	Protected Area
PAH	Poly Aromatic Hydrocarbons
PC	Personal Computer
PCB	Printed Circuit Boards
PHED	Public Health Engineering Department
PIL	Public Interest Litigation
POP	Persistent Organic Pollutant

POWA	Progressive Organisation for Women's Advancement
PPP	Public Private Partnership
PUBLIC	People United for Better Living in Calcutta
R&M	Repair and Maintenance
RAY	Rajiv Awas Yojana
RDF	Refuse Derived Fuel
RMMS	Rashtriya Mill Mazdoor Sangh
RTI	Right to Information
RWA	Resident Welfare Association
SC	Scheduled Caste
SEIAA	State Environmental Impact Assessment Authority
SEWA	Self Employed Women's Association
SEZ	Special Economic Zone
SFC	State Finance Commission
SGNP	Sanjay Gandhi National Park
SJSRY	Swarna Jayanti Shehari Rozgar Yojna
SLB	Service Level Benchmarking
SNP	Slum Networking Programme
SPV	Special Purpose Vehicle
SRA	Slum Rehabilitation Authority
SSW	South South–West
STP	Sewage Treatment Plant
SWF	Storm Water Flow
SWM	Solid Waste Management
TERI	The Energy and Resources Institute
TMC	Thane Municipal Corporation
TPD	Tonnes Per Day
UA	Urban Agglomeration
UBSP	Urban Basic Services for the Poor
UIDSSMT	Urban Infrastructure Development Scheme for Small and Medium Towns
UIG	Urban Infrastructure and Governance
ULB	Urban Local Body
UN	United Nations
UNCED	United Nations Conference on Environment and Development
UNCHS	United Nations Centre for Human Settlement
UNEP	United Nations Environmental Program
UNICEF	United Nations International Children's Emergency Fund
UNU	United Nations University
UPA	United Progressive Alliance
USAID	United States Agency for International Development
USD	US Dollar
WBSPB	West Bengal State Planning Board
WEEE	Waste Electrical and Electronic Equipment

List of Figures

Fig. 4.1	Various types of land tenure systems in low income settlements (assigned on the basis of their degree of tenure security from low to high)	58
Fig. 4.2	Proxy percentage of the perception of security of tenure of the interviewed households in the informal settlements.	62
Fig. 4.3	Home-work distance of the sampled household in the selected low income settlements.	63
Fig. 4.4	Housing condition in Allahnagar, a slum located in Government land (Chatterjee, 2014)	65
Fig. 4.5	Type of dwelling units of the interviewed households in the surveyed slums.	65
Fig. 4.6	Nature of housing investment on a typical slum located on public land (Valmiki Vyas) and SNP slum (Sanjaynagar)	66
Fig. 4.7	Availability of water supply in the sampled households of the surveyed slums	68
Fig. 4.8	Availability of toilet facilities in the sampled households of the surveyed slums	68
Fig. 4.9	Availability of electricity facility in the sampled households of the surveyed slums	69
Fig. 4.10	Site and service <i>na chapra</i> constructed under Site and Service project during the 1970s.	70
Fig. 4.11	A view of the Lakhudi Talavadi, a slum where rehabilitation project was implemented under the 2010 slum policy.	72
Fig. 5.1	JNNURM houses at Kommadi resettlement colony	87
Fig. 5.2	The original site of residence of the Seva Nagar dwellers which has now been converted into a park	92
Fig. 7.1	Fringe area in an urban region.	118
Fig. 7.2	Study area location on zonal master plan of Delhi.	123
Fig. 7.3	Spatial evolution of Ghitorni settlement.	123
Fig. 7.4	Sources of water in Ghitorni	125
Fig. 7.5	Sewerage system in Ghitorni	125

Fig. 7.6	Drainage system in Ghitorni	126
Fig. 7.7	Community satisfaction of civic services.	127
Fig. 7.8	Delhi master plan locating Ghitorni.	129
Fig. 7.9	J Plan locating study area with ridge.	129
Fig. 7.10	Mapping of noise pollution on the site	130
Fig. 7.11	Mapping of air pollution on site	131
Fig. 8.1	Municipal Solid Waste Management process in Bengaluru	153
Fig. 8.2	MSWM process in Chennai.	155
Fig. 8.3	Municipal Solid Waste Management process in Hyderabad.	156
Fig. 9.1	Involvement of different stakeholders along the E-waste flow in urban India	174
Fig. 10.1	EKW in the early nineteenth century (1827).	184
Fig. 10.2	Correspondence between the processes of sewage treatment and fish production	189
Fig. 10.3	Coordination failure.	195
Fig. 13.1	Old working class neighbourhood	240
Fig. 13.2	Textile mill as palimpsest.	241
Fig. 13.3	<i>Chawl</i> in the neighbourhood	244
Fig. 13.4	Morcha of girni kamgar demanding the right to housing.	251
Fig. 13.5	Gathering and protest of the ex-mill workers.	251
Fig. 14.1	Shanties and the temporary makeshift structures at Pimpripada.	266
Fig. 14.2	Shanties and the temporary makeshift structures at Lauhugad.	267
Fig. 16.1	Lake Pichola, Udaipur.	300
Fig. 16.2	Polluted water of Lake Fatehsagar.	307
Fig. 16.3	The old city.	308
Fig. 16.4	Panghat Yojana at Gangaur Ghat in old city, Udaipur.	310
Fig. 16.5	Board informing rule about dumping/ polluting Lake Pichola	312
Fig. 16.6	Hotel in Lalghat (on the bank of Lake Pichola).	313
Fig. 16.7	People bathing and washing at Lake Pichola.	314

List of Tables

Table 4.1	Profile of the selected case studies.	57
Table 4.2	Slum profile of Ahmedabad with their land ownership status (old city limit)	75
Table 5.1	The top ten million plus cities with highest percentages of slum households in the country	84
Table 7.1	Urban areas, population and its growth rate in India	110
Table 7.2	Urbanisation and urban population growth in India	111
Table 7.3	Distribution of number of various classes of towns in India	111
Table 7.4	Distribution of population of various classes of towns in India (percent)	112
Table 7.5	Number and share of million-plus cities in India	112
Table 7.6	Development of core and periphery in Indian cities.	113
Table 7.7	Temporal evolution of Ghitorni settlement	124
Table 7.8	Existing and proposed land use of Ghitorni.	128
Table 7.9	Noise level in Ghitorni	131
Table 8.1	Urban service-level benchmark indicators for SWM	143
Table 8.2	Municipal solid waste generation in study areas	144
Table 8.3	Door-to-door collection efficiency of different service providers engaged in MSWM service	146
Table 8.4	Waste organization in the study areas (Ministry of Urban Development, 2008)	147
Table 8.5	Activity of street sweeping in study areas	147
Table 8.6	Scientific disposal facilities in the study areas	148
Table 8.7	Extent of MSWM recovered	148
Table 8.8	Workforce for provision of MSWM service in the study areas.	149
Table 8.9	Efficiency in redressal of customer complaints—ways of reporting/registering complaints.	150
Table 8.10	Summary of MSWM activities under PPP in the study areas.	152
Table 8.11	Salient features of MSWM in Bangalore	154

Table 8.12	Salient features of MSWM in Chennai	155
Table 8.13	Salient features of MSWM in Hyderabad	157
Table 9.1	EEEs covered under EU's definition of E-waste or WEEE	164
Table 10.1	Sewage treatment plants in Kolkata.	186
Table 10.2	Treatment cost of sewage at STP of Kolkata (Rs. millions). . . .	200
Table 11.1	Population in major cities	208
Table 14.1	Status on June 2012, PHASE-I	269
Table 14.2	After order dated 10th January, 2008, phase II	270
Table 16.1	Population changes in Udaipur	300
Table 16.2	Municipal wards in Udaipur	301
Table 16.3	Projected gap in water distribution	307

List of Maps

Map 10.1	General layout of the feeding and drainage channels in EKW in 1943	185
Map 10.2	Canal network—East Kolkata Wetlands	187
Map 10.3	Core and buffer area	192
Map 10.4	Change in land-use pattern	192
Map 11.1	Satellite map showing Kanjurmarg dumping site, surrounding mangrove cover and residential colony	211
Map 14.1	SGNP	267
Map 16.1	Ward map of Udaipur, 2009	301

List of Boxes

Box 4.1	Story of Valmiki Vyas: Slum Located on Public Land.	63
Box 4.2	Did SNP Improve the Tenure Security of the Slum Dwellers?	66
Box 4.3	Ballol Nagar: A Newly Formed Resettlement Colony in Ahmedabad	70

Chapter 1

Indian Urban Trajectories: Addressing ‘Sustainability’ across Micro-political Settings

Jenia Mukherjee

1.1 Introduction

“A few skipped chapters never hurt anyone!” the civil engineer proclaimed.

The dismembered bodies lying under the collapsed bridge begged to differ.

Though extremely touchy, this couplet that I found in Facebook,¹ eloquently capturing the terrible event of bridge collapse in Kolkata recently, however, fails to excavate what actually went wrong.² The dialectical tensions between Indian cities’ insane rush towards achieving the status of ‘world class’ or ‘global’ and numerous local processes and ‘stubborn realities’ (Tiwari et al., 2015) might offer some deeper explanations. Global cities are strategic sites where transnational processes materialize in national territories and international dynamics run through national, regional and local institutional arrangements (Sassen, 2001), manifesting similar (yet locally divergent) set of characteristics including urban restructuring and gentrification, privatization of city services, attempts to attract global capital, investments in monumental events and buildings, speculative housing developments, etc. (Bose, 2015). In today’s so-called age of the ‘urban imperative’ (Glaesar & Ghani, 2015), (global) cities are recognized as seedbeds of solutions; flurry of recommendations, designs and innovations are being thought upon with ‘sustainability’ as the nucleus.

¹Retrieved April 8, 2016, from Facebook Website: <https://www.facebook.com/TheScribbledStories/photos/a.1157506880929759.1073741828.1156243537722760/1356124417734670/?type=3&theater>.

²More than 100 people were killed and injured as two parts of an under-construction 2.2-km-long Vivekananda Flyover collapsed in a congested market area in Burra Bazar, north Kolkata on March 31, 2016. A 100-m (330-ft) section came crashing down suddenly, crushing pedestrians, cars and other vehicles under huge concrete slabs and metal.

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‘Sustainable Urbanization’ is the post-2015 development agenda of the United Nations that unfurls such optimistic designs and consider cities as the axes for the new global change, economic forces to entire nations, and central players on the world stage (UN Habitat, 2012). The city is contemplated as the major platform for transformation, the locus for change and the venue where human agency might be mobilized.

Cities make countries more prosperous. Countries that are highly urbanized have higher incomes, more stable economies, stronger institutions and are better able to withstand the volatility of the global economy than those with less urbanized populations ... Cities around the world are playing an ever-increasing role in creating wealth, enhancing social development, attracting investment and harnessing both human and technical resources for achieving unprecedented gains in productivity and competitiveness (UN Habitat, 2012: 7).

The first-ever Integration Segment of the United Nations Economic and Social Council (UNECOSOC) focused on ‘sustainable urbanization’, demonstrating how urbanization can be an effective tool for the integration of economic, social and environmental dimensions of sustainable development (UNECOSOC, 2014a). Like the 2012 UN report, the 2014 background note for the Integration Segment also looks into opportunities and potentials offered by contemporary patterns of urbanization. It considers urban areas as a source of growth, development and jobs, which if well managed and adequately planned, could offer opportunities for economies of scale and scope in development efforts, in particular in addressing poverty, health and education issues. It points out that “urbanization has been, and continues to be, a source rather than simply an outcome of development ... Governments can use urbanization as a powerful tool for transforming production capacities, income levels and living standards, especially in developing countries” (UNECOSOC, 2014b: 3–4).

Keeping in tune to the gospel of ‘sustainable urbanization’ and the rise and growth of ‘smart’ city, high-density city, etc., in the west, the Indian National Democratic Alliance (NDA) government has made an official announcement of creating 100 smart cities in the country for which it laid out an amount of Rs. 480 billion³ to be disbursed to the urban local bodies at frequent intervals in the 5 years between 2015 and 2020 (Jeelani, 2015). “The purpose of the ‘smart city’ agenda and plan is to drive economic growth and improve the quality of life of people by enabling local area development and harnessing technology, especially technology that leads to Smart outcomes”.⁴ A stormy upsurge has swept the Indian academic circle and experts are rigorously questioning the relevance, feasibility and sustainability of this laudable project, critically debating on the issue of ‘inclusion’. At this critical juncture, contextualizing the emergence of the project across longer

³The current conversion rate is 1 USD = INR 65 (approx.).

⁴Retrieved April 8, 2016, from Smart Cities Mission, Ministry of Urban Development, Government of India Website: <http://smartcities.gov.in/writereaddata/What.%20is%20Smart%20City.pdf>.

spatio-temporal trajectory that initiated the concept of 'sustainable' and interpolated it in the development (and urbanization) discourse remains crucial.

The concept of 'sustainable cities' derived from that of 'sustainable development', popularized in the Brundtland Report (1987) of the World Commission on Environment and Development (WCED), United Nations (UN) and Agenda 21 (1992), the agreement that came out of the Earth Summit held in Rio de Janeiro, Brazil, in 1992 (UNCED, 1992; WCED, 1987). The shifting geography of urbanization to the global South provided justification for the implementation of 'sustainable cities', an amalgamation of various independent processes like Agenda 21 followed by Habitat II in 1996, urban environmental movements, decentralization of local governance structures, etc. (Mahadevia, 2001). In the early 1980s, the United Nations Centre on Human Settlements (UNCHS) and the United Nations Environment Programme (UNEP) decided to prepare joint environmental guidelines for environmental planning and management (EPM) of cities. In the early 1990s, this initiative was converted to the joint Sustainable City Programme (SCP) in the global South. SCP was launched as a vehicle for implementing Agenda 21 at the city level, to incorporate environmental management into urban development decision making (Mahadevia, 2001) where economic and environmental costs of urbanization and urban development were to be taken into account and cities were to be designed as compact and energy efficient, self-reliant in terms of resource production and waste absorption (Haughton, 1997). The country regained its perspectives on regional disparities of cities and inclusive urbanization was made a priority since the Eleventh Five Year Plan, which had inclusive growth as its agenda. It was in this phase that Indian smart cities started taking shape. The Delhi Mumbai Industrial Corridor had smart cities planned along the stretch since 2011. In 2012, it was announced that smart cities shall be a part of the (Jawaharlal Nehru National Urban Renewal Mission) JNNURM Phase II.⁵ However, with the JNNURM taking a backseat, the recently elected NDA government officially launched the 'Smart City' Mission and the 70.6 bn set in budget 2014 was dramatically enhanced to 480 bn in budget 2015, to be spread over 5 years and 20 cities in the first phase (Shaw, Chap. 2).

There is an overarching criticism of 'sustainable cities' programme which proclaims that "The pursuit of sustainable development and 'Sustainable Cities' is set against the backdrop of an increasingly globalised world in which the North dominates the South in economic terms" (Mahadevia, 2001: 243). Most southern countries became part of the global economy through conditionalities and a development model imposed by the multilateral funding agencies under the general regime of Structural Adjustment Programmes (SAPs) (Mahadevia, 2001; Davis, 2006) which had adverse impacts on social sectors (Cornia, Jolly, & Stewart, 1987) and on the environment (Reed, 1995). In the urban context, SAPs implied

⁵For details relating to the JNNURM mission, objective, scope, strategy, duration and expected outcomes, please refer to Jawaharlal Nehru National Urban Renewal Mission Overview, Ministry of Urban Employment & Poverty Alleviation, Ministry of Urban Development. Retrieved April 15, 2016, from <http://jnnurm.nic.in/wp-content/uploads/2011/01/PMSpeechOverviewE.pdf>.

privatization and commercialization of infrastructure including social sectors, deregulation and retreat of the welfare-based approach of the state under the guise of decentralization and popular participation (Stubbs & Clarke, 1996; World Bank, 1990; WRI, UNEP, UNDP, & World Bank, 1996). In quite similar fashion, the thinking behind the growth and development of cities and spread of urbanization embedded in the gospel of ‘sustainable urbanization’ fails critically to examine complex problems associated with the nature, scale, pace and pattern of urbanization in the south, both currently and in the coming decades (Mukherjee, 2015a). It is expected that most of the urban population will be absorbed by the cities and towns of low-income countries, likely to rise from 1.9 billion in 2000 to 3.9 billion by 2030 (Allen, 2009). Rapid urbanization in the south is marked by numerous problems and challenges including the burgeoning slums and squatter settlements; lack of citywide infrastructure such as housing, health, sanitation, privatization and commercialization of infrastructure; conversion of ecosystem resources affecting the livelihood opportunities of ecologically dependent marginal communities; and the changing nature of the rural–urban divide (Mukherjee, 2015a, b). Satterthwaite rightly pointed out days back in 1998 that along with emphasis on the reduction of resource consumption, local waste absorption, and the use of renewable resources, urban environmental issues have to effectively insist upon the critical issue of meeting basic human needs. “...the ‘sustainable’ part of sustainable development be considered as avoiding the depletion of environmental capital (or concentrating on ecological sustainability) while the ‘development’ part of sustainable development be considered the meeting of human needs” (Satterthwaite, 1997).

Series of researches have been conducted since then on the distinctness of southern urbanization processes and southern urbanisms; and today global south is eloquently critiquing the concept of modernity, asserting the presence of the postcolonial narrative and giving voices to the subaltern in urban studies (Fatima, Chap. 6). It is developing its own idiom (Roy, 2009), giving birth to quiet rebels (Bayat, 2000) often as an act of democracy ‘from below’ (Appadurai, 2001) or as ‘occupancy urbanism’ (Benjamin, 2009); it is reflective of the diversity and intricacy of the city itself which in spite of apparently being similar through the manifestation of global urban attributes, is never uniform and single (Fatima, Chap. 6). With greater understanding and exposure of chronic neo-liberal urban problems, time and again promises are being made and provisions kept in official legislations like the passage of the 74th Amendment Act (1992) and urban renewal projects like JNNURM to ensure ‘sustainability’ across governance of civic infrastructures and amenities, management of wastes and understanding of urban ecological issues (including ‘ecological footprints’ of cities), the three most significant and connected components of urban development for southern countries like India through democratic governance, efficient management and protective legislations; yet not much has been achieved and challenges seem to outgrow benefits at much faster pace. While so much remains undone and incomplete, the sudden escalation of budget for the ‘Smart City Mission’ not really confirms Indian urban journey to be ‘reluctant’ (Tiwari et al., 2015), but with real estate and urban

infrastructure offering a great opportunity to global capital, it seems to be a card waiting to be played right in India (Burte, 2014).

While industry, especially corporate giants have identified smart cities as a promising new line, and invested in intra-industry advocacy by building platforms like Smart Cities Council and spun new slogans like 'smart is the new green' i.e. smart is sustainable (Burte, 2014; Smart Cities Council, 2014), wide spread criticisms in the scholarly circle and among urban action groups and experts have flooded the scene since the official proclamation of the agenda in the union budget for 2014–15. Opponents warn that with the implementation of this '21st century utopian urban experiment' (Datta, 2014) of India, the competition it would entail among cities would be severe in economic terms and social polarization across Indian cities would accentuate in far greater intensity than being estimated. "Smart cities are proposed as isolated satellite cities of the 'neo-middle class'" which implies clearly "a class-based spatial categorisation of populations: world class urbanism of smart cities for the upper classes and the creaky old urbanism of existing cities for the creaky old middle and lower classes" (Burte, 2014: 24). Many experts also fear that these smart cities would not only prove dystopic and inequitable, but may turn into social apartheid. Having islands of well-serviced smart cities amidst a vast sea of poorly services and impoverished villages would lead to the juxtaposition of the citadel and ghetto, and these visible forms of spatial inequalities would engender social mistrust and violence (Ravindran, 2015).

These denunciations and disapprovals clearly demonstrate that what is missing in this grand mission and agenda is any sense of the various conflicts, contestations, contradictions and negotiations that smartening up would imply in the larger sociopolitical context of cities (Burte, 2014). There are also questions regarding the sheer feasibility of the programme, given the current urban information, infrastructures and governance systems (Burte, 2014). The current context appeals and makes us aware to move beyond the binary analysis surrounding urbanization challenges and opportunities across north and south towards a more poly-centric approach, accommodating the three major and connected components of urban sustainability including governance of infrastructures and investments, management of wastes and wetlands and a thorough and in-depth understanding of urban ecology and environmentalisms. The case studies across the three parts of the book identify contemporary challenges and opportunities across north, south, east and west Indian cities through nuanced readings and explorations of micro politico-economic and micro politico-ecological contexts and realities. Through previously unexplored complex details of local politics and social realities of specific (also including unexplored) contexts, the chapters attempt to add and develop another narrative of looking and reading the vast and varied processes of urban transformation by bringing to the forefront 'epistemology of the particulars' (Castree, 2005) that hopes to unpack the embeddedness of the global and the local processes.

1.2 Structure of the Book

The book is divided into 3 parts and 15 chapters. Part I is preceded by an introductory chapter by Annapurna Shaw (Chap. 2). It is built upon conceptual premises, making way towards an easy transition to the case specific descriptions and analyses.

1.2.1 *Setting the Context*

In Chap. 2, Shaw explores different conceptual perspectives on urban sustainability: sustainability as understood from the Brundtland Commission's report, sustainable urban form as defined by planners, and the political economy approach of structuralist and post-structuralist scholars such as David Harvey. The second section of the chapter examines urban sustainability as policy in the Indian context from immediate pre-economic liberalization era to the present indicating how urban sustainability policies have evolved, traveled and transformed since the pre-1990s to the recent times with the current thrust on 'Smart City' Programme and gigantic urban-industrial corridors. The chapter ends with a broad and comprehensive understanding of the implications of the proposed Smart City Programme and raises the most vital question at this critical juncture that "What will happen to the hundreds of ordinary/non-smart cities and those not covered under AMRUT (Atal Mission for Rejuvenation and Urban Transformation)?" Shaw makes us aware about the distinct characteristics of contemporary patterns and processes of Indian urbanization mainly in the form of the way urbanization is spreading in the country, particularly in the last decade, with the emergence of thousands of small, new towns on the one hand, and on the other circularity migration of people from rural to urban areas and then back again while maintaining both rural and urban links blurring of rural-urban differences with villages becoming a part of larger urban systems and calling into question the relevance of the very categories 'rural' and 'urban'. Hence, "a key aspect that needs to be highlighted and planned for", Shaw argues "is the way India's urbanization process has unique elements and these should be leveraged to achieve sustainability rather than blindly following a model based on the experiences of Western countries or even China".

1.2.2 *Governing Investments and Infrastructures*

Part I consists of four case studies across the three cities of south (Visakhapatnam), west (Ahmedabad) and east (Patna) and one urban fringe area (Ghitorni), located at the periphery of the National Capital Territory (NCT). These cases are preceded by a conceptual chapter by Chakraborty that inquires deep into the structural limits to

equitable urbanization (Chap. 3). By critically conceptualizing the normative consequences of urbanization against the so-called supposedly bidirectional causality of planned urban development and economic growth, it deals with problems associated with the Twelfth Plan's perception and promotion of small and medium size towns with locational and natural resource advantages for future socio-economic growth. Raising the efficiency versus equity debate, the chapter provokes us to think that by sheer focus and through investments on infrastructures on the units with 'potential', others which have less potential are ignored, which in turn increases the gap between the two. The chapter enters the complex terrain that emerges out of the confluence of three normative goals of urbanization—growth or efficiency, sustainability and social justice and proclaims that although the imperatives of economic growth in the modern globalized world have an apparent ring of inevitability around them, an articulated view on social justice and appropriate conceptualization of equity through community engagement is of immense help to make us understand alternative possibilities with their associated trade-offs.

Researches focusing on numerical and technical analysis of availability of funds or access to infrastructures (Ahluwalia, Kanbur, & Mohanty, 2014) do not seem to be sufficient exercise to identify challenges, potentials and the way forward for the contemporary complex Indian urban scene. "These cities are not so much fracturing as they are being strategically divided by governance practices informed by local histories and political contestation, and refracted through or infused by market-based approaches to urban development" (Samara et al., 2013, introduction, 2). There is an emerging literature focusing on exclusionary aspects of urban governance in the global south (Banerjee-Guha, 2010; Davis, 2006; Gugler, 2004; Harvey, 2000), nakedly exposing the deleterious effects of neo-liberal urbanization on marginalized quarters and pockets of Indian cities like slums and squatters (Roy, 2009), small cities (Véron, 2010) and also the peri-urbanizing interfaces (Mukherjee, 2015a, b; Mukherjee & Ghosh, 2015). Again, slums in Indian cities have characteristics that are far more complex, the explanation of which cuts across economic, social, urban and development disciplines far away from the simple segregation-based notions of ghettos or enclaves used in the context of western cities (Nijman, 2010). Slums cannot be classified as single category, it range from high-density squalid central city tenements to spontaneous squatter settlements without legal recognition or rights, sprawling at the edge of cities (Tiwari et al., 2015). In Chap. 4, Chatterjee identifies the prevalence of multiple tenure systems including various 'intermediate tenure systems' ranging from informal, customary, religious, to formal in contemporary Ahmedabad and explores the degree of security of tenure and the rights enjoyed by the households in each of the tenure systems based on the primary insights obtained from the field. Questioning the rhetoric of the housing policies driven by the state-led ideology, the study concludes with the practical observation that as the poor in the informal settlements acquires perceived tenure security over the years, along with basic rights or the incremental approach to tenure provision (which the Slum Networking Programme has partially succeeded in provisioning), infrastructure programmes should be planned to reduce urban poverty and upgrade the living conditions of these households.

While Chap. 4 drills down deep to collect empirical facts and findings to evolve a theoretical proposition, Chap. 5 attempts to capture and understand neo-liberal 'accumulation by dispossession' in the context of urban India within the framework of statehood, governance strategies and the people by invoking both primary and secondary sources of data, in the context of a fast growing urban centre of South India, i.e. Visakhapatnam in the state of Andhra Pradesh. Borrowing from Kohli (1987), Holston and Appadurai (1996), Chatterjee (2004) and Gupta (2012), Ganguly sidelines governance for the time being and makes a smooth entry into the terrain of 'governmentality' to offer in-depth explanation and analysis of the exclusionary strategies deployed by the state. Both the quantitative and qualitative findings on slums of Ahmedabad and Visakhapatnam, respectively, expose how 'competitive populism' (Gupta, 2012) advocated by the state ultimately makes real estate and private developers thrive at the cost of further vulnerability of urban slums. Both the cases sharply bring out the problems associated with state-led rehabilitation programmes, appropriately testifying that a superficial approach to fix the 'space and infrastructure' of these settlements rather than providing opportunities to enhance their dynamism (Tiwari et al., 2015: 15), i.e. entering the city through the housing and the bathroom rather than through the place of work and the market has created fault lines between the most discussions on urban policy and issues of inequities and inequalities (Cohen, 2008).

In Chap. 6, Fatima captures yet another important aspect of failure of urban governance mechanisms for cities like Patna and portrays how local politics hinder the effective functioning of democratic decentralization. It attempts to explore and excavate 'new geographies of Global South' and develop another narrative of looking at the vast and varied processes of urban transformation, bringing to the forefront 'epistemology of the particulars' (Fatima, Chap. 6). Ransacking through the pages of both English and local Hindi newspapers and using other qualitative research methods, the case study of Patna Municipal Corporations and its functioning under the new reform period opens up accounts of the unceasing everyday struggles of municipal functioning and the vested political manoeuvres among the elected ward councillors themselves, leaving much to be desired in respect to actual implementation of civic work and city development.

The part ends with Chap. 7 where the empirical findings from the detailed case study of Ghitorni settlement, the urban fringe area, located at the periphery of NCT by Nallathiga et al. confirms lack of policy-driven initiatives in the peri-urban regions, concretizing the argument that these areas are manifestations of 'urbanization without infrastructure' (Allen, 2009), i.e. being developed without appropriate urban planning and management (Allen, 2010). The case consolidates the uneven development of the settlement area and its impact on the wider ecological infrastructures of the city. Lack of water supply and sanitation, systematic collection of garbage, environmental pollution, etc., are some of the severe challenges that are increasing with population pressure. The chapter recommends a sharp balance between rising share of suburban fringe areas in the overall population and a corresponding rise in civic infrastructure services in terms of resources, institutions, planning and governance systems.

1.2.3 Managing Wastes and Wetlands

Part II consists of four chapters on one of the crucial components of sustainability, i.e. waste management. This part provides a wide coverage ranging from physical and technical aspects of waste (municipal solid waste; Chap. 8) to sociological dynamics (surrounding waste disposal ground of a metropolitan city; Chap. 11). It also includes a chapter (Chap. 9) on one of the least explored areas in waste management, i.e. E-waste trajectory in urban India. Encapsulating technical and socio-economic details of waste management practices and estimating opportunity cost for Kolkata, the city which has no separate sewage treatment plant and in turn depends on the wetlands located to her eastern periphery for waste disposal, Chap. 10 incorporates significant dimensions of ecological infrastructures of sprawling cities.

Though every nations and cities had plunged into 'the search for the ultimate sink' (Tarr, 1996) since historical times, yet a particular city's capacity to tackle sewage and solid waste and performance depends on wide spectrum of variables both internal and external. Again, a city might perform at higher efficiency in one activity, for example, collection of waste from the primary source, while lagging behind in another, for example, treatment. The efficiency in the entire municipal solid waste management (MSWM) system of a city can be achieved through identifying performance gaps in the system and introducing improvements, thus facilitating a higher level of performance. Following the principles of performance measurement in the service delivery of MSWM across the three south Indian cities of comparable size, i.e. Chennai, Bengaluru and Hyderabad, the fourth, fifth and sixth biggest metropolitan cities of India, in Chap. 8, Sajith and Kumar attempt to identify the challenges and also explore the best practices that have enhanced performance in service delivery. Based on rigorous use of mixed methods including analysis of indices from Urban Service Level Benchmark indicators, CPHEEO (Central Public Health and Environmental Engineering Organization) norms and other formal performance assessment parameters, complemented with field data collected through interaction with municipal officials, local NGOs and sector experts, the study concludes that Bengaluru's dry waste collection centres, Hyderabad's 'unique unit area method' (i.e. outsourcing street sweeping service contracts to a group of sanitary workers for a share of land) for unserved areas, and Chennai's collaboration with the private sector could be considered as some of the best practices that could be adopted across local specific contexts.

Today, any discussion and debate on sustainable waste management remain incomplete without some reflections on the E-waste scenario in urban India. "Thus, the already existent solid waste management problem in India has been aggravated manifolds with the advent of domestically generated and illegal imported E-waste" (Borthakur, Chap. 9). Increasing penetration of electrical and electronic equipment into the country due to unprecedented growth of India's consumer electronics market (including the IT sector) is contributing significantly to the country's toxic waste stream. In Chap. 9, Borthakur evaluates the current E-waste scenario in urban

India, attempting to document and forecast India's E-waste generation. Taking into account the current E-waste disposal practices and preferences, dominance of the informal recycling sector and stakeholders' involvement and awareness, the chapter assesses existing E-waste management challenges in urban India and generates the warning note that although substantial quantum of E-waste is generated in India, its management practices and policy initiatives are still inadequate in the country. Though Borthakur informs on a positive note that unlike several developed countries, electrical and electronic equipments often find second-hand and even third-hand users farther down the income chain and there has been rapid growth of E-waste recycling industries, yet, the recycling areas act as sites for uncontrolled emission of hazardous pollutants and have significant human health and environmental implications, especially for large number of unskilled or semi-skilled male workers and also large number of women and children who are involved in it. Is India's 'Smart City' Mission and drive towards digital empowerment conscious of the already existing E-waste challenges?

"No city or urban region can achieve sustainability on its own"; the path-breaking research by Rees and Wackernagel (1996) on 'ecological footprint' of cities provides a universal and holistic framework of analysis relating to generation and disposal of waste, grounded in urban metabolism, i.e. the interaction and the connect between urban infrastructures and the wider ecosystem of the city. By providing the formal definition of ecological footprint as "the total area of productive land and water required continuously to produce all the resources consumed and to assimilate all the wastes produced, a defined population, wherever on Earth that land is located" and identifying it as a land-based surrogate measure of the population's demands on natural capital, Rees and Wackernagel (1996) exposed that waste generation and disposal is not confined to mere technical aspects related to the 'hardware' of cities (Mukherjee, 2015a, b) but also hugely includes ecological infrastructure of cities which involves their wider ecosystems (Sukhdev, 2013). Using this framework and also making significant contribution to it, studies exploring sustainable flows between Kolkata and its peri-urban interface consisting of the East Kolkata Wetlands (EKW), the 'natural kidney' of the city which recycles solid waste and effluents of the city and in turn generates fish, crops and vegetables through waste recovery practices, have been conducted recently (Mukherjee, 2015a, b; Mukherjee & Ghosh, 2015). Existing literature also shed light on how real estate development engulfing wetlands and arable lands on the east of the city has transformed the mutually reinforcing relationship between the city and its surroundings into a truncated one (Bose, 2013, 2015; Dey, Samaddar, & Sen 2013; Mukherjee, 2015a). In Chap. 10, Dey and Banerjee move another step forward to calculate opportunity cost for such transformation. Pointing out about the significant change in the pattern of land use in the wetland area, and observing a tendency towards vocation switching all over the place, the authors argue that if this propensity continues and especially, if fisheries stop dominating the livelihood option of the local residents, then that will not only affect the low-cost supply chain available to the city dwellers, will challenge continuity of the waste management practice as well. Collating data from available official documents and

complementing those with field findings, Dey and Banerjee estimate that EKW provides an annual ecological subsidy of Rs. 4680.06 million to Kolkata city by extending opportunities of natural sewage treatment! The global vision of the city resulting into unchecked sprawl and real estate speculation in the eastern part of the city directly clashes with the existence and proper functioning of the low-cost sustainable local service in the near future.

There is rich literature on sociology and political economy of waste (Gidwani & Maringanti, 2016; Gidwani & Reddy, 2015; Gidwani, 2013; Murray, 1999; O'Brien, 1999; Yearley, 1995). The last chapter of this part (Chap. 11), located at the crossroad of urban governance, waste management and environmentalism, unveils sociological dimensions surrounding waste in the Kanjur Marg dumping ground in Mumbai. It narrates the sociological story of how and why (mixed) waste is dumped in a site that has been deliberately chosen by the Mumbai Metropolitan Corporation, reflecting traditional (orthodox) attitudes towards waste in India and the contestations among different actors or stakeholders for effective bargains and negotiations. At this critical juncture when cities, urbanization processes and urban lives are glorified, entering into the contested terrain of waste by documenting and analysing the viewpoints of contesting parties and selection of waste dumping ground and waste dumping being perceived within the larger sociopolitical processes of construction of binaries: pure/impure, clean/dirt that enters into discourse of municipal governance is an interesting and important intervention.

1.2.4 Exploring Urban Ecologies and Environmentalisms

It is only recently that urban studies and environmental studies have begun to intersect. Urban ecology has emerged as a sub-discipline of ecology and gained prominence against urban crises including population spurt in urban areas and resource depletion, and its impact on urban settings (Mukherjee, 2015a). An important development occurred as early as the 1920s when drawing upon the works of Malthus, Darwin and Spencer, the Chicago School conducted researches on urban sociology, combining ecological concept in a social matrix (Grove & Burch, 1997). Urban environmentalism perceived from the ambit of urban planning and the incorporation of the 'environment' in it, flourishing amidst global environmental despondency within the neo-liberal context (Brand, 2005). Through the construction of new attitudes and expectations with regard to urban space, it appears as an ideological form, a legitimation strategy of city governments, being realized through neo-liberal institutional reforms (Brand, 2005).

In the Indian context, literature on urban ecology and urban environmentalism (both as an ideology and action) is very much in its nascent stage though the Indian variety of environmentalism in the rural context has been studied in detail (Guha & Alier, 1998) using the political ecology framework that argues for the consideration of environmental degradation within its historical, political, economic and ecological contexts (Blaikie & Brookfield, 1987). Much of the political ecological

thinking is confined to a rural, third world context (Roy, 2011) giving rise to the emergence of ‘Third World Political Ecology’ (TWPE) as a new research field in the 1980s against the pressing need for ‘an analytical approach integrating environmental and political understanding’ in a context of intensifying environmental problems in the Third World (Bryant, 1992: 12). Studies on the role of politics in shaping ecology in the Third World is greater today as it is widely understood that the development of Third World environmental problems is linked to political processes (Bryant & Bailey, 1997).

Recently, to understand the environmental dynamics of the more complex urban space, the basic notion of underlying interconnectedness of human and natural processes has been extended to the foreground of ‘urban’ through urban political ecology (UPE) (Keil, 2003) that makes investigation into the complex issues of how particular urban environment is produced and who gains and who loses due to particular power relations influencing changes within the urban environment and in the coproduction of urban society and environment (Braun & Castree, 1998; Kaika, 2005; Heynen, Kaika, & Swyngedouw, 2006; Swyngedouw, 1996, 1997; Swyngedouw & Heynen, 2003).

Studies with an explicit UPE perspective in the Indian context has gained prominence since the last one and half decade against the time and again expensive promises of transforming Indian cities into sustainable environments (Rademacher & Sivaramakrishnan, 2013) and as the ecological traditions of local self-sufficiency offer little solutions for the city dwellers and political action is unlikely to be found in an idealized, colonial and rural past. These include case studies on urban planning, tenure security, water provision, beautification schemes, slum improvement and eradication, air pollution, waste in Delhi (Baviskar, 2003, 2011; Bhan, 2009, Chakrabarti, 2008; Dupont, 2008; Dutta, Chander, & Srivastava, 2005; Ghertner, 2013; Gidwani, 2013; Kundu, 2004; Mistelbacher, 2005; Overdorf, 2003; Sharan, 2013; Véron, 2006); urban planning, environmental hazards, water provision, parks, slum sanitation, redevelopment, resettlement and housing in Mumbai (Bhagat, Guha, & Chattopadhyay, 2006; Chatterji, 2005; Gandy, 2008; Mcfarlane, 2008; Pacione, 2006; Vedula, 2007; Zerah, 2007); planning, water extraction, environmental health and solid waste management in Chennai (Arabindoo, 2009; Baud & Dhanalakshmi, 2007; Brisset, 2006; Forsyth, 2005; Ruët, Gambiez, & Lacour, 2007); urban planning and neo-liberal restructuring in Kolkata (Bose, 2013, 2015; Mukherjee & Ray, 2014; Mukherjee, 2015a, b; Pal, 2006; Shaw & Satish, 2007; Sudhira, Ramachandra, & Subrahmanya, 2007); urban development in Bangalore (Benjamin, 2000; Shaw & Satish, 2007; Sudhira, Ramachandra, & Subrahmanya, 2007), etc.⁶ Paying heed to Moore’s (1993) proposition on ‘micro politics’, i.e. to consider the internal complexity or differentiated concerns of the state and other actors, more studies are coming up to document the micro-level ‘politicised environment’ (Schroeder & Neumann, 1995) and the complex interests and actions of place and non-place based actors in environmental conflict in the Third World (Bryant

⁶The editor would like to thank Prof. René Véron, University of Lausanne for providing her guidance and introducing her to the emerging literature on urban political ecology.

& Bailey, 1997). The five chapters in Part III are such contributions to the budding literature of urban political ecology that inform (and also counter) the emerging theoretical framework with conceptual and analytical lenses through detailed empirical findings from the field and addresses the tricky issue of urban sustainability in the complex and dynamic context of the Indian cities.

Chapter 12 by Jain is an ethnographic study of the implications of the recent demolition/displacement drive in Delhi on a low-income neighbourhood of the bank of Yamuna, i.e. Kudasiya Ghat. It teases through the numerous ways in which a multitude of actors navigate their way through urban life, especially in settings like that of the informal spaces in the Global South. In her path-breaking researches on contemporary Delhi since the 1990s, Baviskar (2004, 2007, 2008) has argued that the bourgeoisie aesthetic requirements of 'clean and green Delhi' have been fulfilled by the state and its policies. Baviskar (2003) irrevocably brings out the encounter between urban environment that includes capital-intensive beautification schemes and other projects securing resources for capitalist restructuring within the neo-liberal regime and the poor, the inhabitants of the 'illegal' *jhuggis* (squatters) that mushroomed in Delhi, existed by a series of ongoing transactions such as the periodic payment of bribes to municipal officials and the intervention of local politicians, and became a symbol of unplanned Delhi since the days of her independence. Moreover, this vision of 'authoritarian environmentalism', formulated and perpetuated by the Delhi Development Authority, suited to the broader neo-liberal politico-economic interests appealed to the middle class, eager to distance itself from their own environmental footprints and from the poor (Baviskar, 2003) leading to the emergence of 'bourgeois environmentalism' as the dominant discourse (and also action by displacing huge numbers of poor *jhuggi* inhabitants) in the urban context of Delhi. In another study on the transformation of the Yamuna riverbed in Delhi from an 'urban commons' into a prized real estate commodity for private and public corporations, Baviskar (2011) explains this catastrophic environmental change not only within the wider pattern of 'accumulation by dispossession' in an age of 'new imperialism' (Harvey, 2009) in contemporary India, but also anchored in a long-standing set of aesthetic values associated with modernity. However, Jain argues, "Such an understanding of power operation represents the poor as hapless victims and misses out the ways in which power is often negotiated in an everyday life". Through the qualitative study on Kudasiya Ghat, Jain explores the ways in which the discourse of 'bourgeois environmentalism' effectuated through the Delhi Master Plan 2021, is circumvented by an ensemble of actors—traditional elites, bureaucratic class and political agents—within their respective micro-settings. It captures how the current judicial discourse on the cleansing of slums and the neo-liberal agenda of 'World Class' city marketing strategies colluded through a repertoire of new modes of silent resistance. It unveils the growing resilience of the Foucauldian idea of 'heterotopia' as a key theoretical analytic which in turn unpacks the urban form and its constituents. Finally, the chapter ends by raising further questions about the ways in which one tends to conceptualize emergent forms of citizenship in the Global South, through the prism of, what scholars like Arjun Appadurai term as 'deep democracy'.

Studying the urban scape and its power dynamics using multilineal prisms seems to be even more meaningful when Chatterjee attempts to explore rising aspirations of different population along with the state in the gentrifying textile mill lands of Mumbai fascinatingly unlocking the multiple layers of the city space, and the ongoing processes within and across these layers (Chap. 13). It eloquently captures that the emergence of the new landscape with service sectors, firms, IT industries, creative sectors, cheek by jowl shopping malls, high end restaurants, pubs, night clubs, fashion houses and gated communities juxtaposed with long rows of *chawls* (shanties/houses for the working class) in the old working class neighbourhood resulted in an exorbitant land values and reproduced the space as a landscape of contrast, contestation, negotiation and aspirations. Challenging classical theories, where one class is replaced by another in the process of competition, invasion, succession and replacement (Betancur, 2011) as theorized by the Chicago school or the process of ‘revanchism’ that Smith (1996) speaks about where the white middle class population influxes into the city centre displacing the poor, and also ‘bourgeoisie revanchism’ (Banerjee-Guha, 2010) in the city core where corporate capitalism plays a significant role, the study establishes that it is rather the interplay of multiple strings attached with one another or the interdependence of one stratum with the other that holds good and inhibits complete displacement or replacement of one class by another.

Chapter 14 by Sen and Pattanaik also elucidates Mumbai’s inner city (core) urbanism but within a different context of politics of conservation in a protected urban space, i.e. Sanjay Gandhi National Park and contributes to the emerging literature on urban commons in India (D’Souza & Nagendra, 2011; Gidwani & Baviskar, 2011; Narain & Nischal, 2007; Parthasarathy, 2011).⁷ Through an ethnographic study, the chapter reveals conditions under which politics of conservation in a Protected Area (PA) operates in metropolitan cities like Mumbai in highly inequitable and fabricated ways. Sen and Pattanaik examine how in the absence of any prior rights to the inhabited lands in the cities, due to lack of any particular generational roots of cultural identity, the marginalized population structure within the PAs constitute and establish themselves as ‘community’ not to get confined or trapped within discourses of indigenous novelty and cultural belongingness.

The next chapter (Chap. 15) by Chouhan, Parthasarthy and Pattanaik moves from the inner city core to study nature at the edges exemplifying Mumbai’s coastline urbanism which is markedly different from the dominant urbanisms in the

⁷An panel on ‘Smart Cities, but for Whom? The Loss of the Commons and Urban Vulnerability’ was organized at the recently held eighth biennial conference of the Indian Society for Ecological Economics (INSEE) on *Urbanization and the Environment*, held between 4 and 6 January 2016 at the Department of Management Science (IISc), Bengaluru, India. The papers presented in the panel generated a wider debate on alternatives to the current model of urbanization and urban common property resource (CPR) utilization; scholars argued for and emphasized a different envisioning of the environment and planning process that prioritizes ecosystem services of urban commons to meet the dual goals of ecological sustainability and social justice.

city centre. It accounts how the effects of CRZ (coastal regulation zone) rules and their violations in the MMR have reconstituted the urban in the seashores, with huge impacts on the traditional fishing communities. The paper focuses on the transformation of spaces and activities related to the lives of fishing community and expounds that these spaces are seemingly worst affected by the encroachment on coastal areas and rampant CRZ violations. The broader issues related to the contradictions and complementarities involved in Integrated Coastal Zone Management (ICZM) plans vis-à-vis management of biodiversity are scrutinized in the study, within the larger context of evolving urbanisms in the coastal areas of Mumbai.

In the last chapter of this part (Chap. 16), Singh, Parthasarathy and Narayanan traverse the contested urban waterscape of the much unexplored context of Udaipur, Rajasthan, mapping the trajectory of water resources from rural to urban and also within urban contours, questioning the very premise of publicly initiated schemes which overtly depend on water extraction from rural hinterland. It examines contestations that have engulfed access and allocation of water within the city, a popular tourist destination with its sprawling lakes, beautiful palaces and *havelis* (large private homes) and its wider region. Building upon the emerging framework of political ecology of water (Bakker, 2003; Loftus, 2009; Loftus & McDonald, 2001; Swyngedouw, Kaika, & Castro, 2002), the authors assert that the contemporary urban waterscape in Udaipur "has evolved over a long period and is constituted of fractures along which water flows mediating within various regimes which govern and give access to it. This urban waterscape is being made and remade through the circulation of water". And thus, within this urban space, "flows of water are embedded in the larger political economy where it is contested and governed" (Singh et al., Chap. 16).

1.3 Towards a Sustainable, Just and Democratic Urban Transition

Concepts and terms like 'sustainable', 'green', 'smart' splurge some kind of definitional ambiguity that has provoked deep cynicism surrounding these concepts since the formulation of 'sustainable development' almost two-and-half decades back. "...there is little consensus as to what has to be sustained, and how this is to be done" (Mahadevia, 2001: 243). Some even suggest that the very ambiguity of the term attracts a wide range of political and intellectual currents across fragmented environmental movements (Stren, 1992). Again, the term 'sustainable' (meaning 'long-term') also seems to be contradictory as long-term environmental considerations cannot be accomplished as an afterthought to a short-term profit economy. There are significant structural and post-structural criticisms to the concept where critics denounce the approach for skirting round the issue of existing power structures at global, national and local levels and for seeking to achieve sustainable development within structures that in themselves prevent true bottom-up,

participatory, holistic and process-based development initiatives (Castro, 2004; Mahadevia, 2001; Nicholls, 1996).

On a similar note, the pro-metropolis 'sustainable urbanization' document has been criticized for manifesting unilinear mainstream perspective of a positive correlation between urbanization and development and not taking into account nonlinearities and critical approaches especially pertaining to socio-economic and political contexts of developing countries (Mukherjee, 2015a). Within this context, the formulation of the 'Smart City' discourse and the proposed migration of this concept to Indian cities (Burte, 2014) has also generated hot bed of controversy among experts and academicians who are even sceptical about the sheer feasibility of the project. In general, Hollands (2008) observes three characteristics of a discourse organized around terms like creative, intelligent, wired, digital and smart in relation to cities. First, the way these terms are used suggests some linkages between or even conflation of technological and social transformations. Second, the relation between the hype of claimed smartness and the real effectiveness and benefits in a range of real cases remains to be validated. Third, the use of these terms implies a positive and rather uncritical stance towards urban development (Burte, 2014: 24).

Policies seem to be mere political agenda in India especially within the context of its huge, complex and diverse urban scene. These are loaded with political goals, suited to politico-economic interests of its times rather than incorporating social humanitarian outlook. The Indian neo-liberal urbanization experience is studded with new policies at regular interventions paving the way for huge investments, pulling foreign funds and attracting and involving private stakeholders with their market-based approach. Series of technical analyses are also conducted on project and policy outcomes sometimes vividly unmasking the wide gap between pre-project implementation phase and post-project actuality. Projects are also suspended and called off in the middle and then again, other laudable projects are launched, injecting convictions among citizens that the new ones are better equipped to tackle problems. The 'Smart City' plan is not an exception; it is a feature of the proposed second phase of the now buried JNNURM.

Sustainability is dependent on the way we collectively organize ourselves in growing urban centres. Doing so depends on the ways in which we conduct our analysis of urban systems, design and engineer them, and manage their multiple and complex interactions: economic, social and environmental. Global sustainability is not dependent on the technological characteristics of global systems, but rather on the technology and design of local urban systems (Ferrao & Fernandez, 2013). Again, Ehrenfeld (2008) argues that sustainability is a mere possibility that human and other life will flourish on the Earth forever. The notion of flourishing connotes not only mere survival but declaration of life as meaningful in terms of justice, freedom and dignity. These are the attributes that an urban system should provide to their citizens, coupled with respect for and responsibility towards the environment.

Transition towards urban sustainability where 'sustainability' is embedded with 'justice', 'freedom' and 'dignity' claims pertinent information and data on the challenges, opportunities and 'numerous possibilities' (Fatima, Chap. 6) within the

dynamic Indian urban scenario which can be generated and articulated through scientifically based framework of indicators and in-depth historical and ethnographic works across micro politico-economic and politico-ecological trajectories and conjectures.

“In the long run we are all dead” (Keynes, 1923: 80). The very recent bridge collapse incident in Kolkata signifies that the intensity of risks in Indian cities today is massive, affecting not only the marginal heterogeneous multitude, but all. Given the vulnerable scenario, it is doubtful if smart cities would be able to cater to the needs and interests of even the rich and ‘skilled’. This is a watershed moment in Indian urban history, generating warning bells and irresistibly calling for concerted action through more and more scientific information and understanding of the numerous and granular possibilities towards a sustainable, just and democratic urban transition in India. The empirically rich and theoretically informed chapters in the book find relevance against this transformative context.

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Chapter 2

Towards Sustainable Cities in India

Annapurna Shaw

2.1 Introduction

As India becomes increasingly urban, sustainability issues will become more and more important in determining the quality of life of urban residents, the economic productivity of its cities and the state of its natural environment. Between 2001 and 2011, 92 million people were added to the urban population, the largest decadal increase in the last one hundred years, and for the first time, the net addition to urban population exceeded that of the rural population heralding a demographic turning point towards an increasingly urban future. The economic costs of the urban transition will be considerable with India requiring around US\$1.2 trillion over the next 20 years or USD 134 per capita per annum to match the anticipated urban population growth with basic services for urban residents (McKinsey, 2010). With a total urban population of 377 million in 2011, the second largest in the world after China and expected to increase to 590 million by 2031, there is an urgent need to make sustainability a central issue in planning and managing India's urban environment, both now and in the future.

But what constitutes sustainability and how it should be pursued as a policy goal is contested and shows considerable variation both in theory and practice. In the first part of this paper, different conceptual perspectives on urban sustainability are examined, namely, sustainability as understood from the Brundtland Commission's report, sustainable urban form as defined by planners, and the political economy approach of structuralist and post-structuralist scholars such as David Harvey. In the second part of the paper, urban sustainability is examined as policy in the Indian context, from the period before economic liberalization to the present and changes in policy are discussed. The current thrust on smart cities and gigantic urban-industrial corridors indicate that the scale of thinking about the urban has

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changed. The final section turns to the implications of the proposed policies in the context of land availability and sustainability.

2.2 Conceptual Perspectives on Urban Sustainability

The meaning of sustainability and how it can be achieved in the urban context must be the starting point for any deeper understanding of national policy on sustainability. Three conceptual approaches to sustainability are now discussed to show the different meanings it has and how policy prescriptions emanating from them would vary.

2.2.1 *Brundtland Commission's Report of 1987*

Officially known as the U.N. Report *Our Common Future* brought out by the World Commission on Environment and Development (UN, 1987) which was headed by Brundtland, this report has enabled some of the earliest global discussions and policy making on sustainability with both developed and developing countries sitting across the table. The report is considered foundational in sustainability studies as it was among the first to attempt to define sustainability which it did as follows: “*Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs*”. There are two concepts in this definition as given in this chapter of the report: “the concept of ‘needs’, in particular the essential needs of the world’s poor, to which overriding priority should be given; and the idea of limitations imposed by the state of technology and social organization on the environment’s ability to meet present and future needs”. The report also recognized that “environmental stresses and patterns of economic development are linked to one another” on the one hand and on the other, that “environmental and economic problems are linked to many social and political factors”. Thus economy, ecology and social goals are equally relevant for improving the human condition. Together they constitute sustainable development.

Defining sustainability in such a broad way and laying emphasis to local level definitions of ‘needs’ appealed to a large cross section of countries and the definition was widely accepted and its scope extended. The concepts of ‘sustainable city’ and ‘sustainable human settlement’ followed from the report’s concept of sustainable development and were endorsed in several global forums such as the Rio Summit of 1992 (UN Conference on Environment and Development) and Habitat 2 (UN Conference on Human Settlements) in Istanbul 1996 where all government delegations seemed to support the idea of ‘sustainable human settlements’ or ‘sustainable urban development’. At the regional scale, Europe took the lead with the European Sustainable Cities and Towns Campaign, launched in Aalborg, Denmark in 1994.

An important outcome of the Brundtland Report’s definition of sustainability was the development of urban sustainability assessment based on the three

dimensions of economic, social and environmental. Applied at the city level, its objective (Newman, 2006: 286) was to “achieve a simultaneous consideration of social, economic and environmental issues and to achieve a ‘net benefit’ outcome in each area, with minimal tradeoffs”. Urban sustainability assessment in practice has influenced the choice of city development goals and the criteria by which the achievement of these goals can be assessed. The city of Sydney’s Plan of 2005, for instance, used eight criteria from the social, economic and environmental areas (Newman, 2006). In a study of nine cities covering both developed and developing countries, city development plans showed a mix of measures with priorities varying from city to city (Shen, Ochoa, Shah, & Zhang, 2011). Sustainable development plans for the nine cities had different goals—simultaneous compliance on all the dimensions (social, economic, environmental, governance) was not possible. The authors concluded that cities should keep their own short run and long run needs in mind and cross-city sharing of experiences is important.

Satterthwaite (2004) has suggested prioritizing on the basis of the most basic and foundational needs and then moving on to other goals. In his framework for assessing the environmental sustainability of cities, the provision of adequate water, sanitation, drainage and garbage collection come first followed by the goal to reduce chemical and physical hazards within the home, workplace and wider city. Thereafter the goal of achieving a high quality city environment for all city inhabitants becomes important followed by the goals to minimize the transfer of environment costs to inhabitants and ecosystems surrounding the city, and to minimize the transfer of environment costs to people and ecosystems beyond the city region and the future. The latter two goals take care of the ecological footprint of the city (Rees & Wackernagel, 1996) and its impact on future generations, while the former three ensure that the city is livable for the present residents.

While the Brundtland Report’s definition of sustainability continues to be widely used certain practical problems related to its application on the ground have been noted. One of the major ones is the difficulty of balancing the three dimensions of economic, social and environmental in meeting the needs of the present generation. As pointed out by Allen (2009) “The most pressing problem with this model is that it offers relatively little understanding of the inherent trade-offs found in the simultaneous pursuit of these goals. Coupled with this, the picture it provides is too abstract to appreciate how sustainable development unfolds at the urban level, but also to acknowledge the political dimension of the process”. Satterthwaite (2004: 81) observes that “achievement in one sector or location implies a move away from the achievement of sustainable development goals in another sector or location”.

2.2.2 Sustainability of the Built Environment

A key component to the livability of the earth is the way urban areas are being built as this can be done in a business as usual way or it can be done in a way that reduces environmental impact by minimizing carbon emissions and conserving

natural resources such as water. A very significant percentage of the earth's GHG emissions come from buildings and urban transport. Sustainability as defined by the Brundtland Report leaves out the way the urban area is being built unless it is explicitly mentioned as Newman (2006: 286) does in his definition of sustainability which he defines as "reducing ecological footprint (energy, water, land materials, waste) while simultaneously improving quality of life (health, housing, employment, community) within the capacity constraints of the city". The impact of the building of urban areas is increasingly being recognized as a central component affecting the livability of the earth and some experts have suggested its inclusion as a separate dimension to that of the social, economic and environmental aspects already considered as constituting sustainability (Allen, 2009). Since the late 1980s, it has been highlighted in the work of urban planners and architects (Register, 1987, 2006; Farr, 2007) aiming to reduce the negative impact of the built environment through environment sensitive planning and design of individual buildings as well as entire settlements or towns. In the case of buildings, site selection, materials used, energy type and intensity, water use and waste output management can be planned so as to minimize environmental impacts and make the building 'green'. The green building movement which started in the USA in the 1990s began to develop in parallel to the sustainability goals as defined by the Brundtland Report. The idea of a 'sustainable urbanism' or a way of life in cities that is in harmony with nature reinforces the above by considering the totality of urban living and how sustainability can be practiced in the daily routines of urban living.

At the level of the city, there has been increasing interest in what characteristics made a city sustainable and to what extent they could be transferred to other cities. In the last two decades, there is emerging consensus that the traits associated with sustainable urban form/eco city cover broadly the following: compactness, sustainable transport, density, mixed land uses, diversity, passive solar design, greening and closed loop systems for water use, energy and waste management (Jabareen, 2006; Brown, 2006; Pinderhuges, 2004). To these Kenworthy (2006) adds the need for a 'debate and decide' planning process rather than a 'predict and provide' one.

However, while both the above two conceptual perspectives on sustainability have been put to practical use in city planning and design, their effectiveness is constrained by the underlying political nature of planning, values and biases of planners themselves, and the conflicting interests of different sections of society (Versteeg & Hajer, 2010). In developing countries, with an emerging middle class, the conflicts are often seen as a tussle between the brown agendas of the poor who still lack basic services and the green agendas of the better off who dream of parks and leisure places (Marcotullio & McGranahan, 2007). These perspectives have less to say about the larger process of urbanization and its drivers. Sustainability at the level of the individual building or settlement can hardly be seen in isolation of the larger processes at work. For this we need to turn to the third perspective.

2.2.3 *Political Economy Approach*

Alongside the dominant views of sustainability and what is needed at the policy level to achieve it, there has also been recognition that, at the global level, sustainable development is not possible without changing overarching structures of power in the global system of countries. This has been acknowledged by institutions working within the United Nations itself. For instance, in the Brundtland Report (1987), it has been observed that “A world in which poverty and inequity are endemic will always be prone to ecological and other crises”. According to the UN Habitat (2003: 43) “The main single cause of increases in poverty and inequality during the 1980s and 1990s was the retreat of the state”. Such views echo the observations of independent scholars who have pointed to “Poverty as a fundamental cause of environmental degradation” (Neumann 2006: 85).

This approach of delving into the causes of environmental degradation and the approaching environmental crisis (should there be no global consensus on reducing GHG emissions) rather than defining what sustainability is has also been the characteristic of a number of structuralist and post-structuralist scholars whose work has been gaining prominence, particularly since the global economic slowdown of 2007–08. But the latter go much further with some such as Davis (2006) holding the view that sustainable development is not possible under neoliberal capitalism as it is increasing poverty and inequality. Others such as David Harvey believe that sustainable development is not possible per se under the capitalist mode of production.

According to Davis (2006: 17) “rapid urban growth in the context of structural adjustment, currency devaluation, and state retrenchment has been an inevitable recipe for the mass production of slums”. That a shift towards market based solutions to development problems and the lessening of state involvement has been a significant factor deterring advances in sustainability is seen in the growing numbers of slums in the poorer countries. On the other hand, rapid increase in numbers of the super-rich and high net worth individuals has meant a jump in demand for luxurious homes and a life style that is much more demanding of natural resources. Thus Davis (2006: 134) notes that “Sustainable urbanism presupposes the preservation of surrounding wetlands and agriculture. Unfortunately, Third World cities—with few exceptions—are systematically polluting, urbanizing, and destroying their crucial environmental support systems”.

Harvey (2008) points to an ‘intimate connection’ between capitalism and urbanization. According to him, the surplus product of the capitalist mode of production has to be reinvested to generate more surplus value—otherwise capitalism will be in crisis. Taking examples from the modern history of the West, he explains how urbanization has played a particularly active role as a stabilizer of the capitalist system, for instance, in France under Louis-Napoleon Bonaparte in 1845 when Paris was modernized and in the USA after 1945 when the post-war boom was led by the construction of highways and rapid suburbanization. His last example is of China’s urbanization since the 1990s when over 100 cities with a population of above 1 million have been building housing and other infrastructure

to meet their growing population. In fact, he views the urbanization of China as the prime stabilizer of global capitalism in the last two decades, via its demand for various goods and services which have kept many industries in the West afloat. Likewise, its demand for minerals and natural resources have benefitted the prices of these commodities and helped exporting countries to boost their economies.

According to Harvey (2008), the other side of the urbanization process under capitalism has ‘an even darker aspect’ as it involves “repeated bouts of urban restructuring through ‘creative destruction’”. It is driven by existing land uses becoming less profitable on land the value of which keeps increasing, an example being slum housing in the centre of the city. Such uses must change for the land to yield its highest return but the process of urban renewal affects the poor and powerless the most resulting in their displacement (Harvey, 2008). This process of displacement Harvey calls ‘accumulation by dispossession’ and it lies at the core of the urban process under capitalism. Such a process is now unfolding in the developing countries as they make the transition from predominantly rural to urban societies.

Harvey’s concept of ‘accumulation by dispossession’ is somewhat similar to Sanyal’s (2007) ‘accumulation as development’ but with significant differences. According to Sanyal (2007: 226), postcolonial capitalism not only destroys other modes in the process of its ‘arising’ but also creates a space outside of capital for the dispossessed to eke out a living. The creation of this space is a reversal of the process of dispossession but is a constitutive part of the dynamics of postcolonial capitalism. By sheltering the dispossessed, it “prevents them from banging on the doors of the glittering world of capital”. The space Sanyal is referring to is the urban informal sector which houses the city’s poor in its slums and provides livelihoods that enable them to subsist in postcolonial capitalism’s other which he calls ‘the need economy’. Both the accumulation economy and the need economy coexist and this very coexistence differentiates postcolonial capitalism from capitalism in the advanced economies.

By focusing on the larger forces that are framing the context of development, the political economy approach provides an alternate way of viewing the framing of policy on urban sustainability in India and its subsequent changes.

2.3 Urban Sustainability as Policy in the Indian Context

In this section, I turn to the way urban sustainability has been understood in the government of India’s urban policy and its implementation. As mentioned at the start of the paper, the meaning of urban sustainability becomes important in the policy context as well as in the practices such policy supports at the ground level. Although the term ‘sustainability’ and its use in official policy documents is present only post 1987, that is, after the Brundtland Report, a focus on human needs as advocated in the report has been present in the government’s policy on urban basic services, going back to the early 1980s. For instance, in 1981 when the UN declared the 1980s to be the UN’s International Water Supply and Sanitation Decade, the

Indian government set a goal of 100% coverage of urban households by piped water supply by 1991, 100% coverage of Class I towns with sewerage facilities and toilets, and in other towns, 80% of the population to be covered by low cost sanitation facilities. This goal was not achieved and remains to be achieved even today as, for instance, indicated by the data on water supply. As revealed by the census of 2011, piped water is now available to 70.6% of urban households, a latrine to 81.4% (72.6% with a water closet) and electricity to 92.7% of households. While the target set in the 1980s remains unmet, what should be noted is the goal of universal coverage, at least of piped water supply. In more recent times, the government has not mentioned universal coverage but has been more targeted in its focus regarding the improvement of basic services. Thus, for instance, JNNURM funds released by the central government during the period 2005–2014 have gone primarily for the upgradation of water and sewerage facilities in 64 selected cities. The Modi government's counterpart to JNNURM is AMRUT (Atal Mission for Rejuvenation and Urban Transformation), launched in 2015, which will be covering 500 cities and attempting to ensure that every household in the selected cities has access to a tap with assured supply of water and a sewerage connection. Although the coverage is more extensive than that under JNNURM, it will still leave a balance of 7000 urban places in the country without the financial support of an overarching central program.

Apart from water supply and sewerage, a focus on human needs is also seen in the early piecemeal and individual city efforts to improve slums through community development projects, the earliest of which date back to 1958–60 when Ford Foundation provided aid (NCU, 1988). They were continued and extended with aid from UNICEF and resulted in the Urban Basic Services program of 1981–1984, a partnership between the government of India and UNICEF, and extended to 42 towns. In the Seventh Plan (1985–89) this program was extended to 168 towns. Post economic liberalization, during the Eighth Plan (1991–1997), it was modified and implemented as UBSP (Urban Basic Services for the Poor). In the last 9 years, from 2005 to March 2014, under JNNURM, the program continued as BUSP (Basic Urban Services for the Poor) which was to provide shelter, basic services and related civic amenities to those living below the poverty line. On the employment front, since 1997 and continuing to the present time, there is SJSRY (Swarna Jayanti Shahari Rozgar Yojana) for wage and self-employment creation among the poor. Targeting below the poverty line households, this program has focused on women as Resident Community Workers and as leaders of Neighbourhood Groups to decide on micro level infrastructure building (Shaw, 2006). It has also provided training to women in various crafts and skills.

While the human needs aspect of sustainability has been present in urban policy from the early plans and has been targeted, particularly, at below poverty line households, sustainability in terms of the built environment and its ecological footprint became a policy concern much later, only in the Eleventh Five Year Plan (2007–2012). With policy recommendations made by TERI (The Energy and Resources Institute) the built environment dimension was included, for the first time, since the national planning exercise started in 1951. TERI's suggestions

included an environmental rating system for urban services provided by the local bodies: Urban Services Environmental Rating System (USERS) and a national green building rating system called GRIHA which was launched in November 1, 2007. Thereafter, there was the creation of a National Action Plan on Climate Change in 2008 under which the National Mission on Sustainable Habitat was launched in June 2010. Its objectives included enhancing the energy efficiency of buildings, urban waste recycling and a shift towards public transport. It stressed the need for integrating climate change objectives into the planning process.

Since 2010, in keeping with developments in the West, there has been growing interest in the Smart City and smart growth. One of the earliest official references to this is in the October 2011 document of the Twelfth Plan's Working Group on Urban Strategic Planning which defined smart growth as follows: compact, transit-oriented, walk to work, bicycle friendly land use; neighbourhood schools; mixed use development; public transport and IT enabled governance. The linking of environmental sustainability and information technology driven governance and services forms the basis of the smart city or smart growth idea which appears to be increasingly attractive to India's administrative and political elite as a way to leapfrog the difficulties of building and maintaining ordinary towns and cities. During the last years of UPA (United Progressive Alliance 2004, 2014) rule, the Indian government was planning to develop at least two smart cities in each state with features like intelligent transport, e-services and carbon neutral status. The testing ground was to be medium sized cities like Ujjain or Jabalpur—with half a million to one million people. The UPA sought the expertise of the Austrian Institute of Technology (AIT). The AIT was to assist in the planning and development of the roughly 70 smart cities. The current government under Narendra Modi and the BJP (Bharatiya Janata Party) plans to build 100 smart cities. Budget 2014 set aside 70,600 millions, enhanced to Rs. 4,80,000 millions in 2015, to be spread over 5 years and 20 cities in the first phase. The smart city idea presents great opportunities for technology vendors like IBM, Cisco, ABB, Siemens, Alstom and Schneider to establish a significant presence in the Indian market through large scale deployments of IT related infrastructure and the Smart Cities Council, a US based association of real estate interests, has recently opened a regional chapter in India. Private sector enthusiasm in smart cities is seen in a 2013 report (CII, 2013: 1) where the Confederation of Indian Industry in partnership with Cisco has urged a 'fresh approach' to urban planning and the need to add another layer to it, 'the layer of ICT planning'. This will enable the achievement of 'a better and sustainable urban India' and should encompass Smart Buildings, Smart Utilities, Smart Healthcare, Smart Education, Smart Governance and Smart Transportation.

The private sector's interest in smart cities has been matched by that of the popular press and in the last few years, there has been much hype about them in leading newspapers and magazines (Indian Express, 2014) and unofficial discourse. Official documents on the smart city have started to become publicly available since 2014 with the revised manual for planning and plan implementation framed by the Ministry of Urban Development, uploaded in its website in February 2014

(Government of India, 2014a, b: 152–157). In August 2014, after the present government announced its intention to build 100 smart cities in the Budget Speech of the Finance Minister, a ‘Draft Concept Note on Smart City Scheme’ was made available in the Ministry of Urban Development’s (MUD) website. As a first step, the MUD convened a National Conclave of States and Union Territories on September 12, 2014 for suggestions. The note has since been revised and, in June 2015, replaced by a formal mission statement on smart cities that provides a framework within which the context, aims, operational procedures and guidelines to obtain central funding are given. An important clarification it provides is regarding what type of urban place can be selected to be a smart city. According to the mission statement (2015: 8), these can either be parts of existing cities with little change in the existing built-up area (retrofitting), or parts of existing cities with replacement of existing built environment and creation of a new layout (redevelopment), or creating new cities from scratch (greenfield). In addition, every smart city proposal must have a pan-city feature which means the application of a smart city solution to the entire city-wise infrastructure. These proposed strategies are a contrast to the few smart cities that are already in the process of being built, for instance, Kochi Smart City, Lavasa (Maharashtra), Wave City (Ghaziabad), Gujarat International Finance Tec-City (GIFT), the seven smart cities of the Delhi-Mumbai Industrial Corridor Project and Solar City (Bhubaneswar, Odisha), all of which are greenfield projects. Several of them have faced land acquisition problems which have slowed their progress.

The Smart City Mission statement, however, does not elaborate on an issue that has been missing or understated in the discussion of smart cities in the Indian context, namely, who will be the persons living in these cities, an affluent elite or a cross section of people, including the poor. This aspect has remained vague and the Finance Minister’s statement that the 100 smart cities could be the potential destination of the ‘neo middle class’ has added to the lack of clarity. The early concept note had attempted to address the issue of social inclusiveness via the requirement of a process of seeking community opinion in creating the city development plan. Through its Citizen’s Reference Framework (CRF), a “structured document which captures aspirations and expectation of residents/citizens of the town/city (p. 25)” feedback from urban residents would be incorporated in planning. The agencies preparing the CRF thus needed “to talk to housewives, students, artisans, traders, employees, entrepreneurs, senior citizens, NGOs, Government agencies, scientists, artists and opinion-makers etc.,” (p. 25) though there was no specific mention of reaching out to the poor. However, even this partial attempt at inclusiveness has been removed from the current mission document which mentions ‘sustainable and inclusive development’ (p. 5) and ‘affordable housing, especially for the poor’ (p. 6) as being one of the core infrastructure elements in a smart city without detailing how they would be ensured.

The smart cities mission is to be implemented at the city level by a new entity, a Special Purpose Vehicle (SPV) which will be headed by a full time CEO and have nominees of the central government, state government and the local urban body on its board of directors. One of its purposes is “to ensure operational independence

and autonomy in decision making” and “delegating the rights and obligations of the municipal council” to the SPV in areas selected for smart city upgradation is encouraged. Clearly, the intention of the mission is to bypass the existing elected local government bodies to speed up decision-making and plan implementation.

Given the huge requirement of funds to enable smart city projects, Budget 2014 provided for easier entry of foreign investment to finance the development of smart cities. The requirement of built-up area and capital conditions for FDI was reduced from 50,000 to 20,000 m², and USD 10 to USD 5 million respectively with a 3 year post completion lock in. Moreover, projects which commit at least 30% of the total project cost for low cost affordable housing will be exempted from minimum built-up area and capitalization requirements, with the condition of 3 year lock in. These were announced in the Finance Minister’s Budget Speech in April 2014 (Jaitley, 2014).

Budget 2014 has also promoted the growth of industrial corridors. The Finance Minister announced that the development of industrial corridors, with smart cities linked to transport connectivity will now be the cornerstone of the strategy to drive India’s growth in manufacturing and urbanization. As a first step, a National Corridor Authority will be set up with 1,000 millions and master planning for the following corridors will be undertaken: Amritsar Kolkata Industrial Corridor with 7 smart cities, Chennai-Bengaluru Industrial Corridor region with three smart cities, Bengaluru Mumbai Economic Corridor and Vizag-Chennai Corridor. This strategy of future urban and industrialization along corridors is based on the fact that the pattern of urban growth has roughly followed linear development along major highways from the seven largest metropolitan areas of the country (Shaw, 1999). However, the availability of land for planned development of infrastructure along these routes and its impact on local populations remains an issue of concern, not openly discussed or addressed in official policy documents.

2.4 Implications of the Proposed Policies

While the growing interest, both from government and outside agencies, in making Indian cities sustainable is a welcome trend given India’s increasing urbanization, social and economic inequality, and environmental pressure on scarce resources, are the above policies focusing on smart cities and massive industrial corridors, the best way to go about it? How far they will contribute to overall urban sustainability is already being questioned.

Some have raised the issue of the relevance of smart cities in the existing urban situation where basic services to the existing urban households are not yet available on a universal basis and questioned whether the smart cities project is the ultimate great escape (Desai, 2012; Dutta, 2014; Nair, 2014a). Unable to fulfil basic services in the existing cities, the government seeks to create utopian enclaves of order and exclusivity. A second issue is its limited coverage, a point also raised by critics of UPA’s JNNURM which focused primarily on 65 mission cities. If successfully

built, the hundred smart cities will create another layer of inequality to India's urban system for as compared to the non-smart cities, they will enjoy many more conveniences (Burte, 2014). As models to be emulated, a hundred smart cities will have little impact in an urban system of over 7200 urban places most of which are financially strapped.

Another point is whether the real costs—financial, social and environmental—have been factored in both with regard to building smart cities and creating industrial corridors. For instance, critics point out that the building of the gigantic Delhi-Mumbai Industrial Corridor (DMIC), 1483 km long and covering six states, in one of the most arid regions of the country has commenced without a satisfactory accounting of water availability and its costs in terms of the continuance of pre-existing livelihoods, mostly agricultural and pastoral, in the area (Khosla & Soni, 2012). With little scope for water supply augmentation, the currently available water supply in the region will have to be diverted to new industrial and urban uses and so, the livelihoods of the local population that depended on this water will no longer be available. This raises the issue of livelihood rehabilitation of the existing population of which there is no discussion in official reports. And of course, the most glaring issue, that of land acquisition has not been factored in at all. The DMIC experience already indicates plan changes that have occurred because of this. For instance, at the southern end of the DMIC corridor, work has started in Dighi in Maharashtra and Dholera in Gujarat. The size of Dighi port node has been cut down from 25,000 ha to a mere 3,600 ha and there have been protests in Dholera over land acquisition (Nair, 2014b; Kumar, 2015). It is estimated that the DMIC by creating new jobs in its industrial nodes and associated smart cities will attract new migrants and around 94 million new migrants are expected into the region of the corridor by 2039. Will there be adequate housing and related infrastructure for this massive influx?

With the first two rounds of the selection of cities for the mission over by May 2016, a major point of friction has emerged in the way the SPV board of the smart city is structured and its powers vis-à-vis pre-existing elected local bodies. It is being seen as an attempt to take away the powers of these bodies by both the central government and the state government. Greater representation of elected local government members in the SPV board has been demanded by the Solapur Municipal Corporation in Maharashtra recently selected to be a smart city (Phadke, 2016).

2.5 Conclusion

Since the last decade, the central government's interest in managing urban growth has deepened with the passage of several regulations that have been adopted by the states (Shaw, 2012). While attempting to streamline key urban processes in the states, the central government is also encouraging a rapid scaling up of activities, for instance, in the case of land with the removal of the Urban Land (Ceiling and Regulation) Act as a central act in 1999 to enable larger plot size transactions.

Concurrently with economic growth in China declining and global fears of its 'hard landing', India with its large and growing market is being regarded as one of the future drivers of global growth (Sharma, 2016). The huge sizes of the planned industrial corridors clearly indicate that the scale of thinking about India's urbanization process has changed. Stretching from one end of the country to another, when operational, these planned linear developments are likely to dominate the economic space of the country and change migration flows towards them. The smart cities being built within the corridors will further reinforce this. The goal of planned urbanization is now more than just settlement planning. As in the case of China, India's future urban growth offers an immense opportunity for investment from both domestic and external sources. The Japan government has invested in the Delhi-Mumbai corridor and is also financing a high-speed rail line of more than 1 trillion yen (\$8.11 billion) in loans to construct India's Rs. 9,80,000 millions fast train (Roche, 2015). The government hopes that such investment will be the driver reviving the national economy and ensure a high rate of growth of GDP.

This would explain the scale of the corridor projects and the massive size of individual planned cities such as Dholera which with an area of over 900 km² will be more than twice the size of Brihan Mumbai Municipal Corporation, India's largest city. However, the larger the sizes of the corridors and cities, the greater will be the need for land, and the possibility of loss of homes and livelihood disruption of the pre-existing population. If the latter cannot be absorbed in the dynamic new economy of the emerging corridors, they will be relegated to subsisting in a 'need economy' of minimal living standards and left out of the benefits of the expected upturn in economic growth. Focusing on the upgrading of pre-existing towns and cities along with creating new smart cities from scratch could minimize some of the adverse effects.

Even if all goes well, the new cities will take 20–30 years to reach their full potential and converting pre-existing cities or sections of them into fully IT enabled ones will also take time. What will be happening to the rest of the urban system during this time period? As mentioned earlier, the present government has come up with a program called AMRUT (Atal Mission for Rejuvenation and Urban Transformation) for the upgradation of 500 urban places. This is in the pattern of JNNURM which ended in March 2014 and like JNNURM, its coverage will be selective. What will happen to the hundreds of ordinary/non-smart cities and those not covered under AMRUT? It is critical that they are not neglected. They too must continue to be improved with infrastructure investment and sustainability plans and practices. In particular, the focus must be on smaller cities and emerging towns where so much new construction is going on and where there is still scope to implement sustainable land uses, sustainable building activity and public transport.

A key aspect that needs to be highlighted and planned for is the way India's urbanization process has unique elements and these should be leveraged to achieve sustainability rather than blindly following a model based on the experiences of Western countries or even China. The uniqueness has to do with the way urbanization is spreading in the country, particularly in the last decade, with the emergence of thousands of small, new towns (Denis, Mukhopadhyay, & Zerach, 2012;

Pradhan, 2013) on the one hand, and on the other, through the movement of people from rural to urban areas and then back again while maintaining both rural and urban links (Echanove & Srivastava, 2015). Such circularity in migration along with long distance commuting from rural areas to nearby towns and cities is leading to a blurring of rural–urban differences with villages becoming a part of larger urban systems and calling into question the relevance of the very categories ‘rural’ and ‘urban’. Responding to these demographic dynamics by focusing infrastructure upgradation in smaller urban places while simultaneously providing affordable rental housing in the larger cities and improving transport links between urban places and their hinterlands would be a cheaper and less traumatic way of integrating diverse parts of the country into a common market without the pain of forcibly converting agricultural lands into planned cities and industrial corridors.

Finally, given the huge challenges of providing India’s growing urban population access to basic services and housing, adding an IT layer to the planning process and service delivery can be a potentially useful tool to better the quality of life and make Indian cities more livable. But such policies must be grounded in the political will to follow through and implement sustainability practices across the urban system and not just in a handful of selected cities. Moreover, it must be inclusionary drawing into its ambit all residents and not just the middle and upper middle classes.

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Part I
Governing Investments
and Infrastructures

Chapter 3

Structural Limits to Equitable Urbanization

Achin Chakraborty

3.1 Introduction

It is a commonplace observation that spatial inequality in India has been on the rise in the past two decades. To reckon such inequality, however, one needs to be specific about the spatial units that one is focusing on and the space or dimension in which inequality is being measured. Recent studies on convergence/divergence show that inequality in per capita state domestic products in India has increased. There is also evidence of two ‘convergence clubs’—a low income club and a high income club of states, and there is little evidence of mobility of states between the two clubs (Bandopadhyay, 2011). However, if we measured spatial inequality in the dimensions of human development, we would have found convergence across states over time, which is not surprising given the fact that most of the commonly used human development indicators have natural upper limits. Having observed such apparently contradictory movements in measured spatial inequality in two different dimensions, viz. per capita state domestic product and indicators of human development, can one say that the development process in India has been iniquitous?

Conclusions about equity or social justice cannot be made exclusively on the basis of factual information on rising or falling inequality. Spatial inequality in certain aspects of the standard of living can be thought of as the manifest outcome of certain processes which are iniquitous. However, the connection between inequality and inequity is not straightforward. In the general context of economic inequality and equity, in a very perceptive essay Tendulkar (2010) provocatively asks “would a high rate of economic growth with *rising* relative inequalities in

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income be necessarily inequitable?” What Tendulkar wants to underline here is that any ethical evaluation of rising inequality has to take into account the overall increase in the size of the cake as well. Thus rising inequality in an economy which is growing rapidly may not be considered iniquitous if, for example, in the process, the economy achieves an egalitarian distribution of the basic necessities of life. If a decline in the measured inequality in the distribution of income happens to coincide with an overall economic regress in terms of a decline in national income, one is not sure if this change can be called equitable as sections of the people in the bottom rungs of distribution may experience absolute deterioration in their condition because of the overall economic decline. As Scitovsky (1986, cited in Tendulkar, 2010) notes “[m]ost people consider equitable an economic system or economic organisation that leads to an egalitarian or near-egalitarian distribution of the necessities of life”. The recent trends in urbanization around the world show that the bigger cities become the dominant economic centres in which the high-end services such as ICT, finance and insurance services gradually replace manufacturing activities. As the bigger cities become more prosperous but less inclusive about various low-skilled workers, spatial inequality between these cities on the one hand and the medium and small cities on the other, in terms of average income or wealth, increases. This could be viewed as something inevitable in a dynamic economy, and not necessarily inequitable if by equity we mean socially perceived fairness in distribution of economic rewards. The reflection of this view can also be seen in the following quote from Dreze and Sen (2013):

The worst infringement of *principles of equity in India* is not so much the unseemly wealth of the rich or super-rich, but the fact that so many people still lack the basic requirements of dignified living – food, shelter, clothing, sanitation, health care, and schools for their children (218, emphasis ours).

Clearly, by inequity Dreze and Sen do not mean measured inequality in the overall distribution of income or wealth. Their focus instead on the unequal ability to fulfil the ‘basic requirements of dignified living’. This provides an ethical foundation to our attempt to reconcile the goal of social justice with the imperatives of economic prosperity of cities.

In the next two sections, we elaborate further on the three goals of urban development and the underlying tension among them. In Sect. 3.4, the linkages between urbanization and the structure of the economy are discussed, which, together with the discussion in Sects. 3.2 and 3.3 form the analytical core of the paper. In Sect. 3.5, we first present the recent progress in urbanization in India and its analytical connections with the changing structure of the economy. In the light of what we discuss in the previous sections, we examine the structural constraints on the possibility of achieving equitable urbanization. Section 3.6 takes a critical look at a specific scheme that the Government of India launched, which was supposed to reduce spatial inequality and ended in failure. Section 3.7 concludes.

3.2 The Tension

It has been well recognized in the urban and regional planning literature that an attempt to combine sustainability with social justice in a policy framework is likely to lead to a deep conceptual as well as practical conundrum. A well-known scholar on urban and regional planning wrote 20 years ago in his now oft-cited paper,

In the coming years planners face tough decisions about where they stand on protecting the green city, promoting the economically growing city, and advocating social justice. Conflicts among these goals are not superficial ones arising simply from personal preferences. Nor are they merely conceptual, among the abstract notions of ecological, economic, and political logic, nor a temporary problem caused by the untimely confluence of environmental awareness and economic recession (Campbell, 1996).

Thus conflicts among the three goals—economic growth, sustainability and distributive justice—are seen as something inherent in the nature of urban planning or urbanization policy itself. Yet, the idea of sustainable development in general is often posed in an overwhelmingly normative frame. Seeped in a kind of vague holism, it ends in a list of things that ought to be done, without delving deep into the underlying conflicts and contradictions. The goals of sustainability and inclusiveness (taken as a variant of the social justice goal) are usually combined in a way that creates the impression that they form a seamless whole, and could be achieved without problems only if the international community had been sensitized about the importance of setting such goals. The UN documents extolling the virtues of Sustainable Development Goals (SDG) are examples of this kind. While setting the post-2015 development agenda, 17 SDGs were adopted at the UN summit held in September, 2015. Goal 11, which says “Make cities and human settlements inclusive, safe, resilient and sustainable”, addresses urban issues directly. In their attempt to sensitize the international community about the need for setting goals, which the policy makers and the wider communities are supposed to have agreed upon, the UN reports often repeat pious-looking easy platitudes and avoid any attempt to provide analytical insights into the deep structural conflicts. One can hardly get any insight from the statements of the following kind:

We are announcing today 17 Sustainable Development Goals with 169 associated targets which are integrated and indivisible. Never before have world leaders pledged common action and endeavour across such a broad and universal policy agenda. We are setting out together on the path towards sustainable development, devoting ourselves collectively to the pursuit of global development and of “win-win” cooperation which can bring huge gains to all countries and all parts of the world.¹

The wistful thinking of ‘win-win’ cooperation can hardly be taken as a guide for implementation of the agenda.

¹Quoted from “Draft outcome document of the United Nations summit for the adoption of the post-2015 development agenda”.

Useful distinction can be made here between two kinds of conflicts. One kind of conflict arises out of the incompatibility between the normative goals and the systemic or structural logic that connects a policy action to its outcome. In other words, if the normative standpoint is not sensitive to the positive-analytic aspects of the social phenomenon in question, then policies driven by such normative concerns may end up in unintended consequences. For example, even though it is well known that for sustainable use and equitable distribution of potable water specific pricing schemes can be devised and implemented, the political class often shows reluctance in imposing water tariff for the fear of losing popularity. Conflicts of the second kind include those which are inherent in the nature of the goals themselves. For example, a concern for social justice now (as opposed to justice between the present and future generations, which is at the core of the concept of sustainability) requires redistribution to the poor. But such redistribution also entails increased consumption vis-à-vis resources to be available for investment in, say, green technology. Conflicts of both these kinds throw up difficult challenges to the policy makers. With a suitable design for redistribution it may be possible to reduce the extent of trade-off. However, the likelihood of success of such a design crucially depends on how well the structural/institutional parameters have been understood. This is the underlying motivation of the paper.

It would be apposite to make a distinction at this point between the planners' perspective and an economist's perspective on urbanization, even though an attempt of this kind is vulnerable to the charge of over-simplification. Urban and regional planners essentially view urbanization as something to be designed for some greater good. In this perspective, planned urbanization is supposed to fulfil other ends that are valued. Besides the instrumental worth of a specific plan, participatory urban planning as a process could also be viewed as a goal in itself. By contrast, economists tend to view urbanization as a consequence of economic development. The planning and design aspects of cities and towns are usually subsumed under the imperatives of economic growth and the structures capable of sustaining economic growth. The imperatives of economic progress on the one hand and sustainable development on the other may at times impose limits on the social justice goals that planners and public policy makers envisage.

3.3 Green, Growing or Just?²

It sounds almost trivial if we say that the contemporary world is marked by deep inequities in living conditions, on the one hand, and by serious threats to the prospects of good life in future, on the other. These two central problems of contemporary world are often put succinctly as intergenerational and intragenerational injustice. Yet, the typical development planner sees the city as a location

²The idea of this triad, as appears in the previous quote, has been borrowed from Campbell (1996).

where investment, production, consumption and innovation take place. The dominant approach in the policy circles is one of competition—the city is supposed to be in endless competition with other cities for markets and for new industries. A typical recent example of such an approach is Asian Development Bank sponsored study *Competitive Cities in the 21st Century* (Choe & Roberts, 2011). To quote from this book,

Cities play a crucial role in national economic growth, especially in Asia, where they have urbanized quickly over the last 30 years, beginning with manufacturing and now with the booming service sectors. However, Asian cities struggle with the impacts of fast growth. Overcrowding, environmental degradation, high land costs, and worsening mobility of people and goods are some conditions *reducing the productivity as well as inhibiting industrial or business activities* (p. xviii, emphasis ours).

The viewpoint expressed in this quote takes problems like overcrowding, environmental degradation, etc., as hindrances on productivity and business activities, not as something that affects people's lives in a direct manner. Environmental degradation does affect the quality of people's lives directly. The evaluative criteria adopted here are clearly productivity and whether the cities in question promote or inhibit industrial and business activities, even though the authors ask later at some point, almost un-self-consciously, "what is necessary to create enabling environments and strategic infrastructure to help cities more competitive, sustainable, and inclusive?" However, nowhere in the book do the authors seriously deal with the tension and conflicts that might arise among the three goals—being competitive, being sustainable and being inclusive. The book centres on the concept of 'cluster-based city economic development' (CCED)—a concept introduced by ADB in 2008 with the claim that it offers "a new way of developing cities into engines of economic growth". This leads us to think and wonder how one should conceptualize the normative/ethical content of urbanization. If a perspective suggests that cities be seen exclusively as engines of growth, does not it ignore an entire range of things that people have reason to value? At the risk of sounding cliché, one wonders, what about 'putting people at the centre of development'³? The plurality of human concerns must be reflected in the normative viewpoint relevant for urbanization.

Viewing cities as engines of growth invites obvious criticisms from the other end of the normative spectrum that bases its logic on the need for sensitivity to the possible irreversible degradation of nature. While the viewpoint that takes cities as engines of growth rightly invites criticism, the sustainability argument is also often seen as vulnerable to the charge of 'vague idealism' which is built upon a rather romanticized view of a pristine rural pre-industrial society. If sustainability was redefined and incorporated into a broader understanding of political conflicts in urbanizing societies, it could be a powerful and useful organizing principle for planning and public policy (Campbell, 1996).

³The urge to 'put people at the centre of development' has appeared in every Human Development Report that UNDP has put forth since 1990.

The plurality of human concerns is the key normative standpoint that we choose to hold here, in the spirit of Amartya Sen's articulated preference for a middle ground between various kinds of extremities—both ideational and practical. It may be useful here to recall the useful distinction between the two kinds of plurality, viz. competitive plurality and constitutive plurality, which Amartya Sen earlier made while building up the case for a plural conceptualization of the standard of living. While by 'competitive plurality' he means different viewpoints standing as alternatives to each other and any one of them being accepted while rejecting others, 'constitutive plurality' refers to viewpoints that supplement rather than supplant each other (Sen, 1987). We argue in this paper that there is good reason to hold on to constitutive plurality when we identify the evaluative criteria for assessing consequences of urbanization. A plural viewpoint helps us avoid extremities of both kinds—viewing urbanization exclusively as an engine of growth on the one hand, or viewing the same as inevitably tending to environmental and ecological disaster, on the other. However, accepting the constitutive plurality approach does not necessarily mean that one must ignore all the conflicts among the diverse viewpoints and concerns and rush towards a seamless synthesis. On the contrary, it actually opens up the richer possibilities of the encounter with conflicts head on, treading the bumpy road of creative tension.

Concerns have rightly been raised against the recently launched idea of the *smart city* in India. In the brief review of the critical literature presented in the Introduction to this volume, Jenia Mukherjee summarizes the main points of criticism against smart city which centre mainly on the inherent inequity as manifested in the form of some kind of spatial inequality. As we mentioned earlier, one of the major normative concerns of policymaking in general is social justice. However, as the concept of social justice is broad enough to encompass relational as well as distributional aspects of inequality, in public policy discourse the focus is narrowed down to the equity consequences of policy interventions. Even though at the abstract level the definitions of vertical and horizontal equity are well understood, in the specific context of promoting urbanization by promoting the concept of 'smart cities' or 'cluster-based city economic development', the interpretation of equity can take a variety of forms depending on the way one seeks to capture empirically the equity consequences of the policy.

While the principle of horizontal equity in the context of individuals says that individuals who are essentially identical should be treated the same, the principle of vertical equity says that dissimilar individuals should be treated differently. But here we are concerned with regions or spatial entities rather than individuals, and therefore the notions of equity become more complex. However, there is a connection between the two types of inequality. There is a good deal of evidence that inequality in income/consumption has increased in India in the post-reform period, and there is also evidence that spatial inequalities in the same dimensions has also increased. Given this, it would be interesting to know how much of the increase in overall inequality could be accounted for by the increase in the spatial inequality. Empirical studies on the nature of spatial inequality in a variety of countries show that a key determinant of household well-being in a region, over and above

household specific characteristics, is the quantity and quality of infrastructure in that region. One is then naturally inclined to think that reducing inequality between regions or between rural and different size classes of cities and towns is an important way of reducing overall inequality.

3.4 Linking Urbanization to the Structure of the Economy

Urbanization is generally seen as a consequence of development. The economy is supposed to undergo structural transformation as it develops. The typical teleology suggests that as an economy develops, first the relative share of agriculture and the allied sectors in its GDP declines and that of manufacturing increases. With further development, the services sector's share increases and the other two sectors' shares decline. The process of structural transformation from agriculture into manufacturing and then services also involves a shift of labour from rural to urban areas. Since manufacturing and services activities are typically seen as urban activities, the link between economic development and progress in urbanization is thus presumed to be conceptually established. Cross-country regressions support some association between urbanization and economic growth at various levels of significance.⁴ However, the direction of causality, like other kinds of causal connections, is not easy to decipher. In policy thinking, there is a view that planned urban development through publicly provided infrastructure is good for growth. A number of documents produced by international agencies for the developing countries express this view. On the other hand, economic growth is believed to 'cause' urbanization. A natural corollary of this view is that the nature of urbanization can therefore be explained by the nature of the growth process. Against this dynamic context of supposedly bidirectional causality, how does one conceptualize the normative consequences of urbanization? What is 'the good' of urbanization? Is it valuable as a 'dynamic engine of growth' or as something that expands the opportunity of people to do or be what they have reason to value?⁵

Some of the policies for urban development in India seem to have taken note of the bidirectional causality. The viewpoint that sees cities as 'engines of growth' tend to argue that investment in infrastructure can be self-sustaining in the following way. As investment in infrastructure pushes up economic growth, the fund for further investment in infrastructure is also more likely to be available through higher tax and non-tax revenues that accompany higher growth of incomes in cities. This optimistic

⁴However, the relationship between urbanization and the share of manufacturing and services is less straightforward. Among countries with large natural resource export shares, there is no significant relationship between the two. Many of these countries have achieved high levels of urbanization without an associated structural transformation.

⁵The latter draws on Amartya Sen's conceptualisation of an individual's well-being in terms of 'functionings', defined as a set of 'doings' and 'beings' that an individual has reason to value. Her capability is the freedom to choose from alternative bundles of functionings.

view about the possibility of a kind of self-sustaining urban development leads to the belief in the virtues of such organizational models as the public–private partnership. However, one can argue that the consequences of ‘cumulative causation’ or the smart getting smarter go contrary to the equity goal.

Even when there is no concerted effort in pushing the cities as engines of growth, spatial inequality rises as a consequence of globalization-driven economic growth. Such a growth process in a country whose population remains largely rural and semi-rural has spatial distributional consequences. Distance from market can influence the individuals’ economic prospects in important ways. It can intervene critically between effort and reward by alternatively facilitating or limiting access to market-based opportunities (Krishna & Bajpai, 2011).

The Approach to Twelfth Plan underlines the need to support “small and medium size towns and expanding villages that have locational and natural resource advantages for future socioeconomic growth” (Planning Commission, 2011). Thus the Planning Commission clearly takes the view that those small and medium-sized towns should be promoted which have locational and natural resource advantages. This is the so-called ‘efficiency argument’. But how ‘fair’ is it to focus on the units with ‘potential’ thereby ignoring others which have less potential? If access to certain publicly provided services is clearly better in developed urban areas then this approach will definitely increase the gap in the quality of life of people between the two kinds of small and medium towns. However, in our view, the normative argument of fairness and equity in this context cannot be thought of independent of the efficiency argument. We make an attempt to throw some light on this crucial question of efficiency versus equity in the context of urbanization keeping in view the structural transformation that an economy goes through, along with economic growth and urbanization. As a country develops, the process of structural transformation from agriculture into manufacturing and services involves a shift of labour out of rural areas and into urban ones. However, empirically the association between urbanization and the fraction of economic activity in manufacturing and services across countries is rather weak. There are countries that are highly urbanized without having experienced a large shift of economic activity towards manufacturing and services (Gollin, Jedwab, & Vollrath, 2013). In India it is now well known that labour has been shifting largely from agriculture to low end services, not much to manufacturing. Given the slow growth of manufacturing, perhaps the possibility of further concentration of manufacturing in the large urban agglomerations has not yet been exhausted. Casual observation suggests that even though the costs of congestion in India’s megacities are very high, which means there should be decreasing returns to further expansion, these megacities also benefit from relatively large agglomeration economies, compared to medium-sized cities, as the latter suffer from a variety of impediments to grow fast. Thus the structure of the economy and the relative economic costs and benefits of the location of economic activities imposes a limit on the extent public policy can change the process of urbanization to address the issue of equity.

3.5 Some Aspects of Urbanization in India

There has been a huge proliferation of papers that have analysed growth of urbanization and the changing structures of cities and towns in India ever since the results of 2011 Census came out.⁶ Observations and interpretations of data significantly differ even though all are based on the same source of data, viz. Census. Here, we present a brief account of Indian urbanization selectively highlighting certain aspects of it which are relevant for the arguments put forward in this paper.

It is generally believed that India is less urbanized than many countries of the world, and that the growth in urbanization has been sluggish as well. The Planning Commission (2011), for example, observed that “urbanization in India has occurred more slowly than in other developing countries and the proportion of the population in urban areas is only 28%” (p. 378). However, this has been challenged by some scholars on the ground that the Indian definition of an urban area is relatively more stringent compared to other countries. Since the definitions differ widely across countries, the extent of urbanization is hardly comparable. The last decade saw a reversal of trend as far as the demography of big cities vis-à-vis medium and small cities/towns are concerned. Till 2001, growth in urban population was largely concentrated in larger cities with hardly any growth of small towns. However, between 2001 and 2011 the demographic growth slowed down not only in metros but also in a large number of Class I cities (Kundu, 2014). The other important feature of urbanization in the past decade is the unprecedented increase in the number of urban centres—agglomerations, cities and towns. In particular, there was a phenomenal increase in the number of census towns (CT) from 1362 in 2001 to 3894 in 2011.

That the urbanization process overall has been iniquitous has been observed by Kundu (2014), Krishna and Bajpai (2011), and others. Kundu (2014) argues that the urbanization process in the most recent decade has become more exclusionary. Many of the Class I cities have become city agglomeration with additions of satellite towns in their vicinity. As the agglomeration becomes predominantly middle class residential space, the old industrial units either close down or are relocated outside the municipal limits. Poor migrants, who could earlier manage to get hold of some space within the municipal limits, are now forced to find place in what Kundu calls ‘degenerated peripheries’. Thus a process of spatial segregation continues with its consequences on the living standards of the excluded. This is evident from the fact that there has been a decline in the percentage of adult male migrants to Class I cities. Krishna and Bajpai (2011) show that the distribution of the fruits of growth in post-reform India has followed a distinct spatial pattern. The largest gain has accrued to the people in the largest cities, which is followed by the smaller gains for the people in smaller towns and villages close to towns. People living in villages distant from any town are the worst off. This spatial pattern is the

⁶Bhagat (2011), Kundu and Saraswati (2012), Denis, Zerah, and Mukhopadhyay (2012), Pradhan (2013), to mention a few.

outcome of the economic process that has led to increasing concentration of high-end service producers in the biggest cities and gradual movement of industries out of these cities. Further away one is from the city, harder it is to take advantage of the opportunities provided by the economic growth driven by modern high-speed, services-oriented economic activities. The rising inequalities therefore appear to be the inevitable outcome of the structure of growth in a globalized economy.

What should be an equity-sensitive policy response to this rising inequality? One sensible approach would be to extend the facilities to the distant areas so that people residing in those areas can seize market-based opportunities. But ironically, the actual policy response goes in the diametrically opposite direction. Villages and small towns close to the cities are usually better provided with paved roads, electricity, telephone lines and so on, as these villages and towns are presumed to have 'greater potential' for reaping the benefits compared to their distant counterparts. It is difficult to believe that the policy makers are not sensitized enough about the equity goal. Faced with the conflict between equity and efficiency goals, the policy makers and implementing agencies usually favour the latter. We quoted earlier from the Approach to 12th Plan which clearly showed this bias.

However, it is not true that spatially oriented public policies have always been exclusively driven by efficiency considerations. But any policy or programme that has ostensibly aimed to correct some spatial inequality has been nothing but a failure. In the next section, we take a critical look at one such programme, namely, Provision of Urban Amenities in Rural Areas (PURA).

3.6 Anatomy of a Well-Intended but Ill-Designed Intervention

With the ostensible aim of attaining spatial equity, PURA was launched on a pilot basis in 2004–05. It is believed to be a pet project of the former President of India Dr. A.P.J. Abdul Kalam. The idea behind the project was quite noble. The ever-growing number of census towns in India, which continue to be governed by the respective Gram Panchayats in which they are located, poses governance challenges as the GPs are ill equipped both financially and managerially to deal with the emerging issues in provisioning of urban services in those areas. PURA was expected to meet these challenges.

To control the migration from rural to urban areas, it is necessary to provide basic amenities and facilities in rural areas which are similar to those in urban areas. Schemes like PURA attempt to bridge these gaps in order to ensure that the rural areas have amenities which are at par with those in urban India. This would help in whittling down the migration from rural to urban areas (GoI, no date)

However, for several years after its launch, the programme could hardly make any progress even on a pilot basis as envisaged at the beginning. It had first been implemented on a pilot basis for a period of 3 years from 2004–05 in seven clusters—one each in Andhra Pradesh, Assam, Bihar, Maharashtra, Rajasthan, Orissa and Uttar Pradesh. The schemes that were contemplated included improving physical connectivity through construction of roads, electronic connectivity by communication network and knowledge connectivity by establishing professional and technical institutions in an integrated way so that economic activities could be boosted. However, barring sanitation projects in a few states, the scheme never took off. UPA-II relaunched it as a central sector scheme during the remaining period of the 11th Five-year Plan.

The government tried to revive PURA in 2010 through public–private partnership. The PURA projects then were of three categories—projects being funded by the government, projects not funded by the government and add-on projects. The government decided to contribute 78% of the capital expansion for core projects, which would include building water and sewage facilities, construction of roads, skill development and development of economic activities. Non-government schemes would include provision of street lighting, telecom, electricity generation, while add-on projects, to be funded entirely by private sector, would include village-linked tourism, agri-marketing, warehousing and other services. The private partner is supposed to provide expertise for implementation of government projects and is expected to earn 12% return on capital. After a good initial response that saw more than 90 companies showing interest in the scheme the government received only eight pilot proposals from six companies. It seems that most of the companies opted out because of the small size of each scheme.

The NDA government, after coming to power, stopped allocating money for PURA. A new scheme named Shyama Prasad Mukherji Rurban Mission, with the same objective as that of PURA, was launched. The mission, which is said to be modelled on a similar initiative in Gujarat, would focus on creating community assets and improving basic infrastructure such as roads, shelter, power and drinking water in rural belts. Under the scheme, the State Governments would identify the clusters in accordance with the framework for implementation prepared by the Ministry of Rural Development of the Government of India. The clusters will be geographically contiguous Gram Panchayats with a population of about 25,000–50,000 in plain and coastal areas and a population of 5000–15,000 in desert, hilly or tribal areas.

PURA struggled to take off right from its launch in 2004–05 and ended in failure. It suffers from all the usual ills—from faulty design to lack of commitment. It does not require high level of expertise to see that the kind of public–private partnership model it adopted could not possibly work for the simple reason that it was not incentive-compatible for private partners.

3.7 Conclusion

In this paper, an attempt has been made to deal with the complex terrain that emerges out of the confluence of three normative goals of urbanization—growth or efficiency, sustainability and social justice. Our analysis shows that although the imperatives of economic growth in the modern globalized world have an apparent ring of inevitability around them, an articulated view on social justice and appropriate conceptualization of equity through community engagement can help us understand the alternative possibilities with their associated trade-offs, which in turn would help us tread the contested terrain.

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Chapter 4

Alternative Provision of Tenure Security and Rights to the Urban Poor: A Case Study from Ahmedabad

Atanu Chatterjee

4.1 Background

The last three decades have been very significant in the discourse of housing the urban poor in Ahmedabad. However, there has been a succession of policies to house the urban poor living in the informal settlements in Ahmedabad since 1970.¹ Notably, the policies has been redefined, recreated and reoriented according to the contemporary urban development process from the 90s onwards. During mid-90s, the city had introduced Slum Networking Programme (hereon SNP) to improve the environmental condition of the households living in the informal settlements.² With SNP, the state now shifted from the welfare approach to the market-based approach through a ‘partnership’ involving private sectors, NGOs and slum communities (Acharya & Parikh, 2002: 312). In 2005, the national government announced the Jawaharlal Nehru National Urban Renewal Mission (JNNURM), where its sub-mission Basic Services for Urban Poor (BSUP) accompanies a new

¹During this time the state and the local government had implemented numerous low-cost public housing programmes like the Site and Service project and the Integrated Urban Development Project (IUDP) in which the slum dwellers from various parts of the city had been resettled in a 10 × 10 semi-pucca dwelling units with basic services and individual ownership mostly in the periphery of the city (Kundu, 2002; Basu, 1988; Mahadevia, 2002).

²The SNP primarily aimed to provide a package of affordable basic services including household connection to water supply, individual toilet, storm water drainage, paving of internal roads, street light and sanitation in slum areas. The project was also guided by the objective to facilitate the process of community mobilization by setting up of community and the saving groups with the direct involvement of NGOs (Lal & Chauhan, 1999; Acharya & Parikh, 2002). In addition, 10 years of no eviction guarantee had been provided to the community to fuel their participation in improving the overall living conditions (Acharya & Parikh, 2002: 319).

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shift in the prevailing housing policies which rallies for the provision of affordable housing, improved basic services, social security and in situ tenure security in the best possible way (Government of India, 2009). In Ahmedabad, BSUP has largely been used as an instrument for relocating the slum dwellers that are affected by various urban infrastructure development projects (Mahadevia, 2011, Desai, 2012). They have been shifted to high profile mass housing colonies located several kilometres away from their present locations. So far, Ahmedabad has constructed more than 32,500 housing units under BSUP at a total cost of Rs. 5,500 millions at various locations in the city and has assigned them to the displaced people (AMC, 2014).

Yet, the whole approach towards housing provision in Ahmedabad received new momentum with the introduction of Slum Rehabilitation Scheme under the 'Regulation for Redevelopment and Rehabilitation of the Slums in 2010' and 'In-situ Rehabilitation of Slums through Public-Private Partnership (PPP) in 2013'. The prescription of the policy is invariably based upon the rhetoric of 'slum-free city' in the provision of affordable housing to the urban poor. Deviating from the past approaches to housing the urban poor, the slum rehabilitation scheme in Ahmedabad is based on the strategies of accommodating the urban poor in a high-rise apartment block with the active involvement of the private developers (Government of Gujarat, 2010, Government of Gujarat 2013). This, nonetheless, shows the higher ideological expressions of the government which mirrors in formalization of existing informal settlements, and creates a level playing field for the real estate market to thrive.

So, it becomes necessary at this juncture to decipher the following questions: did the public housing programmes of the 70s fulfil their objective while holding the security of tenure for the urban poor? Is SNP a viable solution in improving the security of tenure of the urban poor? What are the implications of security and rights granted to the poor through BSUP? And what are the ramifications of slum rehabilitation approach in catering the needs of the urban poor in Ahmedabad? In retrospect, this specific study is an attempt to debrief tenure security through the lens of multiple housing policies and the prevalence of informal settlements in the city. Moreover, the study asks: what are the alternative ranges of tenure options that exist in low-income settlements of Ahmedabad and the possibilities, opportunities and constraints associated with each tenure system while providing tenure security and assigning rights to the households? The paper is organized in six parts: In the first, section the theoretical disposition sets the context of the study. The second section deals with the approach and method of the study followed by the typological framework of land tenure that exists in the low income settlement of Ahmedabad. The last three sections is a justification of the findings with the help of various case studies.

4.1.1 Arguments Over Alternative Provision of Tenure Security

Improving tenure security for the urban poor is considered as one amongst the many ways to upgrade their living conditions and provide access to affordable

shelter³ (UN-Habitat, 2008, 2010). Over the years, two predominant approaches—the market-based approach and the right-based approach have emerged which argue on the relative importance of tenure security and property rights for the urban poor. The former proposed that the provision of individual legal title to the urban poor through legalization and formalization process is a necessary precondition for improving their living conditions. It provided households a sound security against eviction, encouraged housing investment, increased access to credit, helped in integrating the poor to the formal property market and thereby bolstered the overall land and housing market⁴ (De Soto, 2000; World Bank, 1993; Mooya & Cloete, 2007; Banerjee, 2002; Field, Torero, & IFPRI, 2004; Galiani & Schargrodsky, 2010). The second approach, however, counter-argued that to the poor, obtainment of individual legal title may not instil a sense of security against eviction as the vulnerability of informal settlement varies considerably depending on a multitude of factors including the duration of stay, location of land, possession of documents by the residents, status of the land in the development plan, political patronage, the nature of government intervention (Gilbert, 2002: 5) and that living in close proximity to their employment or access to basic services, and perceived protection against eviction is of higher priority (Payne, 2001, 2002; UN-Habitat, 2002; Durand-Lasserve & Royston, 2002). Yet, improving tenure security, through any approach, could be the fundamental step to disrupt the vicious cycle of impoverishment.

The present paper is conceptually based on the emerging research centred on ‘tenure security’ which emphasizes upon the existence of various ‘intermediate tenure systems’ ranging from informal, customary, religious, to formal (Payne, 2001; UN-Habitat, 2008; Payne, 2001, 2002: 3, 2004) and “each of the categories represents a distinct sub-market with its own characteristics serving different sections of the urban population in cities” (Payne, 2004: 169). Therefore, it is necessary to consider the wide range of tenure options which forms a ‘Tenure Continuum’ in a policy measure.⁵ Yet, there is a growing recognition within the

³The importance of security of tenure, an essential prerequisite for the affordable shelter to the urban poor has been widely recommended in Habitat 2 conference in 1996 (UNCHS, 1996; cited in Durand-Lasserve and Royston, 2002: 2); appraised by the ‘Millennium Development Goal’, propounded by UN-Habitat earlier at the beginning of this century for ‘improving the life of the 100 million slum dwellers by 2015’; adopted by UN-Habitat as a components for ‘right to adequate housing’ (UN-Habitat, 2010). The upcoming Habitat 3 conference in 2016, however, persuades for more attention towards innovative and effective approach towards the provision of security of tenure to the urban poor as a key driver of sustainable urban development (UN-Habitat, 2015: 8).

⁴This idea has largely been popularized by de Soto’s assertion on the importance of property rights where he claims that in developing countries while the poor already possess assets, they hold them in a ‘defective form’, thus rendering them as ‘dead capital’ i.e. they lack property rights which they could use in collateral form as loan for their houses or open business to lift themselves out of poverty (de Soto, 2000).

⁵Literature suggested that ideally, the objective of the provision of security of tenure should be the reflection of the local circumstances involving the complexities regarding land tenure and

research and policy forum that despite the wide understanding of these various intermediate tenure systems in cities providing varying degree of security to the urban poor (Fernandes, 2002; Payne, 2002, 2004), there is unnecessary emphasis on legal tenure as a favourable policy option in many developing countries (Durand-Lasserve & Royston, 2002). Payne argues that this model is invariably based on the ‘formal-informal dichotomy’ which underestimates the diversity and legitimacy of other tenure arrangements (Payne, 2001). However, recent literature added that such over-simplification arises “as a consequence of the indiscriminate use of the different kinds of tenure security” (Van Gelder, 2010). Van Gelder argues that in academics and policies, three distinct types of tenure systems are relevant to the residents of low-income settlements for providing varying degrees of security, managing risk of eviction, influencing perceptions of the community and realization of various kinds of rights (Van Gelder, 2010: 449). These are tenure security as perceived by the dweller, tenure security as a legal construct and the de facto security of the tenure situation. The careful exploration of constraints and potentialities of each tenure systems has specific implication in policy formulation.

4.2 Methodology and Data Collection

Most of the research for the study was done at two stages: first, the field survey in nine different low-income settlements of Ahmedabad was conducted from December 2013 to April 2014. The cases were selected on the basis of their land ownership pattern and nature of government intervention regarding housing, security of tenure and basic services (Table 4.1). For data collection purpose, a questionnaire survey was conducted at the community as well as household level. A total of 350 household samples were collected. The selection of the sample size was based on the number of households in a particular settlement. At the household level, both qualitative and quantitative details were collected. An open-ended interview with the experts was also conducted to understand the complexities of the land tenure and the housing scenario in the city.

Second, the next level of research was carried out during November and December 2015 to comprehend the present study by including recent information regarding slum rehabilitation policy which is presently being implemented in Ahmedabad. This involved interviews with the government officials, key stakeholders, reading of relevant policy documents and a semi-structured interview with the residents in a rehabilitated colony to capture their preliminary reactions.

(Footnote 5 continued)

socio-economic, political and legal background and should keep in mind the need and aspiration of the urban poor (Payne, 2002; Durand-Lasserve & Royston, 2002; USAID, 2014).

Table 4.1 Profile of the selected case studies

Case study	Land ownership ^a	Number of huts ^b	Population	Age of the settlement (in years)	Type of land tenure
Crossing na chhapra	Pavement dwellers	74	191	60	Informal
Valmiki Vyas	State government	163	865	30	Informal
Jadiba Nagar	Private	197	1379	35	Informal
Indra Nagar	Private	1334	8528	50	Informal
Allah Nagar	Local government	180	1440	45	Informal
Sanjay Nagar	Private	181	1448	47	Informal
Resettlement Colony	Local Government	576	2880	5	Formal
Site and Service Project	Local Government	2345	2345	38	Formal
Sankalit Nagar	Local Government	2250	11,250	37	Formal

^aAMC socio-economic survey of slums, 2010; review of land ownership documents like 7/12 collected from revenue department

^bHousehold level survey was not conducted in case of the pavement dwellers and the Sankalit Nagar

Source Adapted from Chatterjee (2014)

4.3 Types of Land Tenure

The question of land tenure is not only associated with the question of land, but it also portrays the relationship and outcome of various legal, legislative, social, cultural and political factors of the city (Payne, 2002). Based on the case study of various low-income settlements in Ahmedabad, the following section explains different types of urban land tenure systems, the degree of tenure security and rights that the slum dwellers enjoy in each tenure system in the city⁶ (Fig. 4.1).

In Ahmedabad, the slums have usually spawned on public land or on private land either through encroachment or might have been sold and gifted to the slum dwellers by the owners and landlords (Chatterjee, 2014). The public land is defined as the land owned by the central or state government or the local authority as per as the Gujarat Town Planning and Urban Development Act, 1976. The slums came up on those public lands which have been reserved for public purposes but was left vacant for years due to the inefficiency and inability at the government level (Datta, 2013). Of the total slum population of the city 28% population lives on land owned by the public authority.

⁶The typological framework presented in this section is inspired from the theoretical notes discussed in the second section (notably Payne, 2001, 2002, 2004; UN-Habitat, 2008).

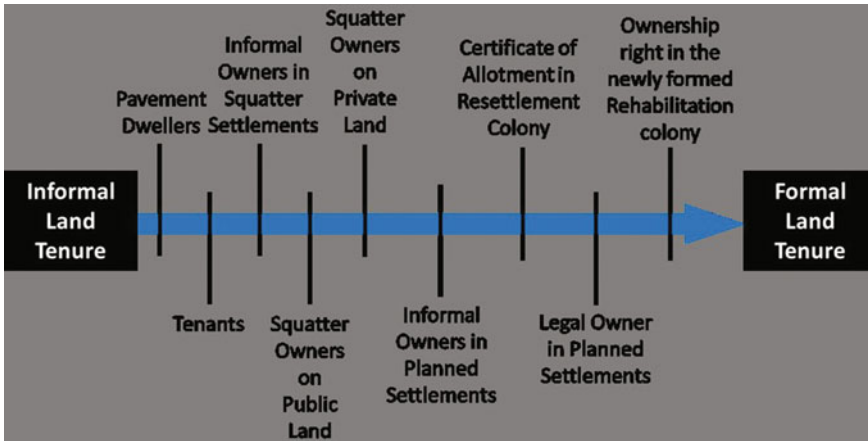


Fig. 4.1 Various types of land tenure systems in low income settlements (assigned on the basis of their degree of tenure security from low to high). *Source* Constructed from Chatterjee (2014)

But, one of the striking facts is that more than 60% of the population living in slums is found on private land where ambiguous tenure pattern poses challenges for sustainable housing solution (see Appendix). This ambiguity in the private land is the outcome of three reasons (Joshi 2013, 2013a; Mahadevia, 2010; Annez et al. 2012): One, the first Development Plan of the city was prepared in 1965, the authorities then decided upon a strategy to control the growth of the city by putting a green belt along the periphery. Thus, numerous acres of private land were overtaken by the state government in the name of ‘Eminent Domain’. This gave the private developers limited choices but to undertake illegal transactions and sell their land to slum dwellers. Second, in 1976, the then Gujarat government introduced Urban Land Ceiling Act which aimed to bring about equity in the urban land market whereby numerous private lands in the urban area came under multiple domains and were under dispute. The Act imposed ceiling on the vacant land holdings of an individual. As a result, numerous private owners who held land beyond the ceiling limit sold off their land informally to make profits.⁷ Third, numerous public lands remained vacant for years which were illegally acquired and sold to the slum dwellers without obtaining NA permission. Due to this ambiguous tenure pattern in the city, there exists a “grey market which affects the policies and programmes related with housing the urban poor⁸”.

Thus, various intermediary tenure systems (squatter owners, informal owners and renting accommodation within squatter settlements) have grown over the years

⁷In the present study, Jadiba Nagar, the case study slum located on private land in the west zone of Ahmadabad, is one of the examples of such transaction that shows the emergence and proliferation of informality in Ahmedabad. It was primarily an agricultural land which had been sold plot by plot to the slum dwellers by the original owner Jadiba Ben almost 40 years back.

⁸An interview with Rajendra Joshi (2013).

in the squatter settlements and have evolved as a viable housing option for the low-income households. The squatter owners (colloquially known as *Juniwala*) have two or three houses in their possession which they have rented out or sold out illegally and this has led to the emergence of various intermediate tenure systems within the informal settlements. One of the indispensable characteristic is that different kinds of settlements in the city have more than one category of tenure system who enjoy different degree of tenure security (like a tenant and informal owners enjoys lower degree of security than a squatter owner) based on their legal status, possession of documents, duration of stay, distance from the workplace and the nature of government interventions.

Whereas, on the other extreme, in the formal tenure system the government has provided long-term tenure security to the low-income households who are either resettled to the periphery of the city under the 70s low-cost public housing programme or under the recently implemented mass housing scheme or rehabilitated under the ongoing Slum Rehabilitation Project.

4.3.1 Pavement Dwellers

The pavement dwellers form the lowest category of the tenure continuum as their tenure security is lowest and they do not enjoy any rights. *Prima facie*, their right to the city is preserved by several court orders in the past (the local government cannot evict them without alternative accommodation).

4.3.2 Tenants

The tenants across tenure categories is one of the inevitable informal housing stocks for the poor in the city as they do not have the ability to buy a house and are forced to rent (rent ranging from Rs. 500 to Rs. 3000 depending on the nature of the settlement). The tenure security of tenants depends on their nature of relationship with the house owners. Thus, they are in a vulnerable position because this relationship is loosely built on informal contract and the owner can force them to vacant the house at any time.

4.3.3 Informal Owner in Squatter Settlements

Informal owners (colloquially known as *Nevawala*) in the squatter settlements are those who have moved into the settlement after buying the house from the squatter owners. Majority of them possess stamp paper or hand-written documents as the sole proof of the transaction. Although this kind of transaction operates within the

informal settlement network, it lacks legal value. Unlike squatter owners, they enjoy relatively low security of tenure because they do not possess photo id passes or property tax bill.

4.3.4 Squatter Owners on Public Land

Squatter owners on public land enjoy relatively low tenure security in comparison to the slums located on private land because as they live on the state and local government land, there is high possibility of acquisition of the land for public uses thus making them prone to eviction. A majority of the squatter owners residing on public land do not possess important documents like photo id passes, property tax bill, etc. which makes them eligible for relocation and other entitlements. They also frequently encounter threats of eviction.

4.3.5 Squatter Owners on Private Land

Squatter owners on private land perceive that they have legitimate claim upon the settlement and that the government cannot evict them without taking permission or consent from the land owners. Most of them possess property tax bills and 1976 photo id passes which make them eligible for government relocation.

4.3.6 Informal Owners in Planned Settlements

The informal owners have purchased the dwelling unit from the original beneficiary in the planned settlements in different periods of time. Very often the transaction made is through stamp papers or sometimes without any documents. The tenure security of the informal owners in the formal settlements is relatively high. They usually pay property tax bill and have been living in the settlement for a long time.

4.3.7 Certificate of Allotment in Resettlement Colony

The residents of the resettlement colony enjoy high tenure security. They have been provided an allotment certificate which restricts the buying and selling of property within the resettlement colony for 10 years since allotment. The different kinds of rights include buying, selling, inheriting, access to service and credit exists equally for both the sexes.

4.3.8 Legal Owner in Planned Settlement

In the planned settlements, the original beneficiaries were provided readymade dwelling units with a package of basic services and infrastructure facilities. The tenure security for legal owners work differently as the residents perceive that their situation is comparatively secure since the government intervened in the provision of housing and infrastructures facilities.

4.3.9 Ownership Rights in Newly Formed Rehabilitation Colony

Finally, the resident in the selected informal settlements has been rehabilitated at the same place in a multi-storied apartment block. They have been provided with two room dwelling units with the kitchen facilities, water supply, and drainage and power supply. The absolute ownership right is allocated to all the dwelling units. However, an initial restriction for at least 20 years is given to prevent transfer of the ownership of the dwelling unit to a third party.

4.4 Implications of Security of Tenure on the Urban Poor in Informal Settlement

4.4.1 Right Over Property

Squatter settlements in Ahmedabad do not have any right to occupy land and practice legal transaction of their property. Yet, they have been transacting informally over the years. Notably, the implementation of SNP in many slums in the city during 90s has also not provided any formal right to the residents except for a 10-year verbal assurance against eviction and the extension of basic services.

4.4.2 Perception of Fear of Eviction

The perception of household in terms of feeling secure against eviction is an important way in measuring tenure security. However, in Ahmedabad, the status of the settlement in the development plan, the possession of various kinds of documents like stamp paper, 1976 photo id passes,⁹ electricity bill and property tax bill,

⁹AMC conducted the first household survey of slums in 1976 when the photo id passes were given to the slum dwellers which is used as a cut-off date for any rehabilitation programme.

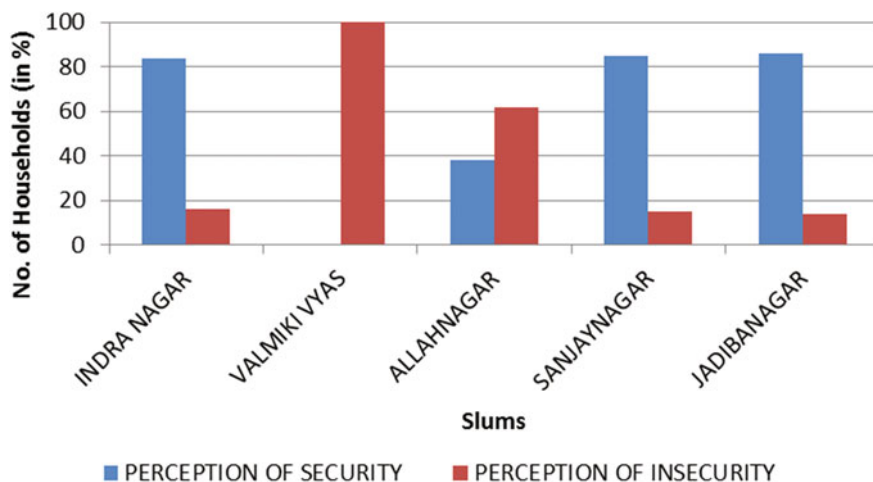


Fig. 4.2 Proxy percentage of the perception of security of tenure of the interviewed households in the informal settlements. *Source* Adapted from Chatterjee (2014)

duration of stay and government intervention influences perceived tenure security of the urban poor living across different tenure categories (Fig. 4.2). One of the significant features of the informal settlement is that almost in every slum there are tenants and informal owners who are vulnerable as they do not possess any documents proving their existence and thus are the first victims of major resettlement and relocation initiatives.

The households residing in settlements developed over public land live with the daily fear of eviction. Moreover, the perception of the individual in these settlements varies depending on various factors. The frequent threats of eviction, the non-possession of various kinds of documents and limited government interventions have influenced their tenure security (Box 4.1). In case of Allah Nagar, located on local government land, majority of the residents who have photo id passes and are living there since inception, feel secure. It is important to note that in context to Ahmedabad, the public authority can acquire land for public purposes and compensation is paid to those who can produce valid documents before the cut-off date.

The perception of fear of eviction in the settlement located on private land is comparatively lower than the slums located on government land, though not absent. The possession of various documents like electricity bill, 1976 photo id passes, voter ID card, property tax bill and more importantly nature of access to land have influenced their perceived security against eviction. The years of occupancy and their long struggle for tenure also act as an assurance to the residents. In case of Indra Nagar, a settlement located on private land, the residents feel strongly secure about tenure because they had received the land from the private owner, paid property tax and basic services were provided by the government in recent years.

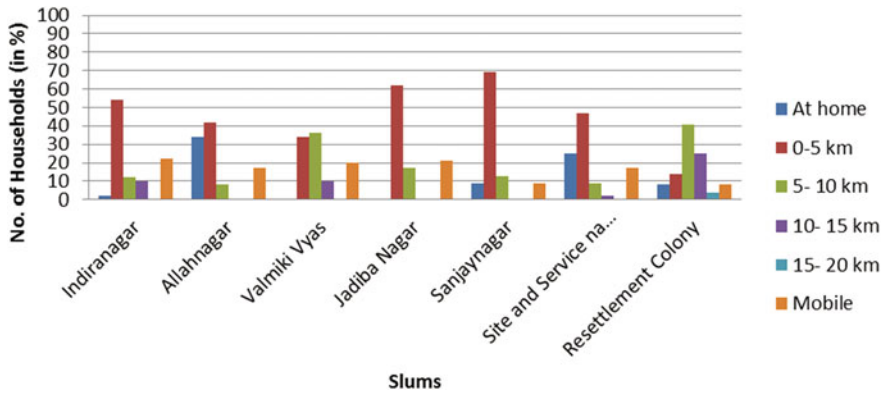


Fig. 4.3 Home-work distance of the sampled household in the selected low income settlements. *Source* Adapted from Chatterjee (2014)

In contrast to these settlements, the slums where SNP were implemented have high perceived security of tenure. In the case study, the slum residents in two SNP slums, i.e. Jadiba Nagar and the Sanjay Nagar enjoy security of tenure since the government and the local NGOs are involved in the extension of basic services, infrastructure facilities, social security and community mobilization (Fig. 4.2 and Box 4.2).

The distance from the workplace is also linked with tenure security in squatter settlements. The findings suggest that the slum dwellers prefer to live in close proximity to their employment site as majority of the slum dwellers work within 5 km distance from their home. This particular aspect is very critical while formulating any housing policy like resettlement which is quite clear from the result (Fig. 4.3).

Box 4.1 Story of Valmiki Vyas: Slum Located on Public Land

Valmiki Vyas, locally known as *Bhangi na Chapra*, is a slum located in the western part of the city. It was formed during late 1970s when few evictees (around 15–20 households) from Odhav canal squatted on this land which is under the ownership of the state government. With the recent urban expansion and residential development in the periphery of the city, the settlement has come within the ambit of the new city limit since 2007 and it seems to be in a very attractive location for the middle-income group (see Image 4.1). In 2005, the government extended basic services to the settlement under various service provision schemes. However majority of the residents have been excluded because the service provision required the possession of documents like voter ID card, ration card and a certain amount of contribution which most residents were unable to pay. Presently, around 1000 people reside in 197 huts. The major occupants of the settlement are the *Bhangi's* (sweepers) who are employed as casual labourers.



Image 4.1 Valmiki Vas Slum. *Source* Chatterjee, 2014

The residents of Valmiki Vyas feel insecure as they reside on public land. According to the various respondents, they frequently encounter threat of eviction from various unknown parties who claim to acquire the land for residential development. Apart from that, majority of the residents do not possess any valid documents like 1976 photo passes, voter ID, ration card and they do not pay any property tax. Although the people in this slum have been living here for 30–35 years but the duration of stay hardly affects their individual sense of security. Despite their fragile tenure security, with time they have developed a solid community consolidation which provides them a false assurance to live. Notably this settlement is selected for rehabilitation under the 2013 slum policy.

Source: Adapted from Chatterjee (2014).

4.4.3 Housing Improvement and Investment

It may be assumed that the security of the residents (de facto/perceived) is important for their investment in housing improvement. One of the interesting findings of the

study is that the slum dwellers invest substantially in spite of their lower degree of tenure security. A majority of the households across various tenure categories lives in semi-pucca houses (Figs. 4.4 and 4.5). The slum dwellers particularly are scared to invest in the improvement of their houses as there is a continuous risk of eviction or events of eviction in the distant past. But it is evident that when the household gets engaged in building their own house they can produce far more efficient, affordable houses which are based on their fluctuating needs over time.

It is true that the de facto security that has been extended to the urban poor through the implementation of SNP has enabled them to improve and expand their

Fig. 4.4 Housing condition in Allahnagar, a slum located in Government land (Chatterjee, 2014)

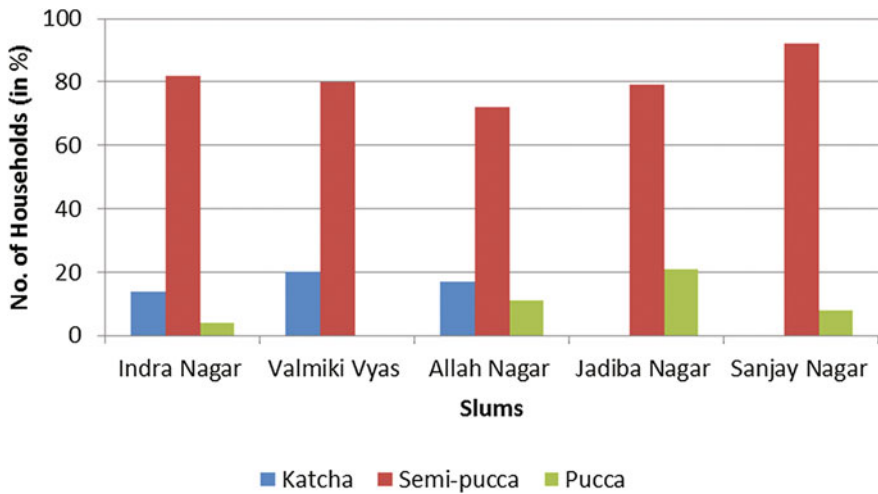


Fig. 4.5 Type of dwelling units of the interviewed households in the surveyed slums. *Source* Adapted from Chatterjee (2014)

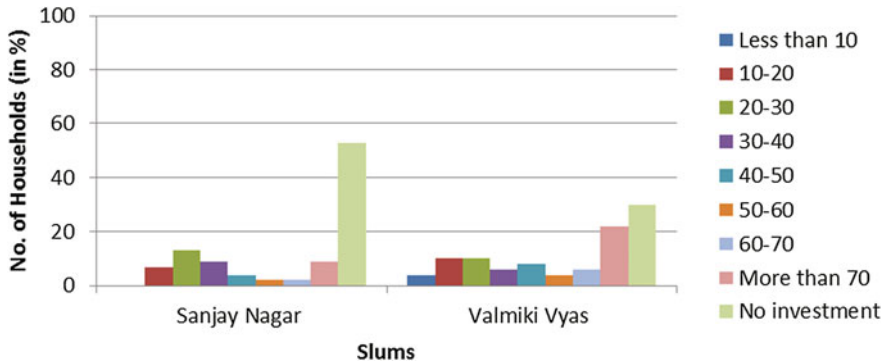


Fig. 4.6 Nature of housing investment on a typical slum located on public land (Valmiki Vyas) and SNP slum (Sanjaynagar). *Source* Adapted from Chatterjee (2014)

housing and housing conditions. But, this particular phenomenon is also visible in other non-SNP slums. In case of Sanjay Nagar as well as Valmiki Vyas, majority of the residents had improved their housing quality for three to four times and have been living there for the past 20–40 years (Fig. 4.6). From the field survey it was also observed that in both the slums, residents who have not added built-up area are mostly tenants or are new informal owners (Fig. 4.6). So, it may be concluded that the investment in the improvement of the housing condition is rather directly related to the duration of stay, increase in family size and household income. In this case, a proactive intervention like SNP has worked as an additional factor in increasing housing investment (see Box 4.2).

Box 4.2 Did SNP Improve the Tenure Security of the Slum Dwellers?

One of the women members of the *Mahila Mandal* in Jadiba Nagar, a slum located on private land in the west zone of Ahmedabad (Image 4.2) depicts the story of changing security in a span of 30 years:

‘Before the implementation of SNP, we lived with the daily fear of eviction. We did not have water supply and had to travel 5–6 km daily to fetch water. We also did not have any toilet facilities and were sued by the nearby residents for open defecation. Though the AMC had provided us with public stand post way back in the 90s, but it was not enough for the whole community. If we needed anything we had to approach the local politicians but they did not pay heed to our petitions. But in 2004 when the SEWA members approached us and told us about SNP, we found a ray of hope. We formed a *Mahila Mandal* with 11 female members of the community for taking care of the entire community. In order to have access to water supply, paved road, sanitation facilities, every household were asked to pay Rs. 2100 each. We agreed to pay the money in instalments and we paid off the entire amount over a period of 3 years. Our living condition has improved after the implementation of SNP and now whenever we approach the



Image 4.2 Jadiba Nagar Slum. *Source* Chatterjee, 2014

government concerning any issues, they do take note of the problem and we are able to live a decent life without any threat or insult’.

Source: Adapted from Chatterjee (2014).

4.4.4 Basic Services

The availability of service varies across tenure categories. The quality of the services vary across the slums based on their size, status, community group and interventions of the government, like the quality of basic services is very good in SNP slums than in the non-SNP slums (Figs. 4.7, 4.8 and 4.9). Apart from SNP, the government has extended basic services to majority of the slum dwellers from time to time under various service provision programmes but have excluded numerous poor households because of non-possession of valid documents. Living in a particular settlement for a long duration and formation of a local community group has helped them to gain access to basic services through negotiation. For example, in the case of Indira Nagar, the slum had received basic services in 2010 when the local politician approached them for election. However the extension of basic

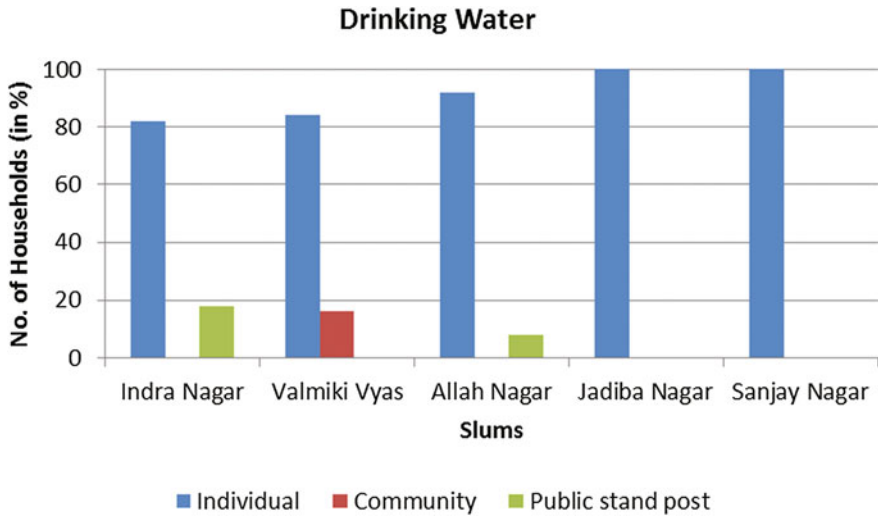


Fig. 4.7 Availability of water supply in the sampled households of the surveyed slums. *Source* Adapted from Chatterjee (2014)

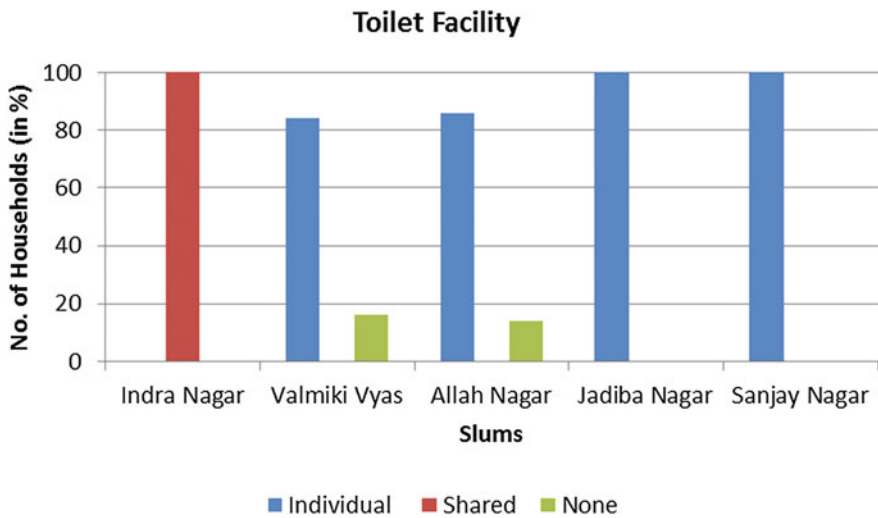


Fig. 4.8 Availability of toilet facilities in the sampled households of the surveyed slums. *Source* Adapted from Chatterjee (2014)

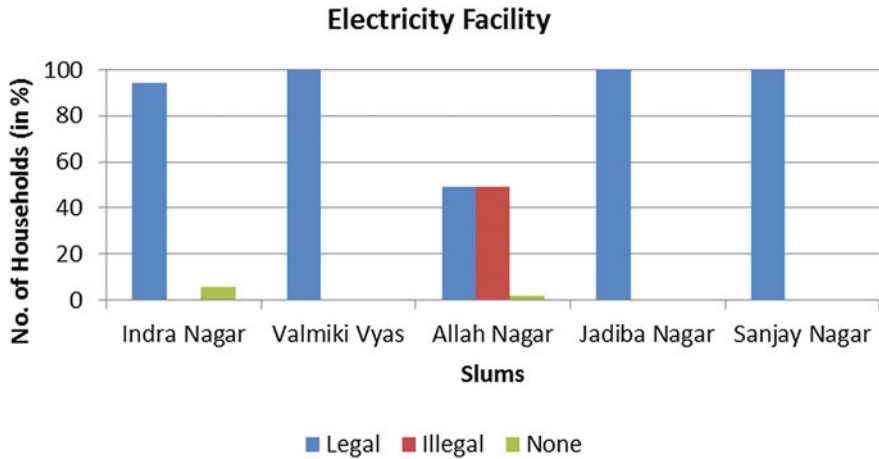


Fig. 4.9 Availability of electricity facility in the sampled households of the surveyed slums. *Source* Adapted from Chatterjee (2014)

service under various service provision schemes has not lead to any significant improvement, as the quality of services is still an issue and majority of the slums dwellers in the city still remain deprived.

4.5 The Implications of Legal Tenure on the Residents in the Formal Settlements

Like many cities of the developing world, the low-cost public housing project in Ahmedabad is considered to be a failure as it was initially located far away from the city centre without having access to public transport and other social facilities (Mahadevia, 2002). But we can see from the case study of Site and Service *na Chapra* and Sankalit Nagar that over the period of time, as the city started sprawling and creating new opportunities, these settlements started prospering and transformed into a well-developed middle income housing colony (Chatterjee, 2014; Dinda, 2014). Presently, the sites are well connected with city's public transportation system where majority of the households are located within 5 km distance of their work place (see Fig. 4.3). In majority of the cases the households have improved their dwelling unit incrementally either by adding extra built-up area or by constructing two-storied *pucca* houses over time (Fig. 4.10). It indicates that the occupants do not have any perceived threat of eviction and this encourages them to extend, sublet, sell and improve the dwelling unit. However in due course of time majority of the original beneficiaries have left the settlements.

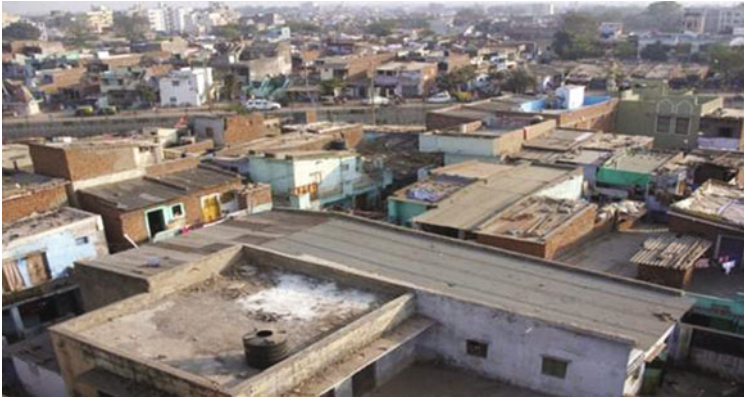


Fig. 4.10 Site and service *na chapra* constructed under Site and Service project during the 1970s. Source Chatterjee, 2014

During the field study, the respondents have revealed that with increase in urbanization and improvement in public transportation system in the areas, the place which was once located in the periphery of the city have now come within the prime zone of the city thus influencing the increase in property value. At present, property transactions often range from in Rs. 1.5 lakh to 3 lakh or even more.

On the other hand, the recently formed Resettlement colony is largely the revival of the ghost of the 70s low-cost public housing scheme where the households were provided with individual ownership rights in the periphery of the city. However, observations from case studies have shown that it has little implication on the daily life of slum dwellers and their security of tenure (Box 4.3).

Box 4.3 Ballol Nagar: A Newly Formed Resettlement Colony in Ahmedabad

Ballol Nagar, in the western zone of Ahmedabad (Image 4.3), is a newly formed resettlement colony where 576 households (mostly project affected households of Sabarmati riverfront and infrastructure development) have been resettled in 2009–10 on 1.6 ha area via BSUP under JNNURM. It is located approximately 15 km away from the city centre.

Although a readymade two room dwelling unit with certificate of allotment was provided to the individual beneficiaries but the initiative lacks importance to the urban poor because it thwarted their livelihood and daily community life. Majority of the beneficiaries who are casual labour are jobless due to lack of job opportunity in the new location. They have to travel long distances in search of job and as a result they end up spending one-third of their daily income in travelling. Their expenses have also increased as they have to pay extra amount for electricity services and transportation cost. As a consequence, within 5 years of its construction, almost 10% of the units in



Image 4.3 Ballol Nagar Resettlement Colony. *Source* Chatterjee, 2014

Ballol Nagar were rented out by the beneficiaries who have moved back to the slums. The emergence of rental market and illegal transaction of property in the resettlement colony continues to be a prominent phenomenon even though there is a 10-year restriction.

Source: Chatterjee (2014).

4.6 A Preliminary Reflection on the Slum Rehabilitation Project

The study also takes note of the preliminary implementation of the Slum rehabilitation project in the city. The author's informal visit to Lakhudi Talavadi, a slum that originated on public land almost 50 years back, brought some interesting insights into the existing policy. Under the 2010 slum policy, this particular slum was demolished and the slum dwellers were rehabilitated in situ by bSafal, an Ahmedabad-based real estate developer (Fig. 4.11)



Fig. 4.11 A view of the Lakhudi Talavadi, a slum where rehabilitation project was implemented under the 2010 slum policy. *Source* Photo taken by the Author, 2015

The individual slum dwellers have been allotted a two room dwelling unit with all the facilities. Along with the dwelling units, a slum dweller is also provided with ownership rights. Although a majority of the residents in the settlement seem quite happy with their new house, yet a lot of them show their dissatisfaction. Their concern arises from the implementation process which was based on forceful community ‘consent’ and the discrepancy in the ‘housing allocation’ process. An interview with the slum dwellers revealed that initially the developers approached communities for seeking their consent regarding the scheme. But majority of the residents from the slum did not provide their consent for the project because they perceived that it is an eviction strategy where they will be provided home in other locations far from their present location. They claimed that no proper community consultation was undertaken and most people from the slum did not have any idea about what was going on. They eventually filed a complaint on behalf of the residents before the collectors, AMC and even the state government regarding their dissatisfaction about the project. But no one paid any heed to their complain. The developers forcefully demolished their dwelling units even though they had not provided their consent. According to the slum dwellers the developers had invited numerous unknown people and had prepared a fake list of consent. Finally the scheme was completed and the dwelling units were allotted to the beneficiaries on October 2015. The residents are also concerned regarding their increasing household expenses as now they have to pay taxes to the municipality and incur maintenance charges every month.

4.7 Summary and Discussion

In summing up, first, it is apparent from the study that in the informal settlements where no notable rights exist, the poor across tenure categories have achieved perceived security over the years. Their period of stay, strong community network and the closeness to the workplace plays a very important role in developing a sense of belonging in the city. These are mirrored in their substantial investment in housing improvement and accessing basic services in due course of time. One of the most apparent fears of the slum residents is the fear of eviction. Although in most of the cases the event of eviction has not occurred for years (like Allah Nagar, Valmiki Vyas) but the threat of eviction makes them more vulnerable. This is more precarious in slums located on public land. It is also to be noted that majority of the slums are located on private land where tenure is a complex issue. The solution to its issues needs to stream from ground reality. The perceived security is an intricate issue which the government does not often acknowledge and rather drives by the ideological imprint of its policies.

Second, in the past 10 years the displacement of the urban poor from the city has remained a central issue of urban development in Ahmedabad (Mahadevia, 2011). Although they have been awarded with individual tenure rights through the implementation of mass housing projects but this action has brought several consequences in everyday life and livelihood of the slum dwellers (refer to Box 4.3). One of the undeniable facts that appears from our case study is that, what the poor actually want is a place where they can continue their daily earning and reduce unnecessary expenses. In this context, one needs to take note of the implication of such intervention which resettles the slum dwellers and fails to understand or meet the needs of the urban poor.

Third, through the recent implementation of slum rehabilitation programme Ahmedabad is marching toward the market provision of housing to the urban poor which are driven by the single consideration of individual legal title as a viable policy option. According to the government the slum rehabilitation scheme is 'a Win-Win situation for Slum dwellers, developers, AMC and Government'. From the perspective of the state it is an ambitious project toward making Ahmedabad slum free. Further, it will also generate property taxes which will eventually strengthen the political visibility of the local government. According to the local government, the previous approaches towards housing like SNP in Ahmedabad aimed for improvement of the services of the existing slums however the service level standard was substandard and the slum dwellers encroached upon the service line which made it difficult for the government to manage. In the new policy the slum dwellers will receive a house and ownership without spending a penny from their pocket (AMC, 2015, personal communication). From the perspective of the developers it will provide them incentive in the name of right to utilize the easily available high-valued land in the prime locations of the city for various development purposes and also to be an active partner in the contemporary urban development discourse. Finally, from the perspective of the slum dwellers getting a free

home with legal status have many positive implications: it is the sign of the end of illegality, there will be no eviction threat and ultimately, housing is the major physical asset one has. It will lead to improvement of living environment and better quality of life for urban poor. But the disengagement of the government from the provision of housing and further side-lining the participation of the slum communities and local NGOs who had played critical role in the past has many disadvantages. The preliminary discussion from the case study of Lakhudi Talavadi provides some interesting insights regarding various issues like forced consent, fake allotment and no proper community consultation. This further questions the involvement of private developer in the provision of housing to the urban poor. Relying on the private developers for the provision of housing will possibly revamp the real estate market in the city and the market will thrive in achieving the ambitious vision of slum-free city but it would make the urban poor far more vulnerable in the open market by proxy provision of ownership rights in an attractive dwelling unit.

4.8 Conclusion

Finally, formulating a comprehensive policy for the informal settlement is likely to be a challenge to the local government in Ahmedabad. The solution of meeting the affordable housing demand could not be possible through the implementation public mass housing and formalization process which is being undertaken through the new slum policy. Some viable solution needs to be worked out (Annez et al., 2012). Therefore there is a need to facilitate gradual up gradation of the slums or incremental provision of security of tenure over direct provision of individual ownership. The review of emerging research on the alternative provision of ‘tenure security’ to the urban poor argues that the provision of individual legal title to the urban poor does not always bring desired results because it makes the poor more vulnerable to the ‘market led displacement’ and moreover, it does not take into account the diverse tenure categories enthrall different degree of security of tenure to the urban poor (see Payne 2001, 2002; Payne, Durrand-Lasserve, & Rakodi, 2009; Gilbert, 2001, 2012; Durand, 2006, Buckley and Kalariekal, 2006). In this context the implementation of SNP in Ahmedabad was an innovative approach in many ways. One also needs to keep in mind that in India where urban development is a state subject and land is a complex issue, providing individual legal tenure may be a costly process and a proper registration system is a lengthy one. In SNP, the adoption of a gradualist approach with temporary rights to remain in the settlement without threat of eviction and extension of basic services has already worked quite successfully.¹⁰ Primary surveys conducted in the SNP sites of Ahmedabad have clearly showed the positive impacts of this approach where people have

¹⁰An interview with Bijal Bhatt, MHT, 2013.

incrementally up graded their house from a shack to semi-*pucca* and even to *pucca* two-storied houses over a period of time. This programme is innovative not only because it has adopted area-based approach to upgrade the living conditions of the slum dwellers, but also it is quite effective in tackling the problem of the ambiguous tenure in the city. Notably, majority of the slum dwellers live in private slums where programmes like this are more viable, cost effective and can overcome complexity of land ownership. In this case, the NGOs and CBOs play a very important role in the organization and participation of the community and also in the financial aspect of the development.

However, it is to be noted that although SNP has increased perceived security of the urban poor but the non-recognition of various important rights makes it an incomplete exercise per se. Also to be noted is the fact that after the introduction of BSUP and the recent Slum Rehabilitation policy, SNP has lost its initial glamour and has become a legacy of past to the public officials. But the findings of the study suggests that for a successful housing policy committed to the cause of the urban poor, it is necessary to look at the diverse range of tenure systems explored in the city and which are an integral part of the increasing demand for affordable housing for the urban poor. And so, the Slum Networking Programme of Ahmedabad is one such example that is readily available for re-consideration.

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Appendix

See Table 4.2.

Table 4.2 Slum profile of Ahmedabad with their land ownership status (old city limit)

Land ownership	Number of slums	Number of huts	Total population	Percent of population
On AMC land	72	31,349	156,745	20.51
On government land	53	12,141	60,705	7.94
On private land	408	93,186	465,930	60.84
On mixed land	34	12,466	62,330	8.16
On road	5	707	3535	0.46
In river	2	48	240	0.03
<i>Gamtal</i>	11	1770	8850	1.16
Others	4	1149	5745	0.75
Total	589	152,816	764,080	100.00

Source Calculated by the author from the unpublished Socio-economic Survey data on Slums in Ahmedabad, 2010 (Author, 2013)

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Chapter 5

State, Governance and Urban Poor: Insights from Visakhapatnam City

Debapriya Ganguly

5.1 Background

Borrowing from Skocpol and Nodingler; Kohli defines ‘State’,

as a set of administrative and coercive institutions headed by an executive authority, defining, at minimum, the territorial boundaries within which societies conceiving of themselves as a nation or competing nations exist (1987: 23).

The coercive nature of the state is neither ‘complete’ nor ‘legitimate’ and undergoes transformations with the changing regimes of state power. The state often remains as an abstraction, understood as a compilation of the government, military and the bureaucratic institutions. The “state’s interests and goals may or may not be coterminous with those of social actors” (Kohli, 1987: 23). The chapter aims to emphasise on this particular aspect of the state’s agential role and its goals in relation to the interests of the people. For this purpose, three major questions will be explored, in the context of neo-liberal urbanisation in India,

1. what is the idea of state and how does it interact with the strategies of governance?
2. what characteristics do these strategies acquire?
3. how do the ‘governed’ get subjected to these strategies of the state?

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5.2 The State and Its People: An Overview

‘Liberty’, ‘equality’ and ‘fraternity’, emerged as important components in the making of the state during the French Revolution which did not remain confined within the ambit of the western political scene but spread to ‘most’ parts of the world (Chatterjee, 2004). Referring to the French philosopher, Etienne Balibar; Chatterjee points out that ‘property’ and ‘community’ became the axes around which the ‘rights’ of the citizens revolved (2004: 30). These two aspects also determined the nature that capital assumed in the modern state and thereby, were given due consideration not only by the liberals and the communitarians, but also by the republicans. However, with the advent of the twentieth century and proliferation of the nation state in all its forms, freedom and equality could not function solely within the institutional frameworks of the state, but required the participation of the ‘civil society’ and not ‘political society’ which signifies a certain section of the population who are ‘ambiguously and contextually’ right bearing citizens, not belonging to the civil society (Chatterjee, 2004: 38). The distinction between citizens (which correspond to the nation state based on popular sovereignty) and equal rights; and population (which is related to the activities of government agencies) remains clear (2004: 34). ‘Population’ is the main focus of governmentality and thereby, enumeration in terms of various characteristics like, religion, ethnicity, caste (as in the Indian context), etc. has always appeared important for the formulation and implementation of government policies. This has been a primary feature of the colonial states where, population as an idea carried more weightage than citizenship. The colonial state was succeeded by the developmental state that took forward improvement in the conditions of the population through different measures. Again the multi-layered category of citizenship enters the discourse bringing out the difference between ‘formal’, and ‘substantive’ citizenship (Holston & Appadurai, 1996: 190). Though it is the formal citizenship which secures one’s identity as a member of the nation state, the rights which come with this identity, are part of the substantive citizenship, and there is not necessarily a concordant relationship between the two (Holston & Appadurai, 1996). Formal citizenship brings certain responsibilities (e.g. tax payments) which sometimes appear to be obligations than rights, therefore, it is substantive citizenship which people seek.

The next section captures the ways in which the Indian state had emerged in the post-independence period, focusing on its approaches towards addressing the needs of its citizens.

5.3 The Indian State and Its Urban Agenda

The ‘developmental ideology’ was a significant component in the making of the post-colonial Indian state. “The state was connected to the people-nation not simply through the procedural forms of representative government, it also acquired its

representativeness by directing a programme of economic development on behalf of the nation” (Chatterjee, 1997: 277). And these two roles were not necessarily compatible with each other, giving rise to contradictions; this disparity was apparent at the planning and policy levels. With the onset of the neo-liberal era, there were further shifts in the state’s interventions in the lives of the people. A sharp and interesting binary shapes the statist strategies; while it played the role of passive onlooker under the effects of neo-liberalism, making space for the private actors and reducing its active presence in the realm of welfare affairs of the people, it also initiated different types of programmes to garner votes from the lower socio-economic groups. The presence of the private sector against such ‘competitive populism’ becomes prominent (Gupta, 2012). The struggle to strike a balance between those sections of the population who have not gained from India’s high growth rates and its participation in the global economy and the pressures from corporate capital and the urban middle classes to enable a ‘good investment climate’ and ‘world-class facilities’ with respect to services becomes apparent (Gupta, 2012: 293). However, in the backdrop of growth and development, it is the former- the socially and economically backward sections-who continue to get excluded and their priorities pushed to the bottom of the list. The urban agenda of the state, also reflect similar ideas, wherefore the prevalence of programmes and schemes, initiated by the state do not seem to signify its focussed attention on the needs of these people.

The post-colonial state’s focus on the ‘urban’ got manifested in the first two five year plans with the establishment of various departments and institutions for urban governance (Shaw, 2012). However, the pace at which urbanisation took off in the country in the subsequent decades, being coterminous with the economic changes, made it a serious concern for the state. According to the Census 2011 data, there has been a significant rise in the number of towns (from 5161 to 7935), Urban Agglomerations (from 384 to 475) and million-plus cities (from 35 to 53), when compared to the Census 2001 figures, giving rise to questions regarding housing, basic civic amenities, and how to tackle informality (Shaw, 2012: 25). In the post-liberalisation era, certain urbanization trends continued, namely, decrease in the number of jobs in the manufacturing sector, growth of large towns, rise in the number of metropolises, expansion of city limits and outward growth, increase in the number of slums and squatters, etc. and the introduction of economic reforms by the state automatically highlighted the significance of urban centres. Motivated by both local and global factors, the Indian urban setup have received a major thrust which is evident over the last few decades in the form of considerable growth in the levels of urban population.¹

The state developed various strategies to confront the urban challenges. The Jawaharlal Nehru National Urban Renewal Mission (JNNURM), an initiative of the Ministry of Urban Development was floated in 2005 where 65 cities were listed for

¹As the 2011 Census data show, that 377.1 million people stay in urban areas, when compared to 286.1 million in 2001.

receiving assistance in building infrastructure necessary for urban living. One of the major idea was to involve urban local bodies (which already received impetus under the 74th Amendment of the Constitution) along with participation of private actors through Public Private Partnerships (PPPs) across its two major components: Urban Infrastructure and Governance and the other with Basic Services to the Urban Poor (BSUP). It bore the promise of restructuring urban governance in India, such that the Indian cities will be comparable to their global counterparts. Even though the mission came up with various plans and projects, its success at the level of implementation is still questionable. Multiplicity of institutional actors, including the public, private bodies and the courts, made the issue of accountability problematic and the provision of urban services faulty (Rewal, 2011). Most of the consultation meetings of City Development Plans (CDP) did not facilitate the involvement of the poor, and in some of the few cases where they participated, their suggestions were not taken into consideration at the time of execution (Rewal, 2011).

5.4 The Urban Journey of Visakhapatnam

Visakhapatnam is the largest city of the new state of Andhra Pradesh, formerly known as Vizagapatam during the colonial times. Geographically, it is located in a picturesque setting bordered by a long coastline from the northeast to the southwest, along with an inland range of hills called the Simhachalam range. It was one of the smallest *taluks*² in the district of Vizagapatam. However it was densely populated and also acquired prominence for having the district headquarters established there. It was also the headquarters of the Northern Division of the Madras Presidency till the year 1878 (Francis, 1907). The Vizagapatam *taluk* experienced greater rise in population as compared to other *taluks*, between 1891 and 1901. As early as 1858, Vizagapatam became a municipality in the Madras Presidency, including the suburbs of Waltair, and was considered to be very successful in its performance. As Patrick Geddes recalled

Vizagapatam is a modern maritime city efficient commercially, industrially and steadily prospering as the outlet and inlet of a great and increasingly prosperous inland region. Adequate housing for the people in the healthy suburbs is one of the good conditions of a successful port. It has a real harbour without the many evils which past neglect rather than natural difficulties had crowded Bombay and other sea ports (as cited in: Raman Rao, 1958: 170).

Its system of taxation and revenue collection was well acclaimed by the British government; along with its efforts at building wide streets, markets, providing street lights and plans for drainage and water supply in the first year. A municipal council was established under the Act of 1865 where three-fourth of its members was elected by rate payers (Francis, 1907: 216). With the closing of the nineteenth

²A *taluk* is a sub-district administrative unit.

century and towards the beginning of the twentieth century, “Visakhapatnam started its career as the promising centre of industries and institutions” (Rao, 2000: 287). Beginning with the Waltair Railway station to King George’s Hospital, Andhra University, Port, Hindustan Shipyard and Naval Base, all established before independence, the city had a lot to offer (Appa Rao, 2000).

Within and around the city limits there were tracts of land which were owned by the landlords. With the construction of Port in 1927, large landholdings were being made available for industrial development. In the following decades, there was a substantial increase in the population levels. With the formation of the state of Orissa (now, Odisha) in 1936, parts of the Visakhapatnam district, almost 11 *taluks*, got included in Orissa. Some of the remaining *taluks* of Ganjam district, which continued to be a part of Madras presidency, were included in the Visakhapatnam district (Census Handbook, 2011). As Jan Baken remarks, by 1947 there was “further densification and outgrowth of existing residential areas” (2011: 124). With the Madras Estates (Abolition and Conversion into Ryotwari) Act of 1948, estates system was obliterated and surveys were conducted on Estates and Inam villages. Since the Visakhapatnam district at that time appeared to be vast for administrative purposes; in 1950 it was further divided into the districts of Srikakulam and Visakhapatnam (Visakhapatnam Census Handbook, 2011).

In the post-independence period, there were essential transformations in the region. One is the formation of the Andhra State in 1953 which consisted of the 11 Telugu-speaking districts of the Madras Presidency, including Visakhapatnam (Raman Rao, 1958). In 1956, the Andhra state, along with the nine Telugu-speaking districts of the Telangana region and the former Hyderabad state; came to form Andhra Pradesh, and Visakhapatnam gradually became the second largest urban centre after the state capital Hyderabad.

Till 1955, the city consisted of the revenue villages of Visakhapatnam and villages of Allipuram and Waltair and areas around them; when the boundaries of the city got extended. Ten years later, in 1965, the port and the industrial areas also came under the Visakhapatnam municipality (Jan Baken, 2003: 125). As Nafzifer noted, Visakhapatnam experienced its initial economic development with the influx of various communities from different parts of India who were setting up their business enterprises (as cited in: Upadhya, 1988: 1433). The establishment of the industrial plants made Visakhapatnam a “boom town” in Andhra Pradesh, and saw further investments, drawn from agrarian surpluses, by entrepreneurs from the other regions of Coastal Andhra (Upadhya, 1988: 1433).

In 1978, Visakhapatnam acquired the status of a ‘Municipal Corporation’ due to a significant upsurge in its population levels. In 1979, the Vizianagaram district was carved out of Visakhapatnam District. In the next three decades the city displayed similar trends of population increase. With the liberalization of the Indian economy, in the early 1990s, there was a rise in the number of private sector undertakings. This also determined the ways in which urban spaces started envisaging growth. In keeping with such transformations, Visakhapatnam also planned out different types of developmental activities, which informs its present urban conditions. According to the Greater Visakhapatnam Municipal Corporation’s (GVMC) City Development

Table 5.1 The top ten million plus cities with highest percentages of slum households in the country

Million plus cities	Percentage of slum households in relation to total urban population (%)
Greater Visakhapatnam Municipal Corporation	44.1
Jabalpur Cantonment (Cantonment Board)	43.3
Greater Mumbai (Municipal Corporation)	41.3
Vijayawada (Municipal Corporation)	40.6
Meerut (Municipal Corporation)	40.0
Raipur (Municipal Corporation)	39.0
Nagpur (Municipal Corporation)	34.3
Greater Hyderabad Municipal Corporation	31.9
Kota (Municipal Corporation)	31.8
Agra (Municipal Corporation)	29.8

Source Census 2011, ppt on 'Housing Stocks, Amenities and Assets in Slums'

Plan, the city is “the fifth fastest growing ‘Industrial Metropolis’ in the Asian sub-continent and the fastest growing industrial city on the East coast of India strategically located mid-way between Calcutta and Chennai” (2005: 22). As the CDP further states, the city has been reporting continuous economic growth which receives boost from agriculture and fishing; large- medium- and small-scale industries and services related to trade, commerce, transport, telecommunication, management, consultancy, education and so on. With the help of such primary, secondary and tertiary sector activities; the city is seen to be heading towards economic development (CDP, 2005: 9). This steady rise in the population levels in the city, over the past few decades³ can be attributed both to natural growth and migration from neighbouring areas and it significantly contributes towards the labour force. Visakhapatnam has shown consistent inflow of migrant population in the last three decades, 32.4% in 1981; 34.4% in 1991, and 33.2% 2001, in relation to the total population (Sandhya, 2015: 20).

The CDP shows that there has also been a simultaneous growth in the number of slum dwellers. Many of these urban poor migrate from neighbouring villages mostly driven by work-related motivations. Additionally, with the extension of the city limits in 2005 to include 32 merged villages, and the earlier Gajuwaka Municipality under the GVMC, the poverty-stricken areas also came within the city’s perimeters. ‘Housing’ therefore became a cause of increasing concern. As per the 2011 Census, Visakhapatnam (under GVMC) was listed as the city (amongst ‘million-plus’ cities), with the highest slum population (44.1%) in the country, in relation to its total urban population (Table 5.1). In this context, mention must be

³According to the Visakhapatnam Urban Development Authority’s (2007) ‘Revised Master Plan for Visakhapatnam Metropolitan Region 2021’; Visakhapatnam Agglomeration’s population has increased from 10.57 lakhs in 1991 to 13.29 lakhs in 2001. As per the 2011 Census the population count is 20.37 lakhs.

made of GVMC's mission of evicting slum dwellers for city development and beautification works during this period. There were widespread protests by the slum inhabitants which led to the halting of this process. However, the two slums of Seva Nagar and Omkar Nagar had to bear the brunt of eviction in December 2011.

"If the peripheralisation of urban poor populations is an old mode through which states have addressed problems of in migration and rising land values in cities, its contribution to producing and perpetuating poverty has been very inadequately explored. It is now well recognised that such displacements disrupt slum-dwellers' hard-won occupational and livelihood security in the city" (Coelho et al., 2012:53). The resettlement colonies of Madhurawada, Kommadi and Pendurthi house six slums from the city under the JNNURM projects within the BSUP programme. The GVMC has constructed houses under the JNNURM and Rajiv Awas Yojana (RAY) schemes to rehabilitate the poor in view of improvement of their living conditions. In this section, the focus will be on a particular slum called Seva Nagar to understand these processes and events.

Cases of slum eviction in Visakhapatnam, like other cities of the country, are not unheard of. However, such incidences were mostly instances of in situ⁴ development and rehabilitation, Seva Nagar eviction on the other hand was ex situ⁵ in nature, displacing the people and relocating them much farther away from their original site of residence, thereby capturing considerable attention of the media, the Non-Governmental Organisations (NGOs) and the state. Besides Seva Nagar; Omkar Nagar slum dwellers were also resettled and several other slums were enlisted for eviction. The strong resistances and agitations from the slum dwellers coupled with the initiatives undertaken by activists of NGOs like, Association for Regional Tribal Development-Urban Wing (ARTD, now known as Association for Urban and Tribal Development) and Progressive Organisation for Women's Advancement (POWA); arrested the process of displacement of other slums. However, Seva Nagar and Omkar Nagar slums had to endure the consequences.

Seva Nagar slum which was earlier located near the Visakhapatnam Railway Station claims its origin to a time period prior to the formation of the undivided state of Andhra Pradesh, around the years 1947 and 1948. The settlers hail mostly from Vizianagaram and Srikakulam districts⁶ of coastal Andhra, besides Visakhapatnam district, and some even from other parts of the country. There were around 714 households existent in the slum at the time of eviction. Majority of the people were Christians belonging to the Scheduled Castes (Rellis, Malas and Madigas); along with some Hindu households of the Backward Castes, Muslim

⁴In situ development refers to the rehabilitation of people close to the original site of residence.

⁵Ex situ development denotes relocation of individuals to a distance farther away from the original site.

⁶Prior to independence, both Srikakulam and Vizianagaram were part of the Visakhapatnam district. Due to administrative reasons, the district of Srikakulam was carved out in 1950 and Vizianagaram separated in 1979. However these administrative boundaries could not restrict migration of people from these districts, to Visakhapatnam city, on account of it being an important urban centre in the region.

households and, some Sikhs as well. The slum dwellers occupied the lower income groups and mostly drew their sustenance from the railway-related services as daily labourers. The slum was recognized⁷ in the year 1988 by the Visakhapatnam Municipal Corporation (now, GVMC). In 1993, the slum dwellers for the first time received a verbal communication regarding possible eviction for occupying railway land, but till 2007, they were left undisturbed. The then slum president, who was also the Seva Nagar SC Service Society President, had appealed to the High Court for ‘status quo’ for the slum and received a favourable judgement. However, in April 2007 they were handed out eviction orders on the grounds that they were ‘encroachers’ on railway land and the railways intend to reclaim the area for developmental works. In 2010, the slum president pursued the matter with the GVMC, the Mandal Revenue Office and the East Coast Railway authorities by using Right to Information Act and filing petitions to figure out who has ownership over the land. In the documents, which he was able to obtain, it was clearly stated that the 3 acre 33 cents of land on which Seva Nagar was located, was not available in official records. There was still a dispute pending regarding the status of that land.⁸ However, no amount of legal petitions and pleas helped the cause and eviction followed.

The NGO, ARTD and the slum president brought to the notice of the Andhra Pradesh High Court the existence of bogus stakeholders. So before the eviction and resettlement of the Seva Nagar dwellers were to be carried out, an order was issued to identify the legitimate beneficiaries for the allotment of houses. Nevertheless, the residents were promptly displaced under the initiative of GVMC and the railway authorities in December 2011, flouting the restraining order issued by the High Court. The Seva Nagar residents witnessed their settlements being bulldozed and, property thrown out. This was followed by the transportation of the people, almost 20 km away in the city’s peripheries, to the areas of Madhurawada, Kommadi and Pendurthi.

The following section would try to give an insight on the challenges faced by the residents of 71 households⁹ of the three resettlement colonies, in negotiating with the new life conditions, generated as a result of state intervention. By doing so, the attempt will be to capture effects of the state’s governance strategies on the people (Fig. 5.1).

⁷According to Census 2011, “all areas recognized as ‘Slum’ by State, UT Administration or Local Government, Housing and Slum Boards, which may not have been formally notified as slum under any act”.

⁸After the construction of a park in the location where Seva Nagar existed, the land has been established as railway property.

⁹Based on the interviews conducted by the author of residents from 71 households, in the time period between January and November 2014, in Visakhapatnam city.



Fig. 5.1 JNNURM houses at Kommadi resettlement colony

5.5 The City, People and Predicaments

Don't be happy seeing these buildings...no point in having this house if there is no money to feed the people living in them.¹⁰

Madhurawada, Kommadi and Pendurthi are areas located on the suburbs of Visakhapatnam city. Madhurawada and Kommadi are on the eastern peripheries of the city, situated along NH16 (previously known as NH5, the national highway runs along the east coast from Kolkata to Chennai) and, Pendurthi is on the north western side. As mentioned earlier, the eviction of the Seva Nagar residents was ex situ in nature, pushing them much farther away from their original site of residence.

One of the most adverse effects of this eviction was in terms of the deterioration of the economic conditions of the people. Most of the residents who are now in the resettlement colonies were born and raised in Seva Nagar, and over several decades had established their social and economic networks which enabled them to acquire jobs and earn a living. Having stayed in a central location of the city, (near the railway station), they also had access to different livelihood opportunities. Several of them were attached to various railway related activities, mostly as sweepers, followed by vending jobs. Others were engaged as daily labourers in different kinds

¹⁰Testimony of a respondent in the Kommadi colony regarding the JNNURM houses.

of casual jobs. Women also sought occupation outside home to support the family and were able to find various types of work, mostly as domestic helps and vendors. After eviction, once they started staying in the resettlement colonies, there was a rapid dilapidation of economic networks. This owed, not only to the fact that several men lost their jobs but also those women who were formerly active contributors in household income, were rendered unemployed and were compelled to stay at home. Some of the elderly members of the slum opine that as a result of the deplorable economic status, several youngsters started gambling and some even have been involved in theft. Some women have been reportedly forced into prostitution to feed their families when their husbands have failed to provide for them. Given the fact that, most of the slum dwellers have received very little to no education, finding formal occupation is almost impossible for them. Many of them complain that when they were relocated, they were assured by GVMC of jobs and economic stability, none of which materialized in reality. Most of them travel long distances to find jobs which are mostly of a contractual nature. Some others have been able to find a livelihood near the colony areas. Their occupations range from being sweepers at hospitals and cinema halls, to hotel housekeeping works, as fruit vendors, auto drivers, domestic workers, petty shopkeepers and, so on.

Having said so, it needs to be emphasized that, transportation is one of the most serious concerns for the people in the colony. Having been resettled approximately 20 km from their original residence, their work place has become increasingly distant from the resettlement colony. It was only in 2013, i.e. 2 years after resettlement, that under the initiative of the NGO ARTD; GVMC started a bus service from the colony to the city. Even then the residents sometimes find it difficult to commute because there is a considerable distance between the colony and the main road. So, if they miss the colony bus, they have to pay a minimum of Rs. 10 to Rs. 20 to reach the main bus stop, by share auto-rickshaws, from where they have to avail another transport to arrive at their desired destination in the city. On the other hand, the bus pass for one person, per month is nothing less than Rs. 750, therefore in months when they have no employment, or very little income they find it even more difficult to travel to the city. Additionally, an important point of consideration related to this issue is the safety concerns of women. Several of the residents in the colony have commented about the insecurity they experience over their daughters' safety. The colony being distant from the main bus stop and located in an isolated stretch, they often feel scared when their daughters are travelling alone; especially in the late hours of the day.

Besides these factors, the resettlement colonies being located on the city outskirts, has led to an increase in the cost of living for the people—prices of fruits, vegetables, pulses and regular food items are all of a greater value than the railway colony area. Some of the residents have ration cards which grant them subsidized rates, while many others have lost theirs during the process of eviction and are reapplying for them. As a consequence of all this they have little to no savings and severely lack financial security. The slum dwellers comment that these houses are probably better than their previous settlements in Seva Nagar but, it is not sufficient to have a house when they have no money to buy food.

Even with respect to the housing under JNNURM, there are issues raised by the residents. One of the major problems that came up post-eviction was in terms of the number of claimants to the flats allotted. As the NGO, ARTD and the former president of the Seva Nagar had discovered, there were at least 172 bogus stakeholders who had been enlisted and whose names were added as Seva Nagar occupants. As a result of this, many of the original residents of Seva Nagar did not get a flat, some of whom are paying rent (for flats belonging to owners who are staying outside the colony), while others have forcefully occupied vacant ones. Unlike the evicted slum dwellers of Seva Nagar and Omkar Nagar, there are four other slums of the city from where, residents have come voluntarily to the resettlement colony to avail the facilities of the JNNURM housing project by paying a certain amount. However, within 2 years of their relocation, the evicted dwellers of the Madhurawada colony received verbal communication from the GVMC asking them to make payments (Rs. 22,000/-) for the flats they are occupying, failing to do which might lead to further evacuation. Given their meagre income, many of the residents expressed their anxiety over the situation.

Apart from this, the lack of adequate provision of basic services has added to the agony of the residents. The condition of the buildings in the colony raises alarm, which have already displayed prominent signs of wear and tear right from the outset. The accounts from the resettlement colonies show that water supply provided to them is on an average for an hour or two per day which is between 6 and 8 am in the morning. At other times they take resort to the bore well where the water is not clean, according to them. Water crisis is persistent and the developmental works being carried out in the city's suburbs have not yet reached the colonies. With respect to drinking water, most of the people share the view that the water available for consumption is not safe. The water they use for taking bath also have caused them skin irritation and allergies. The resettlement colonies have open drains which during monsoons get severely clogged and emit unbearable stench adding to their health concerns. In Kommadi colony, the residents complained that the municipal corporation staff is not proactive in keeping the area clean, making garbage disposal problematic. Electricity supply in the resettlement colony started 6 months after the arrival of the residents. Even then, not everyone had electric lines in their houses. Some residents complain of excessive power cut and high electricity bills. According to them, after a prolonged struggle and with the help of the NGO, ARTD, they were able to obtain electric lines in their original site of residence in the railway colony area, which was installed, by partly accessing Rs. 6,50,000/- from the Member of Parliament Local Area Development (MPLAD) funds and the rest was paid by them, which comprised a substantial amount. In the post-eviction period, they again had to make payments for the electric connections in the resettlement colony. Even the street lights in the colony hardly function, casting darkness over the entire stretch.

Another essential cause of concern for the residents has been the absence of adequate medical services in the resettlement colonies. There are no government hospitals in the vicinity so, the residents have to either travel long distances to the city to avail medical facilities or contact the private practitioners in their nearby

areas. Several of the residents claimed that it is not only expensive to travel long distances to the city, during medical emergencies, but it is also risky in a case where the patient's condition is critical and needs immediate attention.

A major damaging effect of the eviction has been on the children's education of the slum dwellers. The process of eviction not only led them to lose an academic year but also led to several school dropouts. Due to the fall in the family income, many of the parents could not send their children to the former schools because they found it difficult to pay for the travelling costs and the tuition fees. In the resettlement colonies, for instance, in Madhurawada, there is a constructed space for a school, however it does not function properly and the students' attendance is quite low.

5.6 Furthering Discussions

Visakhapatnam city has experienced different phases of transformations from being a fishing village to a port town; from a port and industrial city and now as a smart city in the making. When in post-colonial India, 'development' was understood as the driving force behind state building, and the manufacturing sector was seen to flourish, Visakhapatnam also experienced the growth of heavy industries and consolidation of the port. These developments, besides investments drawn from the agrarian surpluses bore the promise of making the city an engine of economic progress. During this period there was a considerable thrust laid on urban planning and governance to facilitate a systematic expansion of the city. Simultaneously, Visakhapatnam also attracted significant numbers of people at this time, from the neighbouring districts and states, in search of livelihoods, leading to a 100% shortage in housing in the 1960s (Ranga Reddy, 1972: 28). Having said that, in the post-liberalization period with the gradual rise of the service sector the influx of migrant population continued,¹¹ therefore the pressure on land and civic amenities remained acute. The question however remains as to what strategies have been deployed by the state to address these concerns?

In the first Comprehensive Development Plan of Visakhapatnam, formulated by the then Town Planning Trust in the 1968, 'slum clearance' and 'slum improvement' had received emphasis as important measures to be undertaken for city development. Subsequently, in the following decades of urban planning, the focus on slum dwellers, their resettlement and/or improvement of their living conditions has further increased. The ideas behind 'incorporating' these sections in city building, in the form of discussions in Master Plans, allotment of various funds, ironically transgresses into practices which are 'exclusionary' in nature. What is essential to note here is how decisions about these sections, are arrived at, which often seem to overlook their actual needs. A lot of emphasis is laid on the

¹¹See p. 22 for percentages of migrant population.

importance of democratic participation of the people in state's policies and programmes. However, the ground reality reveals a different picture. These sections do not become equal rights bearing 'citizen' in the imagination of the urban, but rather come to compose the peripheral 'population'. The much desired 'substantive citizenship', is often beyond their reach. Looking at the account of the Seva Nagar eviction and some of the issues, amongst numerous others which have come up through this discussion, explicitly highlights these ideas. Located on the threshold of 'rights' and 'entitlements', these sections are engaged in a daily struggle to negotiate and compete for the state's attention. Moreover, there are situations, like that of the Seva Nagar residents who, post-eviction, had to establish their legitimate claims during the process of allotment of JNNURM houses alongside fake beneficiaries. The question of their 'rights' therefore becomes contentious and complicated, thus making it very difficult to secure their basic interests.

The land which was acquired after the eviction of the Seva Nagar residents, on grounds of bearing prime significance; had been left untouched for a considerable period of time with only a water tank being built in mid-2012; and in August 2014, a swimming pool and a park had been inaugurated in that space. It is a clear demonstration of the priorities of city planning wherein people and livelihood were replaced by the objectives of modernity in the form of aestheticisation of the city. "...in the room for judgment in determining who had an interest in the land; and in the 'urgency' clause, which suspended even limited checks on government discretion in undefined circumstances." (Chandra, 2015: 51) (Fig. 5.2).

When the Government of India launched the Smart City project in 2014, which aimed at an increased focus on the digitization of urban services, Visakhapatnam was one of the first cities to be included in it. The selection of the cities was apparently made on the basis of functioning of the urban local bodies and, past records of the cities. Vizag, Ajmer and Allahabad were selected as the cities which are to be developed with the help of U.S. Trade and Development Authority which would assist in drafting a Master Plan for the city ('Ajmer, Allahabad, Visakhapatnam: The three smart cities US will help India develop', Firstpost, October 1, 2014). As per newspaper reports, Visakhapatnam was chosen not only because of it being the largest city in the new state but also on account of its public service undertakings, industries, prevalence of the naval command and its metropolitan population. It is important to mention that the city is also considered by the central government as one of the success stories of JNNURM, whereby the urban local body has been lauded for its performance in the field of Basic Services to the Urban Poor. The illustration in this chapter, with respect to city development and the poor should allude towards a recalibration of this success story.

In October 2014, the cyclone Hudhud severely damaged the city and keeping in mind this incident, IBM which is the progenitor of the idea of Smart City has shown interest in developing Visakhapatnam along the lines of Rio de Janeiro, with concerted efforts in formulating emergency management plans because of its location in a cyclone prone area ('IBM to make Visakhapatnam smart city', The Deccan Chronicle, May 28, 2015). With the initiatives of Chandrababu Naidu, the Chief Minister of the new state of Andhra Pradesh, the IT sector in Visakhapatnam



Fig. 5.2 The original site of residence of the Seva Nagar dwellers which has now been converted into a park

is garnering renewed emphasis with a goal of transforming the city into a financial capital. Large tracts of land are being allotted for Start-up villages, IT firms, Pharma cities, to facilitate growth. All of these developments fall within the Chief Minister's 'Vision 2050' programme which give special attention to the progress of Visakhapatnam ('Chandrababu Naidu sets Vision 2050 for Visakhapatnam', The Deccan Chronicle, December 18, 2014). Amidst all these planning and projects, the fundamental question that demands our attention is, where are the poor placed in this larger picture? How are their needs and demands taken into consideration in this entire process? Is it possible for a city to chart out its own path of 'development' without attending to this section of the population, if so, for how long? The neo-liberal state chooses to invisibilize such concerns by fostering the promises of development. Looking at the case of Seva Nagar, the slum which had previously existed in the railway colony area for over 50 years, an essential question arises regarding the fate of certain sections of the urban inhabitants which rely on the 'tolerance' of the state towards them. Till when are these slums 'acceptable', and when they become 'encroachments' have correlations with the priorities of the city development as understood by the decision makers. Areas like Madhurawada, are being developed as major residential zones to provide homes to the professionals

who will arrive in the city to work in the Special Economic Zones, like Rushikonda for instance. Given these conditions, the demand for land, this time propelled by real estate development, may again lead to evacuation of the resettlement colony residents, thus pushing them further towards uncertainty.

The very trend towards making Indian urban centres ‘global’ or ‘world class’ itself reveals certain clear-cut ideas of the state. There are parameters which determine how it is to become ‘world class’ and these indicators direct towards processes which are more often than not exclusionary in nature and are carefully assimilated in the governance mechanisms of the state. It is not only essential to therefore study these exclusionary practices per se but also to realize the way they are impacting upon the lives of the people without which there will be persistent crisis in state governance. Unless these impeding issues are consciously addressed focusing on their specificities, the much-aspired all-encompassing growth is not attainable.

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Chapter 6

Performing Governance in Urban Patna

Sheema Fatima

6.1 Introduction

Post-Independence the writings on urban India have largely focused on metro cities. The nation-state neither had the vision nor sufficient impetus to build upon the latent potentialities of its provincial towns in others parts of the country. Yet they grew developing their own mechanism of spatiality and management. The current discourse in urban studies read cities as centres of political-economic restructuring of space post neo-liberal reforms (Banerjee, 2010) and accentuates market driven practices for city building. Through this process while the metropolitan cities have moved on to become global cities, the others are struggling for a decent take off. The 74th Amendment Act is an important policy instrument in this regard which aims at devolution of power to the urban local bodies by the state and to give it freedom of fund, function and functionaries. After more than 20 years of the Act coming into effect, this much desired devolution of power by the state is yet to happen (Ghosh, 2010; Aijaz, 2012). There has been diversion and diminution (National commission to review the constitution, 2002) of municipal functions to urban development authority which undertakes identification and sanctioning of urban infrastructure projects and the municipalities invariably become mere maintenance agencies (Hamid, 2004) since it lacks finances to undertake development work (Tawa-Lama & Zerah, 2011). The constant tension between the decentralization and recentralization forces at work in the JNNURM programme (Maringanti, 2012) further aggravates the situation. Most literature elucidates the conditions in metropolitan cities and those belonging to highly urbanized states in the country. But much needs to be explored about those Municipal bodies which have experienced the operationalization of 74th Amendment Act, 1992 at a juncture when urban development was offered and preached in a mission mode with

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programmes like NURM across the metropolitan cities in India. It brought in a renewed effort in urban development in the reforms era (Mahadevia, 2011) and in several cases initiated forced revival of interest in the third tier of governance although the state itself was reluctant to give away its power and suitably benefited from decade only incapacitated municipal bodies. But little research addresses the local dimension of urban politics (Tawa-Lama & Zerah, 2011).

The developing or under-developed countries may not necessarily be in the world city network or fulfill the criteria of a global city; nonetheless they are urbanizing and expanding. For over a decade or more there has been a shift to capture this distinct expression and bring in a new approach of doing urban studies in the global south. The body of literature on southern urbanism is critiquing the concept of modernity, asserting the presence of the postcolonial narrative and giving voices to the subaltern in urban studies. Global south is developing its own idiom (Roy, 2009) and giving birth to quiet rebels (Bayat, 2000) often as an act of democracy 'from below' (Appadurai, 2001) or as 'occupancy urbanism' (Benjamin, 2009). It is reflective of the diversity and intricacy of the city itself, which can never be uniform and single but similar yes. In case of India after the 2011 census it appears that an important, extensive and widespread segment of Indian urbanization may satisfy the definition of subaltern urbanization, i.e., it is autonomous, economically vital and independent of the metropolis finding newer geographies in the peri-urban and suburban settlements (Denis, Mukhopadhyaya, & Zerah, 2012). In these autonomous functioning urban landscapes of the global south, governance is another key feature for developing an understanding of the contemporary urbanization processes. One has to keep in center the decentralization process being undertaken in various parts of the country which though not uniformly implemented is giving rise to numerous possibilities depending to some extent on the political-economic realities of each of these cities. Although even within the global south the emphasis is on those cities which experienced the invasion of neo-liberal market on a much larger scale and have seen a decade of its presence. This paper is an attempt to explore new geographies of global south and develop another narrative of looking at the vast and varied processes of urban transformation but also bringing to the forefront 'epistemology of the particulars' (Castree, 2005 in Tawa-Lama & Zerah, 2011) which hopes to unpack the embeddedness of the global and the local processes. This case study of Patna Municipal Corporations and its functioning under the new reform period is an attempt to open up accounts of the unceasing everyday struggles of municipal functioning. It highlights the vested political manoeuvres among the elected ward councilors themselves leaving much to be desired with respect to actual implementation of civic work and city development. The paper is based on the ongoing research work on Patna. The secondary source of information has primarily been the local newspapers, particularly Hindi newspapers which give more coverage to everyday activities of the local bodies. Besides, formal interviews were conducted with the then Patna Municipal corporation officials, commissioner, Mayor and other ward members. Other informal interviews with activists and retired government officials have also helped in developing the content of this paper.

6.2 Urban Development in Bihar

As per the census of 2011 total population of Bihar is 103 million and 11.3% of this population lives in urban areas. The level of urbanization in Bihar is second lowest in the country. Patna is the largest city and the state capital. Out of the 53 Urban Agglomerations in India, Patna ranks 18th with a population of 2,049,156 (2011 Census). The Patna Urban Agglomeration consists of three municipalities: Danapur, Khagaul and Phulwari Sharif. Patna city's share of population is 1,684,222. It covers an area of 109,218 km². As a prime city in the state, it has witnessed a rapid growth but largely unregulated. The city receives a floating population estimated at about 2 lakhs per day who come to the city for employment, educational and health facilities. According to City Development Report (2006) near about 65% of the population of Patna resides in slums and other poor quality settlements. If we look at the political-economic structure in the state the preponderance of the upper-caste agricultural landlords has been distinct (Frankel, 1990). It was the same class and caste which later found its presence in the bureaucracy and state machinery. The decade of 1990s particularly saw poor law and order situation leading to flight of capital and even the working class from the state to other parts of the country. It led to negligible investment, with no industrial or business establishment opening in the state. Those who stayed back struggled with crumbling infrastructure facilities. In 2000 with the bifurcation of the state the mineral rich areas went to Jharkhand stripping the state from a major source of revenue. Thus the middle class, the patrons of the civil society, never stayed in the state and those who did were impressions of their feudal backgrounds. Since the core constituency and the ruling class was the same upper caste landed gentry the state of non-governance suited one and all. They were the harbingers of property grabs and beneficiaries of this state of non-development. The Lalu–Rabri regime in Bihar ruled the state without governance (Mathew & Moore, 2011). The collapse of governance was deliberate and was used as a technique of rule as the state was considered to be elitist and incapable of delivering justice (Manish & Pushpendra, 2014). Under such circumstances the development of urban centres was never a major concern for the state. The first real attempt at inaugurating municipal government in Bihar was made in 1884 when the Bengal Municipal Act III (B.C) was passed. The previous Act XXVI of 1850 which gave option to the people of a town to apply for municipal administration had failed because few towns in the Bengal presidency took advantage of it. So the Act of 1884 authorized the lieutenant governor to set up a municipality for any town without application from its inhabitants (Singh, 1979). Subsequently, Patna City Municipality was constituted under the Bihar & Orissa Local Self-Government Act of 1885. With the carving out of Bengal province in 1911, a new province of Bihar and Orissa was created with Patna as its capital, a bureaucracy was created to service the new provincial government (Das, 1992). Although Bengal Municipal Act III of 1884 was allowed to be in force from 1912 to 1922 in Orissa and Bihar. The Municipal Act, 1922 was enacted which is a landmark under which Patna municipality functioned. The new Act revised the

municipal laws more in accordance with the changing times and offered opportunities for people's participation (Rout, 1988, 56). The district magistrate was the controlling head for building construction and land usage under the Bihar Restriction of Usage of Land Act, 1948. Post partition Bihar Town Planning and Improvement Trust Act 1951 (Bihar Act XXXV of 1951) was introduced in 1951 and the Patna Improvement Trust (PIT) was set up there-under. The Trust prepared a master-plan for 20 years which was approved by the State Government. In reality it was a haphazard land use exercise. Moreover Patna Improvement Trust did not have adequate infrastructure or financial support to implement the Plan. In 1975 through an ordinance Patna Improvement Trust was replaced by Patna Regional Development Authority (PRDA) which was henceforth entrusted with the overall development of Patna and its neighbouring areas. In 1976 it managed to prepare a comprehensive city development plan and an effort was made to ensure that different agencies work collectively towards it with no positive consequences. On the other hand, this period of building and planning through Patna Regional Development Authority (PRDA) witnessed determined efforts by the people particularly those who were in power to circumvent the master-plan. Unplanned development of housing colonies became the norm; formation of housing cooperative became the norm mainly to defeat government's steps to acquire land for state housing board. Development of civic infrastructure was negligible in such residential areas. It gave birth to innumerable unplanned colonies in the city. Some effort to prepare a master-plan was made in 1986 again with little consequence. Much later Patna Regional Development Authority in 2006 again made efforts to prepare a master-plan for 2021 with the help of private consultants: it remained unapproved. After the enactment of Bihar Municipal Act, 2007 PRDA was merged with Patna Municipal Corporation. In 2012 the Bihar Urban Planning and Development Act was introduced and was expected to bring in a renewed vigour for finally having an approved and legislated master-plan after more than four decades. The 2030 Master-plan still awaits approval from legislative assembly and to make its implementation possible.

The Patna Municipal Corporation was established on 15th August 1952, in accordance with the Patna Municipal Corporation Act, 1951. With the enforcement of the Act, the former Patna City Municipality, the former Patna administrative committee and the former Patna Bankipur Joint Water works Committee were replaced by The Patna Municipal Corporation. The first Patna Municipal Corporation elections took place in March 1954 consisting of 36 wards. At present there are 72 wards in the municipal corporation area. The typical municipal functions such as provision of water supply and sewerage system are performed by non-municipal state agencies like Bihar Rajya Jal Parishad and Public Health Engineering Department. The municipalities themselves are in no position to take on these responsibilities due to lack of technical competence, financial incapability, and inadequate management capacity. There has been little effort to strengthen its capacity with the changing nature of the city and consequent municipal duties over

the years. It requires rationalization and restructuring of the posts which had become archaic and non-productive over the years. It was the Patna High court¹ which ordered the state government to constitute an expert committee for examining and restructuring the staff strength and pattern of the municipal corporation which was based on those sanctioned in 1952 but continued till 2014. At present there are 150 vacancies including the post of chief town planner and engineers in Patna Municipal Corporation. At the same time since 2009 several para-statal agencies like Bihar Urban Infrastructure Development Corporation Ltd (BUIDCO) and Bihar Urban Transport Services Limited (BUTSL) have been constituted to speed up the implementation of JNNURM funded projects.

6.3 Devolution of the 74th Amendment Act

The 74th Amendment Act, 1992 talks about devolution of power to the urban local bodies. It emphasizes the same through decentralization of function, fund and functionary (Sivaramakrishnan, 2000) but implemented with varying outcomes in each state since local self-governance is a state subject. It is ensured by regular enactment by state legislature (Aijaz, 2007) as per the changing need or through judicial pressure. This provision allows the state a dominant position and is used often in contradiction to the core principle of 74th Amendment Act, 1992.

The condition of Patna Municipal Corporation became critical after 1970s. Some of the common problems faced by the municipality were non-payment of employee's salary for months which led to frequent strikes in turn affecting the condition of civic amenities in the city. Poor financial conditions led to frequent financial bail-outs and grants from the state government. To address some of these issues and improve Patna Municipal Corporation's financial condition Patnagar Committee was formed in 1987 but failed to submit its report. In 1990 again a committee was formed by the government which proved futile in fulfilling its mandate too. Thus the well intentioned efforts to improve the municipal corporation never moved beyond the intended. In such a situation resorting to supersession of municipalities rather than conducting elections was a common practice. The prolonged state control over the municipality was maintained through The Bihar Municipal (Third Amendment) Ordinance, 1971 and the Patna Municipal Corporation Amendment ordinance, 1971 which remained effective for 10 years. The superseded municipalities had bureaucrats as the administrative head. Ordinances related to local self-government in the state alone was promulgated 73 times which led to *erosion, rusting and supersession*² (emphasis as in the original Patna High Court Judgment) of the local self-government. It is also called a period of '*Ordinance Raj*' which entailed promulgating and re-promulgating ordinances

¹CWJC No. 9574 of 2012 (2014(2)PLJR611, 2014(1)PLJR482).

²CWJC 11082/95, 8525/95, 8862/95.

every 6 months without making an effort to enact them into Acts of the Legislature. The Governor of Bihar promulgated 256 ordinances between 1967 and 1981 related to various departments and these were in existence from 1 year to 14 years by re-promulgation the same. Out of these 256 ordinances 69 were re-promulgated several times. It was done methodologically and with a sense of deliberateness³ so that the state could maintain its authority. The ordinance gave provision to supersede the Patna Municipal Corporation initially for 30 months, which was later revised to 96 months and in 1991 it was taken further up-to 132 months. Meaning the state armed itself with the power to suppress the municipality for close to 10 years. In the given period it was headed by administrators who were not allowed to stay for more than 6 months. The condition reads similar in other municipalities of the state. Therefore effectively the very grounds on which these municipalities were placed under supersession i.e. collapse of financial condition and deteriorating civic conditions was perpetually being recreated by the state government itself. In the absence of a democratically elected local government, cities in Bihar were losing on the government of India funding for local bodies. It was released to only those states which had undertaken the mandatory municipal elections. Although in keeping with the ethos of 74th Amendment Act, 1992 the Bihar and Orissa Municipal Act, 1922 and the Patna Municipal Corporation Act, 1951 were suitably amended and called The Bihar Municipal (Amendment) Ordinance, 1994 and The Bihar Municipal Corporation (Amendment) Ordinance, 1994. It was further enacted as Acts in 1995 but till 1996 rules were not formed for conducting municipal elections and other functions. Owing to this, implementation of the law was a far cry and in the financial year of 1995–2000 alone Bihar municipalities lost a total of 67 cr as grant from the 10th Finance commission. In 2000–2005 under the 11th Finance commission when grants were increased by 50% for the local bodies, the state of Bihar lost 861.42 cr. The states had to undertake mandatory reforms of decentralization to be eligible for JNNURM funds, an institutional mechanism (Maringanti, 2012) for granting funds to the urban local bodies for developing urban infrastructure and basic services for the urban poor. Taking notice of this dire condition and an appeal made by the Central Bihar Chambers of Commerce, Patna High Court⁴ in October 2001 asked the state government to conduct the elections within 1 month and save further loss of these grants. After more than 10 years municipal elections were held in April 2002.⁵ The elected councilors had come to power after so many years that the municipal officials were neither in practice nor willing to follow the decisions taken in standing committee meetings and board meetings. As a ward councilor⁶ puts it, “After winning the municipal elections for

³(Dr. D.C. Wadhwa and Ors. v. State of Bihar and Ors. MANU/SC/0072/1986: A.I.R. 1987 SC 579).

⁴MANU/BH/0416/2001.

⁵The Mayor and deputy mayor elections were postponed till September since there was no provision for reservation for these posts.

⁶In a personal interview.

the first time in 2002 we went to the municipal office and could see that the bureaucrats are unhappy and felt the power slipping of their hand. Initially the condition was so hostile that we could not even sit in the municipal office, even we were not aware of our roles and position". The formulation of new Bihar Municipal Act, 2007 was a welcome move in this regard and strengthened the elected councilor's position. But it had several errors since it was a hurriedly drafted Act which was realized over the course of municipal's functioning. A large number of these were corrected through continuous Public Interest Litigation and writ cases filed in the Patna high court. Among several such court cases is Jagdish Singh Vs state of Bihar, 2008.⁷ It was a writ petition to challenge the constitutional validity of Section 27 of Bihar Municipal Act, 2007, which had no provision for the removal of empowered standing committee members. It stated that the mayor may change but once an empowered committee is formed it remains the same till next elections. The High court in its judgment noted if the councilor is either recalled under Section 17 or incurs disqualification after election for holding the post as member of the Municipality and an order of removal for such disqualification is passed in terms of Section 18(2) his membership to the empowered standing committee: ipso facto comes to an end. It was an ambiguous judgment wherein there was no clear provision for removal of the members of the empowered standing committee but said there is enough mechanism in Bihar Municipal Act, 2007 to do the same. It left the matter open to interpretation with no clear verdict. Due to which several other municipalities in the state took precedence and had the empowered committee continuing from the time of the previous Mayor. This decision was again challenged by the Mayor of Gaya⁸ who wanted to nominate her chosen ones to the empowered standing committee after coming to power. The single judge bench upheld the writ petition saying that the life of the empowered standing committee was co-terminus with the life of the chief councilor/Mayor. The decision was again challenged⁹ which emphasized that the *Court cannot enlarge the scope of legislative intent when the language of the statute is plain and unambiguous. The duty of the Court is to interpret the law as it reads. The Court cannot re-write or re-cast legislation* and concluded that the members of the Empowered Standing Committee shall continue to hold office as long as they are Members of the Municipal Council. This indecisiveness was finally challenged by the Mayor of Patna in the Supreme Court¹⁰ who after his election wanted to nominate seven councilors to the empowered standing committee. The Supreme Court verdict questioned the constitutional validity of Section 27 of the Bihar Municipal Act (2007) under Article 14 of the constitution of India. The bench reinstated that a newly elected Mayor has the right to elect his own members of the empowered standing committee *else it*

⁷(2009 (2) PLJR 394).

⁸SaguftaParween Vs State of Bihar (2010(2) PLJR1072).

⁹Jitendra Kumar Verma and others Vs the state of Bihar and others, (2010 (3) PLJR 285).

¹⁰(Afjal Imam Vs State of Bihar and others (2011 (3) UJ SC 1316).

jeopardizes the collective responsibility on the basis of democratic governance. In reference to the same changes were made in Sections 25(4), 23(3), 21(3), and 21(4) and save it from being ultra vires to the Article 14 of the constitution of India. It was only after such a long struggle which went up-to the Supreme Court this minor but crucial correction was made. Similarly the Bihar Municipal Act 2007, mentions about the election and the role of the mayor but there is no provision for taking the oath of secrecy for the office of the deputy mayor, nor does it define the chairs duties. Chairman and chief executive are declared as authority in Section-20 of the Bihar Municipal Act, 2007 but it does not mention about the deputy mayor. In the same way powers of chairman, chief executive officer and the ward councilors are defined in Section-27 of the Bihar Municipal Act, 2007. But nothing is mentioned about the role and responsibilities of the deputy mayor. But amusingly the deputy mayor has been mentioned in the process of calling no-confidence motion against him. It means a person who is not responsible for any executive function through his allegiance to the office can be nonetheless removed through a no-confidence motion. In several similar cases amendments to the Bihar Municipal Act, 2007 have been made through judicial orders. The first reason for such a situation is discrepancies in several Acts since it was never a thoughtfully written document but a hurriedly executed law. The second reason of reading the Bihar Municipal Act, 2007 in such cryptic terms was the lack of clearly defined rules and regulations leading to ambiguity in interpretation and implementation. To rectify and clarify the scope of interpretation the elected councilors resort to judiciary which are to momentarily fulfill their vested interest. It is not a collective effort of correction and rectification in the Municipal Act by the councilors to strength it. It is rather done individually or in groups to fortify their position in that particular situation. Third and most importantly in its present shape the Municipal Act has strings attached to each section which provides more power to the state than to the urban local bodies for execution and devolution of municipal functions. The elected representatives find their finances tied, their power limited and their functions curtailed. The Bihar Municipal Act, 2007 in Section 79 mentions that the state government may by order require the municipality to earmark funds which it receives from various sources and it shall be the duty of the municipality to act accordingly as often is the case when a decision taken by the standing committee of the corporation is easily overruled by the state. At the same time the standing committee cannot refuse to pass a proposal sent by the urban development department. Thereby making the Mayor who is elected as a ceremonial head and the commissioner vested with the executive powers. It is for the same reason that the Mayor believes ‘we should have the power to write the confidential report of the Municipal Commissioner so that some control and accountability could be exercised over them’.¹¹

¹¹In discussion with the mayor.

6.4 Embedding Decentralization in Local Urban Politics

As per the Bihar Municipal Act, 2007 the mayor cannot be removed in the first 2 years of its office. The instant 2 years are completed the chair faces a no-confidence motion without the necessity of having a reasonable basis for it. After the re-election the tenure lasts for 1 year and once again a no-confidence motion can be introduced. The Patna Municipal Corporation Mayor, who was elected on 22 May, 2012 faced no-confidence motion after 2 years of his tenure on 16th June, 2014. There were 33 councilors who supported the no-confidence motion. In a meeting called after a week on 26th June 2014, the Mayor managed to win the no-confidence motion with the support of 36 councilors. Needless to say in the interim 1 week the councilors were promised ample reward for their support.¹² The role of the executive head, which is the commissioner, is very limited in these election processes. But as one of the ward councilors said, “During the no-confidence motion the commissioner was openly speaking against the Mayor and suggesting that members should vote against him”.¹³ It had split the elected councilors in two groups, those who were supporting the Mayor and those who belonged to the opposite group and had the commissioner’s patronage. In the interim period the municipal board meeting was held under the deputy mayor and the commissioner¹⁴ which was against the Bihar Municipal Act 2007, since the Mayor was available for the same. It was attended by 44 ward councilors; as a show of strength against the mayor and his team of ward councilors. A legal notice was issued to the deputy mayor and the commissioner based on a PIL¹⁵ for chairing the meeting. This conflict between two factions of the elected ward councilors and the participation of the commissioner in the same provided an opportunity to the state to take matters in its own hand. A show cause notice was issued by the urban development department to the municipal commissioner and the ward councilors to reply particularly about its lack of action in procurement of 72 fogging machines which led to the spreading of dengue in the city, delay in execution of solid waste management project and delay in disposal of vigilance cases on illegal building construction activities.¹⁶ The commissioner was suspended by the Bihar government and the urban development minister believed¹⁷ that proceeding should take place not only against the commissioner but the board in its entirety, including officers and employees for not being dedicated to their work. It was one of its case in the state were the officer of an IAS rank was suspend for not performing his duty and for not being able to spend the funds. But Patna High court in subsequent days dismissed the commissioner’s suspension, saying it cannot be done based on their

¹²In personal interview with ward member from opposition camp.

¹³In personal interview with one of the ward members from the Mayor camp.

¹⁴The Telegraph 22nd October, 2015.

¹⁵AbhaLata VS state of Bihar in CWJC-2621/2014.

¹⁶20th November, 2015 PrabhatKhabar.

¹⁷13th December, 2013 Hindustan Times.

earlier stay order¹⁸ which barred the state government from transferring the municipal commissioner¹⁹ so that vigilance cases on illegal building construction can be addressed unhindered. Later the stay order on his transfer got entangled under two different double bench judgments. Whereas one bench rejected the suspension order, which was hearing cases of illegal building construction and the other bench hearing the case on solid waste management in the city said they cannot make decision on behalf of the government and is not concerned about the commissioner's suspension. To address this pandemonium a three judge bench was formed which removed the stay order on the commissioner's transfer. The decision was welcomed by the Mayor and his group of councilors who did not approve of the commissioner's action against illegal construction in the city. The Mayor covertly had political alignment with some of the members of the incumbent JDU party; one of them²⁰ had been directly implicated in illegal construction business in Patna. The group headed by the deputy mayor and his supporting group of councilors had affiliation with the BJP party and wanted the mayor to be ousted. At this time JDU-BJP which was running the government in coalition had split and was headed for the general elections. So even though there is no direct political affiliation the ward councilors carry the pressure of walking along with the parties they seek patronage from. The tussle for power affected day to day functioning of the municipality and for nearly 3 months standing committee meeting or board meetings were not conducted in the Patna Municipal Corporation; Bringing the executive functions to a standstill. The officials were hesitant in taking decisions and few senior executive officers requested for voluntary retirement or transfer from the department considering the increasing hostility within the municipal office.

After 1 year of term completion which barely saw much improvement on 26 June 2015 the second no-confidence motion was tabled against the present Mayor Afzal Imam by 40 councilors and on 16 July 2015 he was voted out by 38 votes. The mayor, as the opposition group ward councilors claimed could not fulfill the following functions, i.e. waste management, providing safe drinking water and street light. He also encouraged illegal hoarding in the city. Initially it was not clear if an ex-Mayor could stand for reelections but after clearance by the state election commission Afzal Imam managed to get re-elected and make a comeback as the Mayor. Those from the opposition group said they were threatened and pressurized by the leaders of the present government which had been re-elected to power a few months back. At the same time ward councilors from the Mayor's camp said that they were threatened and pressurized by the senior legislative council leaders of the opposition camp. In resentment of the no-confidence motion brought against the Mayor his group of councilors removed the deputy mayor on 30 October 2015 for not attending five continuous meetings of the standing committee. The matter was

¹⁸(2013(4) PLJR508).

¹⁹In last 4 years ten municipal commissioners had been transferred.

²⁰5th December, 2015, Hindustan Times.

further contested in the court.²¹ Consequently the new deputy mayor was elected from the Mayor's Camp.²² The ousted deputy mayor contested his removal²³ and reelections in the court and so did the newly elected deputy mayor to save her position. The confusion continued with differing interpretations given by the High Court and the urban development department. Finally to dissolve this lawlessness the High Court in its judgment on 13 January 2016 said the chair of the deputy mayor would remain empty till the next municipal election which is scheduled in 2017. At present after the grand victory of the JDU-RJD party in the legislative assembly polls, it is also expected that the state government and the mayor belonging to the grand alliance camp will speed up urban development work in the state.

6.5 Conclusion

The 74th Amendment Act, 1992 aimed at putting the relation between the state government and urban local bodies at a firm footing but such is not the case. The detailed account illustrated above gives a clear picture of subversion of power by the state from the elected representatives. First, the elected representatives of Patna Municipal Corporation are finding it extremely difficult to function through a hurriedly written Bihar Municipal Act, 2007. Second, support from the executive body is not very forthcoming, who believe that the elected members are incapable of decision making. It reflects the patrimonial-bureaucratic (Vidyarathi, 2004) culture of governance when the municipal commissioner interferes in the election process of the mayor or conducts the board meeting with the deputy mayor even though the mayor is available for the same. But when the state feels the discomfort of the commissioner not working in their interest by overlooking the cases of illegal construction by some of the political leaders in capital city the patrimonial-bureaucratic character goes a step further and the state directly intervenes in removing the municipal commissioner with such urgency that it bypassed even the standard administrative procedure for the same.²⁴ Another area of concern has been lack of finances in the municipality for undertaking city development plan. As one of the bureaucrats²⁵ sums it, "if there was ample for everyone to share, these tussles would be less". But as on 1st April, 2015 Patna Municipal Corporation had 8039.31 lakhs out of which only 2384.10 lakh was used. Even after the approval of

²¹CWJC 12051/2015.

²²The deputy mayor Amravati is the first woman deputy mayor in the 63-year-old municipal history. Although earlier women have fought for the post of deputy mayor but there was always a man on the other side who would win. But, this time candidate from both the sides was a woman.

²³CWJC 17721/2015.

²⁴The file noting of his removal were written well before the application for the same was put up in the urban department. The Hindustan Times, December 4, 2015.

²⁵In personal interview.

funds the ward councilors take no initiative to sanction and commission work. Each ward councilor has approval of 50 lakhs worth of project but only 24 councilors out of the 72 have utilized the funds and submitted a project report. Therefore predominantly decentralization process is reflective of the local politics and history which has been embroiled in petty politics and corruption (Maringanti, 2012). Poor technical assistance and financial support actually provide the government with opportunities to nullify the local bodies as a maintenance agency of urban infrastructure. Earlier the same logic was adhered to for superseding the municipalities for more than two decades in Bihar. Today superseding is out of bounds but controlling it through other instruments of governance is achievable. The 74th Amendment Act, 1992 entrusts the third tier of government with the urban local bodies but as one of the ward councilor's explained, "the elected member of legislative assembly (MLA) and Member of Parliament (MP) do not welcome this change. If all the problems of the citizen can be solved by the local ward councilors, who would pay attention to the MLA and the MP and how would they manage to take credit for every road constructed or street light installed but on the other hand if there is some problem in the city, it is the ward members who have to bear the brunt of the citizen's ire".²⁶ Today it is the city which is the real showcase of governance initiatives. It is here that the MLA and the MP want to be noticed for their efforts in brining capital intensive infrastructural projects which carry visibility and give an impression of building a global city. It is in the city that the real politics is being played out, which narrows the space available for ward councilors, who believe they are mere spectators. Hence, no effort is made for meaningful participation in decision making by the ward councilors themselves rather it is used merely as a stepping stone to advance their career growth as an MLA or MP in near future. The state controls the fund and function of the municipality whereas the functionaries have not been appointed from last 10 years in the state. Except for the sanitary staffs who are Patna Municipal Corporation's employee, others are brought in on deputation from other departments. The high court in its observation said that *purely executive functions based on logic have to be reminded by the court and it cannot become a substitute for local self-governance* (2014(1) PLJR482).

The new disciplines of financilization (Coelho, Kamath, & Vijayabaskar, 2013) has already settled itself in the process of urbanization in our mega-cities and with the model already set, emphasis on capital intensive urbanization practices have been unprecedented. The institutional reforms and decentralization of power were undertaken by the state in the first place to access funds under the JNNURM funding. It is being done through formation of special purpose vehicles (SPV) like Bihar Urban Infrastructure Development Corporation Limited (BUIDCo) which has not been able to complete any of the projects in the state capital. A detailed project report worth 26,000 millions was prepared in 2015 for drainage and sewerage work in the city but not a single work has been commissioned related to it till date.

²⁶In personal conversation with a ward councilor.

The creation of ultra-vires organization rather than strengthening and empowering the local body is a well-practiced and established norm of the neo-liberal setup. Fine tuning of these practices by states which are late starters in this business gives way to a misplaced sense of urbanization, when the state imagines that the problems of basic infrastructure, of improving quality of life and increased citizen's participation can be achieved through by-passing the municipalities and subverting their power. Today city has become an important endowment for which the struggle to control and manage it for benefit among the elected representatives will continue in times to come. The operationalization of decentralization processes is more engaged with politics of resource contestation than urban development.

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Chapter 7

Sustainability of Urban Fringe Development and Management in NCT-Delhi: A Case Study

Ramakrishna Nallathiga, Suhani Taneja, Anusha Gupta and Bitul Gangal

7.1 Background

Rapid population growth and the accompanying urbanization process have been the serious challenges of the twenty-first century, particularly in developing countries which are facing this challenge to a far greater extent than developed countries. In the year 2001, the world population was 6.1 billion and the UNFPA predicted that, due to a rapid increase in population in developing countries, the world population would reach the level of 7.8 billion by the year 2025, and 9.3 billion by the year 2050 (Kaji, 2004). The proportion of urban to total population in developing countries was 40% in the year 2000, and the size was about 2 billion people; it is estimated to increase to 50% by the year 2025 and 60% by the year 2050 (Kaji, 2004). This means that the urban population in developing countries will be more than double, i.e. from 2 to 4.8 billion.

India, along with China, has been the main contributor to the world's population and also world's urban population. The urbanization in India is resulting in tremendous changes at ground level which are not given due attention in the discourse of planning, development, administration and policy making. One such area that did not receive much attention is the development, planning and governance of 'urban fringe', which this chapter is trying to focus upon. This chapter is organized

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as follows: a background is laid down first in terms of urbanization in India, urban development patterns and sustainable urban development; an introduction to the concepts of urban region, urban fringe and issues of urban fringe is provided in the next section; finally, the Ghitori case is shown as an illustration of haphazard and unsustainable development of urban fringe of Delhi.

7.1.1 Urbanization in India

India has been progressively becoming an urbanized society since after independence, *albeit* at a steady pace. It has already attained an urbanization level of 32% by 2011; it is expected to attain the urbanization level of 50% by the year 2025. The urban population growth has surpassed overall population growth (and also corresponding rural population growth) several decades ago. The number of urban areas in the country has also been on rise for several decades to become more than threefold of that prevailing at the beginning of the century. Table 7.1 shows the numerical details of growth trends of urban areas, urbanization and urban population growth.

India has been on the rising path of urbanization for several decades, particularly after attaining independence. According to the latest Census, around 377 million population lived in cities and towns, which is more than five times the level population in the year 1951. The population growth rate of urban areas has outpaced that of rural areas in the last two decades. The aggregates of population and shares of urban as well as rural population are shown in Table 7.2. These trends in these aggregates show a clearly visible pattern of ‘rising urban—declining rural’ population as well as growth rates. The measure of decadal change in the share of urban

Table 7.1 Urban areas, population and its growth rate in India

Census year	No. of urban areas	Urban to total population (%)	Urban population growth rate (%)
1901	1827	10.84	–
1911	1815	10.29	0.03
1921	1949	11.18	0.79
1931	2072	11.99	1.75
1941	2250	13.86	2.77
1951	2843	17.29	3.47
1961	2365	17.97	2.34
1971	2590	19.91	3.21
1981	3378	23.34	3.83
1991	3768	25.72	3.09
2001	4368	27.78	2.73
2011	6166	31.20	2.76

Source Census of India (2011)

Table 7.2 Urbanisation and urban population growth in India

Year	Total population (million)	Decadal growth rate (%)	Urban population (million)	Share of urban population (%)	Rural population (million)	Share of rural population (%)
1951	361.1	13.31	62.4	17.3	298.7	82.7
1961	439.2	21.64	78.9	18.0	360.3	82.0
1971	548.2	24.80	109.1	19.9	439.1	80.1
1981	683.3	24.66	159.4	23.3	523.9	76.7
1991	846.3	23.86	217.6	25.7	628.7	74.3
2001	1028.0	21.54	287.6	28.0	740.4	72.0
2011	1210.1	17.60	377.1	31.2	833.0	68.8

Source Based on Census of India (2011)

Table 7.3 Distribution of number of various classes of towns in India

Census year	Class I	Class II	Class III	Class IV	Class V	Class VI
1901	24	43	130	391	744	479
1911	23	40	135	364	707	485
1921	29	45	145	370	734	571
1931	35	56	183	434	800	509
1941	49	74	242	498	920	407
1951	76	91	327	608	1124	569
1961	102	129	437	719	711	172
1971	148	173	558	827	623	147
1981	218	270	743	1059	758	253
1991	300	345	947	1167	740	197
2001	393	401	1151	1344	888	191
2011	468	474	1373	1686	1748	424

Source Office of the Registrar General, India

population in total population, however, shows a steady rise from about 0.7 to 3.2%, implying that the urbanization has been taking place at a rising growth rate.

Another feature of the India's urbanization is an increasing trend towards concentration of urban population in Class I towns (cities with 100,000 or more people). Tables 7.3 and 7.4 show the distribution of urban population by size class of UA/town based on the available data. In 1951, only 45% of urban population lived in 76 Class I UAs/Towns, which constituted 2.7% of the total UAs/Towns (2795) in the country, whereas in 2011, 70% of urban population lived in 468 UAs/Towns, whose share also went up to 7.6% of the total UAs/Towns (6173). The structure and pattern of urban population distribution therefore clearly indicates that large cities are becoming places for larger number of people and small towns are diminishing in terms of both the number as well as their share of urban population.

Table 7.4 Distribution of population of various classes of towns in India (percent)

Census year	Class I	Class II	Class III	Class IV	Class V	Class VI
1901	26.00	11.29	15.64	20.83	20.14	6.10
1911	27.48	10.51	16.4	19.73	19.31	6.57
1921	29.70	10.39	15.92	18.29	18.67	7.03
1931	31.20	11.65	16.8	18.00	17.14	5.21
1941	38.23	11.42	16.35	15.78	15.08	3.14
1951	44.63	9.96	15.72	13.63	12.97	3.09
1961	51.42	11.23	16.94	12.77	6.87	0.77
1971	57.24	10.92	16.01	10.94	4.45	0.44
1981	60.37	11.63	14.33	9.54	3.58	0.50
1991	65.20	10.95	13.19	7.77	2.6	0.29
2001	68.67	9.67	12.23	6.84	2.36	0.23
2011	70.15	8.54	11.11	6.39	3.36	0.45

Source Office of the Registrar General, India

Table 7.5 Number and share of million-plus cities in India

Census year	Number	Population (in million)	Population per million-plus city (in million)	Percentage of urban population
1901	1	1.51	1.51	5.84
1911	2	2.76	1.38	10.65
1921	2	3.13	1.56	11.14
1931	2	3.41	1.70	10.18
1941	2	5.31	2.65	12.23
1951	5	11.75	2.35	18.81
1961	7	18.10	2.58	22.93
1971	9	27.83	3.09	25.51
1981	12	42.12	3.51	26.41
1991	23	70.66	3.07	32.54
2001	35	107.88	3.08	38.60
2011	53	164.56	3.10	43.64

Source Census of India (2011)

Accompanying the broader urban population growth, the number of the cities with more than one million population has been on rise. The number of such million-plus population cities went up from 12 to 53 between 1981 and 2011, and the number of people living in them went up from 42 to 120 million. Further, it is observed that there has been more concentration of urban population in metropolitan rank cities, i.e. cities with more than 5 million population. By 2011, the eight metropolitan cities—Delhi, Mumbai, Kolkata, Chennai, Hyderabad, Bangalore, Ahmedabad and Pune—have accounted for 25% of the total urban population and also constituted large share (almost 60%) of the population in million-plus cities. Table 7.5 clearly indicates a steady growth in the number as well as per cent share of urban population living in million-plus cities from 1901 onwards.

7.1.2 Urban Development Patterns

Rising urban population, especially when concentrated in some cities, results in an ever-expanding city boundary and increasing suburbanization of cities in both developing as well as developed countries; India is no exception to it (Buch, 1997). For the last decade or two, India's urban population has been largely becoming concentrated in sub-urban and peri-urban areas, thereby expanding urban influence to beyond the boundary of central city in terms of both population and economy. Urban development due to population growth also results into the ecological footprint of cities, which also depends upon the spatial growth pattern and structure of urban development.¹

It is well known that the population in urban areas in India has been growing not only due to sheer 'natural growth' of urban areas but also due to 'migration' from rural areas. Much of this is explained in terms of 'family expansion' in urban areas and 'push factors' of agriculture-based rural economy. While it is claimed that the growth story of urban demography presents several interesting dimensions such as large cities taking greater share of growth and small towns on the decline, the spatial dimensions of urban growth, i.e. emerging trends and patterns in the expansion of urban areas and their implications, have not been given due attention, partly due to heterogeneous nature and different dimensions of it.

An attempt was made recently in Sivaramakrishnan and Kundu (2005), which compared and analysed the growth of 'core' city and 'peripheral' areas of select Indian cities. They reported these spatial development patterns on a matrix showing the status in terms of growing core—declining core vis-à-vis growing periphery—declining periphery. Table 7.6 shows the placement of various Indian cities in this matrix. A good number of cities feature declining core. The decline of core implies increasing suburbanization of population and suburban expansion; which is attributed to—already large population base, lack of infrastructure and amenities, costs of living and stringent land laws (Kundu 2014).

Table 7.6 Development of core and periphery in Indian cities

	Growing core	Declining core
Growing periphery	Agra, Amritsar, Dhanbad, Indore, Jabalpur, Jamshedpur, Kanpur, Patna, Pune, Rajkot, Surat	Delhi, Ahmedabad, Asansol, Coimbatore
Declining periphery	Bangalore	Greater Mumbai, Kolkata, Chennai, Allahabad, Bhopal, Hyderabad, Kochi, Lucknow, Madurai, Meerut, Nagpur, Nashik, Vadodara, Varanasi, Vijayawada and Visakhapatnam

Source Based on Sivaramakrishnan and Kundu (2005)

¹Certain types of urban forms and structure e.g., compact city development, are considered to be more beneficial than others due to the in-built features of conserving resources and environment (Nallathiga 2007).

7.1.3 Urbanization and Sustainability

As urbanization in India is becoming more intensive and wide-spread, and with larger cities becoming major sharers of urban population, they together throw several major challenges to the stakeholders of urban development and also pose several questions that need to be addressed. The majority of the questions surround various dimensions of the sustainability of urban development and its pattern *per se*. These issues can be discussed under physical, socio-economic and ecological/environmental aspects of sustainability.

7.1.3.1 Physical Sustainability

As the levels of urbanization rise, more and more population resides in the urban areas there will be rapid rise in the resources required for sustaining the population and economic activities. Cities, which constitute the core of urban areas, also consume a good amount of resources—material, space, energy and natural resources—and also generate a good amount of waste that needs to be cleaned up. With the rise of city population, there will be more demands for the provision of these resources as well as the support infrastructure, e.g. market/transport infrastructure to support as well serve as sink, e.g. solid waste management. However, here, the unit rate of consumption, i.e. resource consumption per capita or per unit of land, is also important, which can vary widely between developed and developing countries. Rees and Wackernagel (1996) developed the concept of ecological footprint—which refers to the amount of hinter land required to provide the necessary resources as well as absorb the wastes generated by such urban community—to highlight the impact of cities on the environment. Ecological foot print can be an important indicator reflective of the city's development path—greater the foot print of a city, greater is its impact on hinterland.

7.1.3.2 Economic Sustainability

Economic sustainability of urbanization and urban development stem again from the resources (goods and services) required for the settlements and human activities. As the urban areas grow, they require organized flow of material goods, support services and nonmaterial services from hinterland areas, thereby exerting pressure on those areas so as to increase the supply to urban core. Also, the larger and growing cities with the concentration of people and economic activity require provision of civic infrastructure and amenities by concerned local authorities, which have finite capacity and capability to do the same. The planning bodies also do not catch-up with the development by providing direction and organization of development through master plans. These concerns raise the question of sustainability of organized development of these cities.

Cities are also hubs of organization of various business activities that lead to the development of enterprises. Thriving of enterprises is vital to their economic growth and attracting investments becomes better proposition. Local governments face a major challenge of attracting investments (doing business) due to lack of/shortage of space and civic services/infrastructure to support the business enterprises. Cities are now realizing that the exploitation of vertical space is required for providing space for this class of business and commercial activities and which would also yield additional revenue that can be used for meeting social obligations—infrastructure services and social housing for the poor.

7.1.3.3 Environmental Sustainability

The urbanization pattern and growth process of large cities has also some important implications to environmental sustainability. It is the scale economies and efficiencies in organization that make cities places of human concentration. However, if the city growth consumes more resources (including energy) and generates excess wastes, and its spatial growth pattern is reinforcing the same, then such development of cities has some implications not only to their long-term sustainability but also to the development of nations and the world. Such patterns of urban growth that lead to the development of urban sprawl, or suburban sprawl, raise the questions of environmental sustainability, as such urban development will lead to land use changes in favour of built form and subsequently the problems of providing water, sanitation, public health and waste management. The urban growth also impacts on the environment in terms of altering landscape, intercepting existing structure of hydrology and reducing biodiversity.

7.2 Urban Region and Fringe Areas

The term ‘Urban’ can have different meanings in different contexts and, therefore, different definitions of it are possible. Most of the definitions follow the demographic criteria while ignoring the spatial dimension associated with it.² MacGregor-Fors (2011) define urban area (city-scale) as the settlement under consideration with at least 50% built cover, i.e. with paved material, over an entire area, and within this there may be areas of sparse or moderate development that are a part of the heterogeneous landscape with less than 50% cover for a given unit viz., park, garden, river, etc. (Francis and Chadwick 2013: 8). Although this definition has advantage of explaining spatial differential of urban gradients like centre, suburban and peri-urban areas, it is

²For example, the Census Authority of India defined urban area as the one that satisfies three major criteria—(i) at least 5000 inhabitants living, (ii) more than population density of 400 persons/km², (iii) at least 75% of male workforce in non-agriculture occupation.

difficult to explain the process ridden variations like city-core, suburban fringe and non-rural hinterland.

7.2.1 Urban Region

Francis and Chadwick (2013) therefore take the concept further to ‘urban region’ and provide a better definition of urban area broadly as a combination of (a) a high proportion of built environment (b) a relatively high population density within a regional context. While urban area can be defined as above, the concept of the ‘city’, which originated from English settlements, is essentially an administrative concept which defines the jurisdiction of the city planning and administration within which a defined set of services are provided while levying a tax. Accordingly, administrative authorities can vary by nomenclature and jurisdiction depending upon the scale of the activity or area commanded or even revenue base.³

7.2.1.1 Spatial Structure

Urbanization is a process of the rise in population of urban areas, thereby an increase in the number of such urban areas. Although the broad pattern of urbanization in India and elsewhere remained the same throughout the twentieth century, i.e. rising levels and increasing growth, the regional dimensions of urbanization emerged after industrial revolution. Urban region comprises ‘central city’ and ‘hinterland area’ within its boundaries. Therefore, the concept ‘urban region’ is a geographical concept with core (or, central city) and periphery (or, hinterland) and it persisted to varying proportions across the world (Francis and Chadwick 2013: 9). Another corollary of it found in other parts of the world is ‘metropolitan region’, which has the core and peripheral candidates of metropolitan city and its influence areas.

While there is also a lot of research in the industrialized/developed nations on what causal forces lead to the emergence of such patterns (through development of models analyzing location choice and occupation structure), not much has been written about that in developing countries, where these patterns are guided by the population growth, which is driven by both natural growth and rural–urban immigration.

³In India, the city/town administrative authorities are defined as Municipal Corporations, Municipal Councils, Nagar Panchayats, which represent a decreasing order of level of services or activity and/or revenue. The exact criteria of classification are laid down by the State Municipal Acts which cover the local bodies within their respective jurisdictions.

7.2.1.2 Urban Environment

Urban ecology was originally used by human geographers and sociologists who applied ecological terms and concepts to explain human influences on spatial patterns and processes within cities (Braun, 2005, cited in Francis and Chadwick 2013). Human urban ecology is concerned about ‘environment’ and ‘nature’ of urban regions in relation to human activities and social patterns (Francis and Chadwick, 2013: 3).

Despite being relatively well planned and therefore spatially organized from a human perspective, urban environments are complex and heterogeneous in structure. The complexity of urban environment depends upon the spatial scale, e.g. urban/spatial form is more observable at broader scale whereas individual units/elements of space can be well seen at finer scale. Further urban environments are dynamic in nature with frequent changes in physical fabric and social organization. In this context the term urban form or urban structure (or urban morphology or fabric) refer to the spatial organization of both bio-physical and social parameters such as housing density, arrangement of transportation network, land use patterns, population density or employment distribution.

7.2.1.3 Urban Form

Francis and Chadwick (2013) define urban form to be considered as broad spatial characteristics of an entire urban region—including the shape and arrangement of urban complexes that represent urban land use within the region. Urban structure is spatial organization of the urban complex at finer spatial scales and is essentially how various urban components are arranged. The individual components can be gardens, parks, buildings, canals, rivers and many other elements found in urban areas.

At the broad (regional) scale, particular forms or typologies of urban spatial organization can be observed through urban spatial form. The two-dimensional plan form or shape of an urban area reflects the patterns of past and present urbanization, and will depend upon geomorphology, ecology and climate of the region as well as historical and current trends in urban planning. Some of the simple urban forms can be found to be prevalent in urban areas include (Forman, 2008).

- Concentric rings pattern
- Dispersed sites models
- Transportation corridors model
- Satellite cities model

7.2.2 Urban Fringe

The term ‘fringe’ suggests a borderline case between rural and urban; it actually lies on the periphery of urban areas, surrounding it and distinguishing itself from the

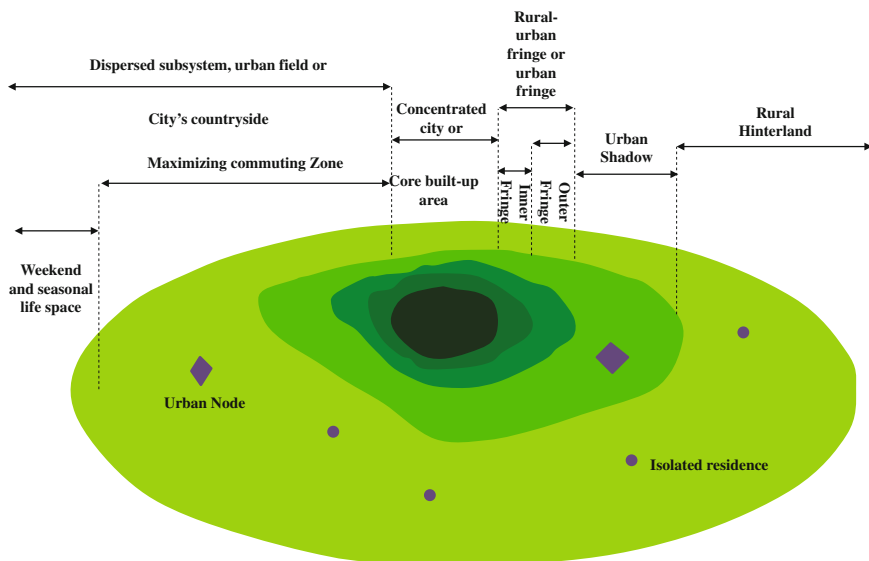


Fig. 7.1 Fringe area in an urban region. *Source* Redrawn based on Bryant et al. (1982)

truly rural countryside. The rural–urban fringe, in the real sense is a relatively narrow zone with varying width outside the political boundaries of an urban unit which is neither urban nor rural in character. The fringe of an urban complex forms a peculiar pattern depending upon the physiographic and transportation facilities of the area. Thus, rural–urban fringe zone is an area where various rural and urban characteristics are mixed together. Figure 7.1 shows the form of regional city with fringe area between rural and urban.

The urban fringe is not considered as an area with a very clear delineation. It starts in the urban area, where housing densities decrease and rural functions like food production and water management emerge. It ends in the rural area, where urban influences like housing and industry are no longer visible in the landscape. It should not be considered as a line, but as a zone with both rural and urban influences and a discussion about exact borders will not be fruitful in most situations. Sometimes it can start and end kilometers from the border between the urban and rural areas. Fringe areas form characteristically around major urban centers (or, central cities), and are almost the physical expansion of built-up areas beyond the municipal boundaries (Manonmani, 2010).

As the cities of the third world, especially the mega-cities, have demonstrated an unprecedented growth during the closing decades of the last century and the process continues unabated. The growth of their economic base, coupled with a steady rural–urban migration stream, has rendered the administration and development of the towns extremely difficult and created in the process the problem of the ‘Fringe’ (Dixit, 2011). As the cities expand in all directions, it results in large-scale urban sprawl and renders changes in land use. The spatial pattern of such changes is

clearly noticed on the urban fringes or city peripheral rural areas, than in the central city. This has made the fringe area of the city to be the most dynamic landscape. In the modern age of urban expansion, 'fringe' is of much significance, which is subject to one of the intense transformations of space use and activity mix.

The process and the resulting spatial form of urbanization is a function of many factors and are arguably different for each urban centre. With variations, however, there is a general consensus that the process becomes more integrated as the urban centre develops and the spatial form of growth can be broadly classified as concentric, sectoral or multiple nuclei in form. In urbanizing Asia, excluding the older more established major urban centers, the rapidly emerging new urban centers are primarily following the multiple nuclei form of development. This is of particular importance in that multiple nuclei development tends to create the largest amount of fringe area (Clark, 2009).

Urban fringe areas have been receiving more and more attention, given the transformational changes in both urban and rural areas plus the fact that both are becoming increasingly interwoven. For a long time, the urban fringe was a 'temporary zone' waiting for the next wave of urban expansion, but in many cases it is no longer expected that this on-going process of expansion will continue much longer. This gives the urban fringe a much more permanent character and calls for specific attention. This proves to be an important task, not only because of substantive issues but first and foremost given the often fragmented governance structures for the urban fringe (Vries, Haccou, Bruijn, & Stortelder, 2013). Studies in developing nations do confirm this, e.g. Olankule and Babatunde (2010).

The urban fringe contains both significant potential to boost economic development of towns and cities and many valued environmental, social and cultural assets which require protection within sustainable models of development. However, what makes the urban fringe a territory requiring research, policy and action in its own right is that it can be both an area of very special characteristics and an area of unusual dynamism and transition (Vries, Haccou, Bruijn, & Stortelder, 2012). Balanced development of urban fringe is now a challenging concern for urban planning. This is where the issue of sustainability of fringe area development comes about, which is the key focus of this chapter. In the next section we discuss the issues of urban fringe development and then will discuss the fringe area of NCT-Delhi as case study.

7.2.3 Issues of Urban Fringe Development

Urban fringe development is not only a process of transition of land from rural use to urban use, rather, it is a complex process that involves many concerns such as a change in landownership pattern, land transfer process, types of development, infrastructure services, and regulatory measures and their enforcement. The process of fringe development is not monolithic and may take place either by rural actors or by urban actors, in either formal way or informal way (Masum, 2009). The urban centers have always been of great concern to the policy makers and technocrats.

This is because of the role that they play in the economic, social and political development of a country. Urban centers are characterized by myriads of problems which cut across a number of sectors. These include housing, transportation, utilities and security. The dimensions and the consequences have enmeshed policy makers, planners and development professionals become more concerned with city centers and less concerned about fringe areas (Dupont, 2005).

7.2.3.1 Sporadic Development

The problems of urban fringe in developing countries are quite often and very similar in nature. Most of the developing countries experience spontaneous development pattern rather than planned growth as they fall outside the jurisdictional boundaries of the governing bodies of the urban area (Zerah, 2005). Therefore, the most daunting problem is development of land in informal way where associated land development activities take place without conforming to the state rules and regulations because the local governments and those of urban areas often act separately in terms of overall planning. This lack of an integrated advocacy group for integrated urban planning for the fringe areas is arguable the largest single hurdle to overcome (Dixit, 2011). Compounding the problem is that the local governments of fringe areas often have only limited town/urban planning rules, regulations or planning capacity. As a result, their existing 'urban planning' is at best incomplete and at worst non-existent. Similarly, the vastness and diversity of fringe areas and the piecemeal nature of development makes it almost impossible for local government to monitor and manage; hence, a reflection of poor urban fringe management.

7.2.3.2 Lack of Planning in Fringe

Spatial or physical planning is generally limited to urban settlements within municipal jurisdiction, i.e. central cities. Central cities tend to have stronger institutions for planning and development administration and they are also well financed through taxation that is linked to the value of property/land. As a result, the planning of fringe areas is relegated to backyard and the focus is made exclusively on central city plans. There are few mechanisms for integrating and coordinating the fringe area plans with that of central city plans. This results into the dominance of 'central city' and the 'fringe' is therefore kept at margins not only in terms of location on space but also in terms of planning and development of areas. This dominance of institutions of central city overshadows fringe areas in several ways.

7.2.3.3 Lack of Planning in Central City

At the same time, the lack of effective planning of central city can also affect the development of fringe areas, as it promotes more people to live on fringe since urban

land is beyond the reach of middle-/low-income group people; they look for land outside the city limit (Saxena, 2001). The spatial plans, which are called as master plans or development plans, are prepared by the municipal/urban development authorities of central cities, which depict the broad and detailed planning and allocation of land uses and the provision of various infrastructural facilities on city space. However, these are not well integrated into sectoral economic plans of the States and country. Apart from the integration, appropriate financing and implementation of master plan is also important (Nallathiga 2012). Thus, there is neither integration nor coordination between sectoral and spatial planning in India. It is the lack of these and improper implementation that leads to divergence between de facto and de jure development in Indian cities (Pethe, Nallathiga, Gandhi & Tandel, 2014).

7.2.3.4 Lack of Regional Planning

Moreover, regional master plans are not made for large urban or metropolitan regions are not prepared in several major urban areas in India. Such regional plans can potentially be effective in the allocation of land/space in the fringe areas to appropriate uses, e.g. public institutions, recreation spaces and biodiversity parks, etc. Even when the plans are made, they remain the same and lack relevance to the dynamics/change on both physical and socio-economic terms (Nallathiga, 2012). The absence of planned growth/development is a great impediment to the sustainable development of fringe land. As a result the land use prevalent is far deviant from the norms of land use and development and, therefore, incorporates unsustainability in the first place as shown by researchers, e.g. Manonmani (2010).

7.2.3.5 Lack of Institutional Capacity

The fringe areas are generally governed by local government or 'Panchayat', which has low capacity (financial resources and technical expertise) to plan and manage the rapidly developing fringe. Actually, the jurisdiction of fringe passes through several panchayats, which do not coordinate with each other. The urban authorities of central city ignore the problems of fringe, as it falls outside their limit. As a result the fringe area is under a constant state of flux—the residents of the fringe have unrestricted movement into the city and they use municipal services without paying for it (Zerah, 2005). The property and service taxes are relatively higher in the city than in fringe area and, therefore, the fringe attracts industries, which intensifies development of fringe. Unlike municipal areas, Panchayats have no town planning rules, subdivision regulations and rules for the provision of services suitable to the dynamic state of fringe. As a result, haphazard development takes place in fringe areas.

7.3 Urban Fringe Development in NCT-Delhi: The Ghitorni Case

7.3.1 Background

The city of Delhi has been growing in terms of population and geographical area for the last more than five decades and has formed NCT-Delhi, but the pressure of urbanization and urban growth is spreading to the surrounding fringe areas also which have been undergoing significant change. The haphazard development of unauthorized colonies, piecemeal commercial development, intermixes of conforming and non-conforming land uses coupled with inadequate services and facilities have become a common feature in the fringe area of NCT-Delhi.

The urban fringe contains both significant potential to boost economic development of towns and cities and many valued environmental, social and cultural assets which require protection within sustainable models of development. However, what makes the urban fringe a territory requiring research, policy and action in its own right is that it can be both an area of very special characteristics and an area of unusual dynamism and transition. NCT-Delhi fringe area is characterized by these ground level complexities as shown hereafter.

7.3.2 Study Area

Delhi serves as the national capital of India and has become a separate territory known as NCT-Delhi. The NCT-Delhi includes the areas that are administered in tandem by three tiers of government: (i) Central Government, (ii) State Government (iii) three municipal bodies, viz., Municipal Corporation of Delhi (MCD), New Delhi Municipal Corporation (NDMC) and the Delhi Cantonment Board (DCB). The NCT-Delhi is a part of the much larger National Capital Region (NCR), which includes New Delhi and urban areas surrounding it in neighbouring states of Haryana, Uttar Pradesh and Rajasthan.

The NCR covers an area of 30,242 km² including 1483 km² of NCT-Delhi (4.4% of total), and has India's largest and world's second largest agglomeration with a population of 25,700,000 according to the population data of urban agglomerations maintained by the United Nations. The NCR area includes the fringe of NCT-Delhi as well as a number of other towns falling in it.

While the State government of NCT-Delhi, MCD and NDMC are responsible for planning the city, the National Capital Region Planning Board (NCRPB) looks after regional planning. For the first time, the area covering Ghitorni settlement (our study area) of the city has been taken into consideration in the new Master Plan for Delhi 2030 with the formation of the J zone of the master plan which seems to envisage a radical shift in the way the area sits in the larger picture of the city. Figure 7.2 shows the location of the study area (Ghitorni) embedded within the relevant part of the Master plan of NCT-Delhi.

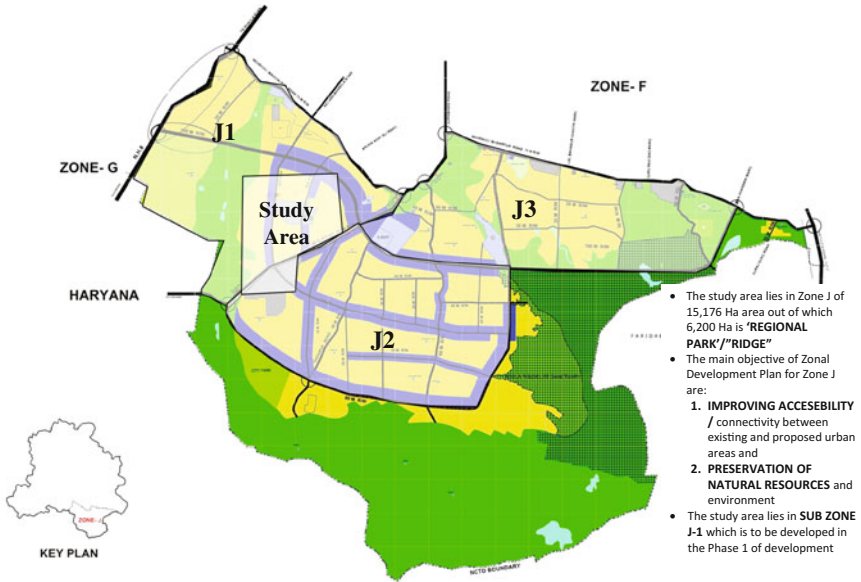


Fig. 7.2 Study area location on zonal master plan of Delhi. Source Drawn based on DDA (2014)



Fig. 7.3 Spatial evolution of Ghitorni settlement. Source Authors

7.3.3 Spatial Pattern Evolution of the Fringe (Ghitorni Settlement)

Ghitorni remained a rural settlement and its control was under the Gram Panchayat. There was no zonal plan or local area plan for this zone, therefore, most of the areas in this region faced lack of physical and social infrastructure. Also due to lack of planning this region faced haphazard and illegal development. Figure 7.3 shows the evolution of spatial pattern of development of Ghitorni settlement and Table 7.7 describes the key developments in the process.

Table 7.7 Temporal evolution of Ghitorni settlement

Year–1980	Year–2000	Year–2012
Following the 1954 Lal Dora extension, property ownership and plot usage remained the same (residential vs. commercial). Properties abutting the road were often used for various purposes while a number of inner plots (i.e. off M.G. Road) became factories	By this period the main changes were <ul style="list-style-type: none"> • Springing up of farm houses • Increased foliage • More built density towards M.G. Road • Increase building heights within almost same spread 	Over a period of time it has been observed that built-up density has decreased in some interior parts of village, freeing up the land which is now an open space The village began growing predominantly on the western side of the core and integrating with the farmhouses on the periphery

Source Authors based on field discussions

7.3.3.1 Infrastructure

Infrastructure may be defined as physical framework of facilities, utilities and support system through which goods and services are provided to the public. The level and quality of infrastructure is important for the development of fringe area and therefore guiding force of its development (Saxena, 2001). Infrastructure facilities can be categorized into:

- Physical infrastructure, comprising of water supply, drainage, sewerage, water disposal system, transportation and power.
- Social infrastructure, which includes education, health, telecommunication, security fire-fighting services, sociocultural, recreational parks, banks and financial institutions, housing and other services.

(A) *Physical Infrastructure*

In the year 2001, the infrastructure apart from sewage was adequate for the population of Ghitorni Village. As the population is increasing over the time, the infrastructure is failing to support the village and this rise calls for infrastructure improvement.

Water

The water supply in Ghitorni settlement is currently about half of the required amount of the household water requirement, i.e. 150 litres per head per day according to NBC norms. Even this water supply is based on insecure source like dug wells and tube wells located in the village. The water from these sources is pumped up to a village overhead tank from where it reaches the households in a criss-crossing pipeline network. Due to excessive dependence on ground water as a source of water, its level has dropped down to 60 m below ground, which is unsustainable for future. Figure 7.4 shows the sources of water in Ghitorni settlement.

The deficiency of water is at rise in the Ghitorni Settlement. In the year 2000 there was no deficiency in the water available for the residents. This figure rose to

Fig. 7.4 Sources of water in Ghitorni. *Source* Authors based on field study

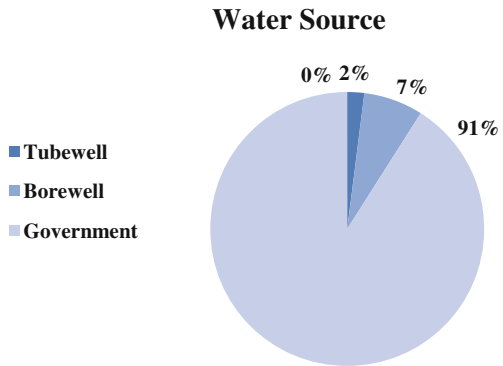
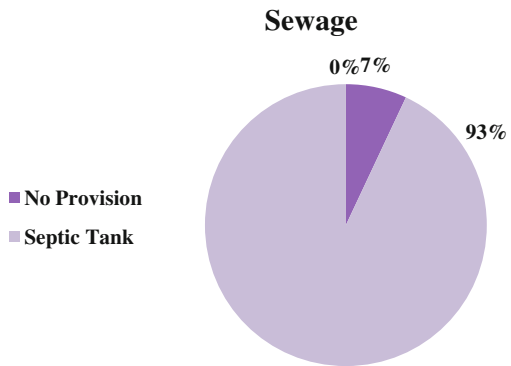


Fig. 7.5 Sewerage system in Ghitorni. *Source* Authors based on field study



25% in the year 2011 and is expected to become 53% of the total demand by 2021. Keeping in mind the low water level at village, there is need for developing an alternative source of portable water.

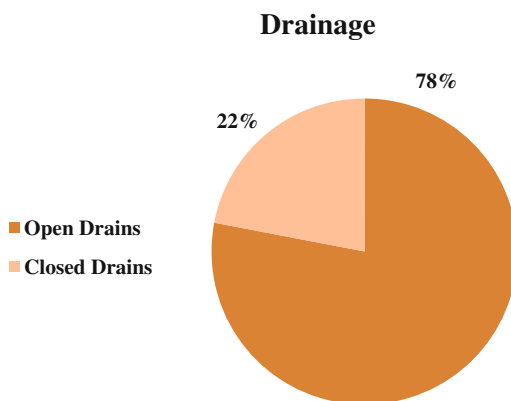
Sewage

Currently, there is no organized sewerage system in Ghitorni. The residents depend completely on Septic Tanks and open drains for the storm water drainage. The residents produce 1.6 MGD of sewage currently. This figure was about 0.5 MGD in 2005. Those who cannot afford Septic tank let the sewage flow in open drain. During monsoon septic tanks tend to overflow and soil the road. This hazardous step affects the health of the community. Figure 7.5 shows the sewerage system in Ghitorni and Fig. 7.6 shows the drainage system.

Garbage

Currently, there is no organized garbage collection system in Ghitorni. The residents depend upon private waste pickers who charge Rs. 50 to Rs. 100 per month to collect

Fig. 7.6 Drainage system in Ghitorni. *Source* Authors based on field study



door to door garbage and dump it nearby MCD dump yard. The modest Ghitorni Lake sitting on the edge of the village has been degenerated into a sink for garbage dump. This has completely destroyed the water quality which is consumed by the fauna of the area. The garbage has formed a film over the water diminishing any chances of aquatic life too. The amount of garbage produced by residents has risen from 3 tonnes/day in 2001 to 15 tonnes/day in 2011. With the projected population growth of the village, it is predicted to reach a massive level of 33 tonnes/day in 2021. With only three dumping points and one segregation site servicing the village, most of the garbage is left on the roads to rot and cause unhygienic conditions.

7.3.3.2 Community Perception of Services

Figure 7.7 shows the community perception of infrastructure services. Communities living in Ghitorni are unsatisfactory with the level and quality of civic infrastructure. Inadequacy of infrastructure not only affects the quality of urban life and living environment but also create the problems of law and order and dysfunction of urban system. Urban fringe areas are confronted with myriad problems, which are directly or indirectly related with deficiency or inefficiency of urban infrastructure services. Communities of these areas become increasingly vulnerable when high density areas with poorly maintained infrastructure are subject to natural hazards, environmental degradation, fires, flooding and earthquake. Lack of infrastructure also causes security problems.

7.3.4 Land Use, Environment and Ecology

7.3.4.1 Land Use

The site has an urban village in between and the predominant land use is of Farmhouses which has low density with absence of social infrastructure. The portion

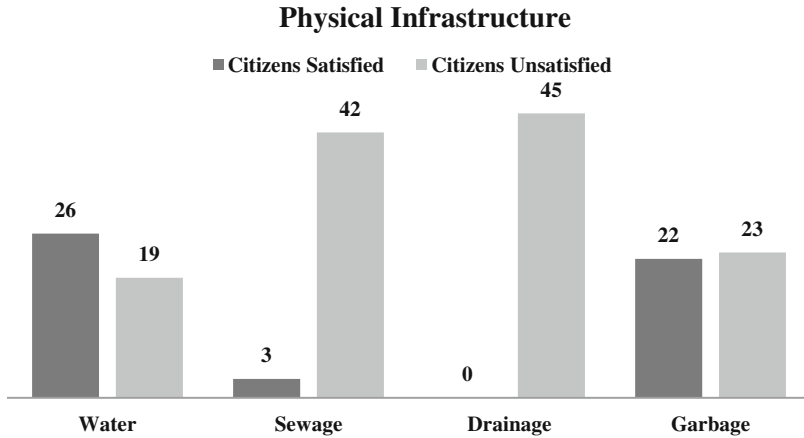


Fig. 7.7 Community satisfaction of civic services. *Source* Authors based on field study

of land occupied by CPWD is largely undeveloped covered with rampant vegetation. The reserve forest is largely maintained. As per Master Plan of Delhi 2021, residential areas and farmhouses combine to form primary land use for the site. There is emergence of ‘facility corridor’ which includes vacant green spaces, agricultural land and roads. Table 7.8 shows existing and proposed land use of Ghitorni.

7.3.4.2 Urban Ecology

Urban ecology is a subfield of ecology which deals with the interaction between organisms in an urban or urbanized community, and their interaction with that community. Delhi is located at the northern end of the Aravali Mountains. An extension of the Aravali hills enters Delhi Region from the South, spreads out into a rocky table land and runs in a northeasterly direction across the Delhi State. The conspicuous Delhi Ridge, trending SSW–NNE runs from the west of the capital city and terminates on the right bank of the Yamuna on the North. Figure 7.8 shows Delhi plan with Ghitorni area marked.

As far as the study area is concerned, the fabric of the site consists mostly of farmlands. Apart from the ridge, which lies on the edge of the site, other forested areas take up 20% of the site. Lakes and ponds only cover 0.1% of the site and are used as dump yards. Figure 7.9 shows Zone J plan locating study area.

7.3.4.3 Environmental Pollution

As a fringe area, Ghitorni suffers from environmental pollution of two major categories: (a) Air pollution (b) Noise pollution.

Table 7.8 Existing and proposed land use of Ghitorni

Land use	Area (in hectares)	Percentage share	Proposed area (in hectares)	Proposed percentage	Remarks
R1 residential	106	33	163.2	51	The residential land use is decreased as per the proposed land use since a lot of the land is under agricultural use or lying as passive green
R2 farmhouses	38.4	12			
Government owned land	60	29	57.6	18	Largely the same
Regional park	35.2	11	38.4	12	There has been some encroachment in the regional park
Passive green	9.6	3			
Transportation	9.6	3	32	10	The roads as specified by the master plan are not on the site. The width is much less and some proposed roads are absent
commercial	3.2	1	60.8	19	Land under commercial, semi-public and public land use is extremely insufficient
Public and semi-public	3.2	1			
Agricultural land	3.2	1			Agricultural land has grown next to the village which eats up the residential land use
Utility	3.2	1			

Source Authors based on field study

Air Pollution

Air pollution is most along Mahatma Gandhi Road and it decreases as we move further away from the roads. It also decreases as we move away from the village to the farmlands and is the least in the forested area as shown in Fig. 7.10.

Noise Pollution

Noise pollution is also high in Ghitorni as noise arises from not only from the vehicles and the metro but also due to the commercial strip stretching on either side. Roads leading away from MG road also have high levels of noise especially in the village. Noise level decrease as we move away from the village to the farmhouses/farmlands and is least at the ridge and the forested area. Figure 7.11 shows the noise levels mapping in Ghitorni.

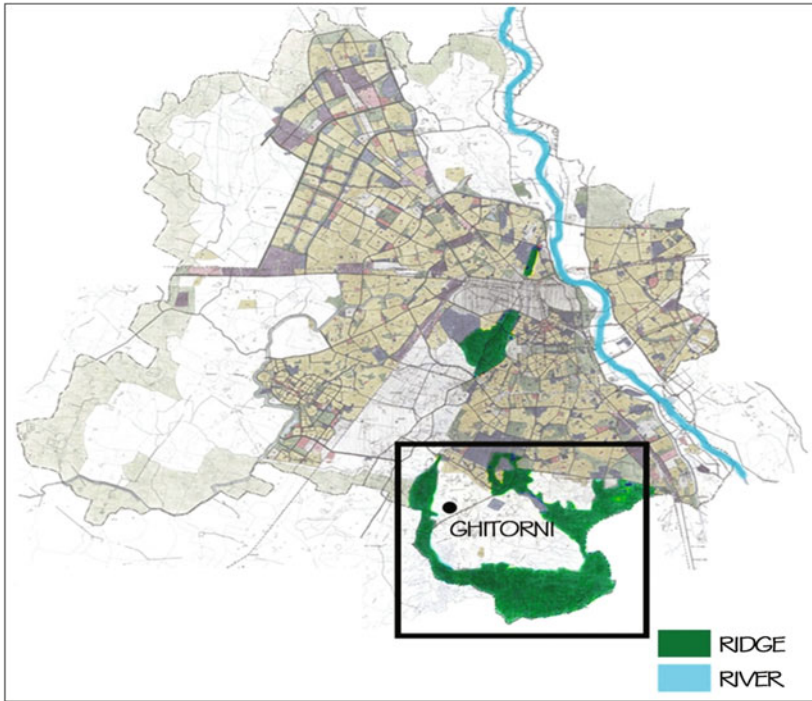


Fig. 7.8 Delhi master plan locating Ghitori. Source Drawn based on DDA (2014)



Fig. 7.9 J Plan locating study area with ridge. Source Authors based on DDA (2014)

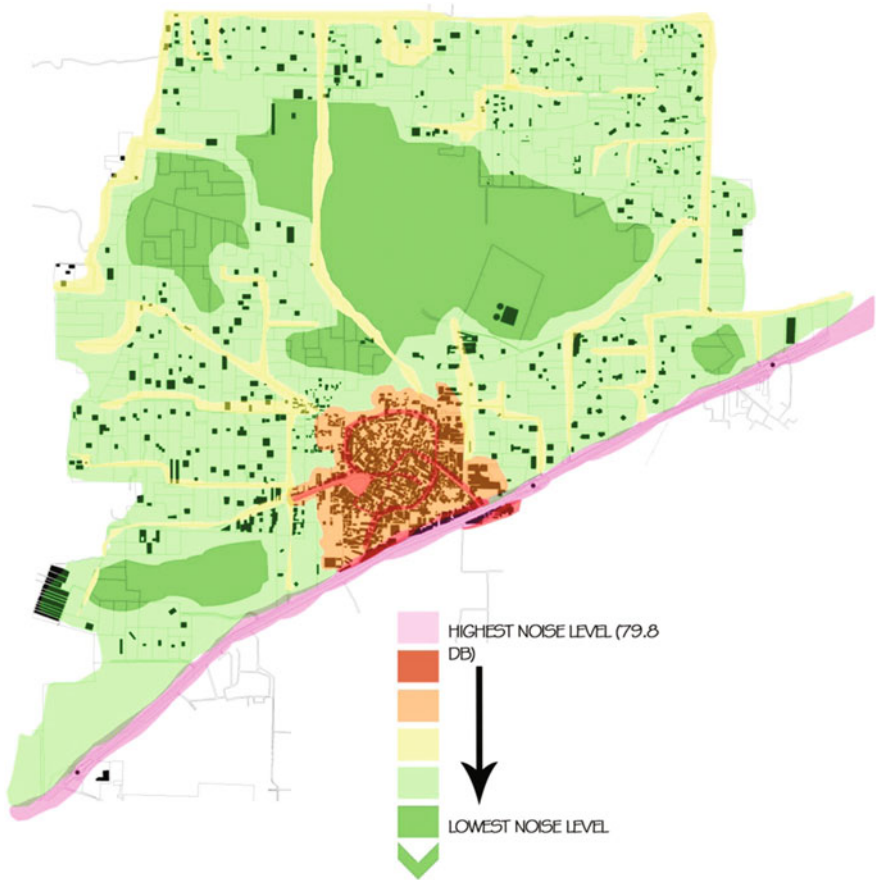


Fig. 7.10 Mapping of noise pollution on the site. *Source* Authors based on DDA (2014)

Noise levels at all hours are very high in Ghitorni and above the standard prescribed for residential areas, particularly during the days. Table 7.9 shows the noise levels in Ghitorni.

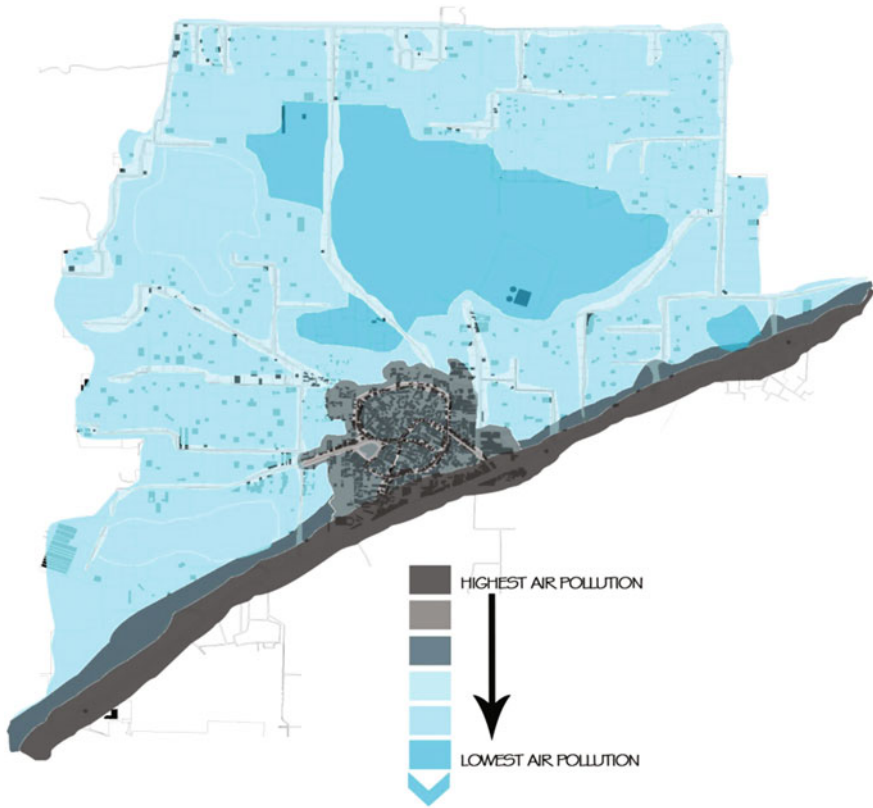


Fig. 7.11 Mapping of air pollution on site. *Source* Authors based on DDA (2014)

Table 7.9 Noise level in Ghitorni

Time	L_{eq}	L_{max}	L_{min}
08:00–10:00	67.33	69.37	60.44
12:00–14:00	75.77	77.73	56.74
16:00–18:00	77.83	79.77	61.31

Note Residential noise standards (L_{eq}) are 55 DB and 45 DB during day and night hours

Source Central Pollution Control Board

7.4 Conclusion

Sustainable development of urban areas has been assuming importance due to rapid urbanization of population and it would require deploying resources not merely to the central cities but would require a greater attention to suburban and fringe areas. The rising share of suburban fringe areas in the overall population but without a corresponding rise in civic infrastructure services speaks for the greater need to pay

attention to them in terms of resources, institutions, planning and governance systems. Urban fringe, which is located on the periphery of suburban areas, presents much more challenge to complex interface and flux of the land and people with both 'urban' and 'rural' parts of land. Various studies in the past (Dupont, 2005; Zerah, 2005) have clearly shown the neglect of urban fringe by both urban and regional authorities in terms of infrastructure facilities, planned development, economic opportunities, environmental pollution and ecological conservation. Sustainability in the context of urban fringe is about integrating different qualities of urban and rural after taking into account the dimensions of time and space.

The evolution of spatial development and the level of infrastructure services in Ghitorni clearly imply how an urban fringe of the national capital is itself finding itself coming under pressures of urbanization and urban attraction while not been able to sustain the challenge with corresponding level and quality of civic infrastructure in fringe areas. There is a large gap between adequate infrastructure services required and the current state of affairs due to poor institutional structures and lack of governance—both top and bottom up. The citizens are unhappy with current state of infrastructure and environment but have learnt to cope with these situations. It is here that the interventions are required on the fronts of appropriate development policies, good response strategies to render infrastructure services and raise institutional capacity to plan and implement them within a set framework of coordination and cooperation as well as timeline.

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Part II
Managing Wastes and Wetlands

Chapter 8

Evaluating Municipal Solid Waste Management in Indian Cities: A Comparative Assessment of Three Metros in South India

Shaik Sajith and Avinash Y. Kumar

8.1 Introduction

India's rapid economic growth in the last two decades has been accompanied by increased levels of urbanization as a direct manifestation of the process of economic development across space (Kundu, 2007). This has influenced the spatial organization of city settlements, characterized by a complex system of infrastructure meant for sanitation, utilities, housing and transportation.

As per latest estimates, the urban population has grown more than sixfold in the last six decades with approximately 380 millions people living in urban areas (Census of India, 2011). This speed of urbanization poses a policy challenge towards the management of the country's urban realms. The population in India's large cities have particularly grown rapidly leading to serious infrastructural deficiencies (Kundu, Trends and processes of urbanization in India, 2011). The cost of not paying enough attention to basic urban services suggests risks like worsening urban quality of life. Confirming this fear are the claims that the current performances of India's cities are poor across the key indicators of quality of life, these indicators essentially having to do with service delivery, i.e. sanitation, solid waste management, water supply, transportation and population residing in slums (Vittal, Dobbs, & Sankhe, 2010). All these point to the message by Annapurna Shaw that Indian cities prioritize liveability, by focusing on basic urban services over the goal of a high-rising global city (Shaw, 2012).

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8.1.1 *The Load of Rapid Urbanization on Service Delivery*

Recognizing this growing importance of improving efficiency in delivery of basic services in our cities, the Government of India has over the last decade launched a series of initiatives (as mentioned below) constituting an urban agenda aimed at enabling urban local bodies to meet the unprecedented challenges and to fast track priority projects of local governments in India:

- Jawaharlal Nehru National Urban Renewal Mission (JNNURM), (2005–2014)
 - Sub-Mission for Urban Infrastructure and Governance
 - Sub-Mission for Basic Services to the Urban Poor (BSUP)
 - Sub-Mission for Urban Infrastructure Development Scheme for Small & Medium Towns (UIDSSMT)
 - Sub-Mission for Integrated Housing and Slum Development Programme (IHSDP)
- Atal Mission for Rejuvenation and Urban Transformation (2015–2022)
- Smart City Mission (2015–2022)
- Swachh Bharat Mission (2014–2019)

With the JNNURM for the first time, the sector of urban development was contingent on reforms with the urban agenda coming to the fore. In alignment with the JNNURM and the other schemes over the past decade, the operational guidelines for all aspects of urban services ranging from asset creation, monitoring and service delivery are in place; what follows this is the need for adequate leadership to back up the urban agenda.

Owing to availability of more information on impact evaluation and monitoring from projects belonging to the first generation of the JNNURM reforms (i.e. during the period of December 2005 to March 2012), this paper focuses on government efforts during this phase. However, though the government ran on mission mode, by making the funding for JNNURM projects (conditional on reforms), service levels still remained unsatisfactory. As stated in the High Powered Expert Committee (HPEC) report on Indian Urban Infrastructure and Services: *‘Investments in Urban Infrastructure have, however, not only resulted in corresponding improvements in level of service delivery. There is, therefore, a need for a shift in focus towards service delivery’* (Ahluwalia et al., 2013). The report additionally sums up the following reasons for the situation of poor urban service delivery in urban India:

- i. Inadequate investments in urban infrastructure
- ii. Poor maintenance of assets
- iii. Fragmented institutional set up
- iv. Capacity constraints.

8.2 Performance Measurement Paradigm for Urban Local Bodies

With the spurt of urban reforms, there has been an improvement in the level of accountability for service delivery sought from local governments by the Central and State Governments making urban local governments to show a measure of consistency in performing well in provision of certain (if not all) services. This is demonstrated in the case of Vadodara for implementing improvements in its water supply and wastewater sector, or the case of Surat and even Rajkot for its efforts in solid waste management saving the city from an outbreak. The city is also considered a front-runner in the implementation of projects with respect to Basic Services to Urban Poor (BSUP), and similar consistency in service delivery has been noted with cities like Nagpur in its implementation of 24 × 7 Water Supply schemes. Similarly, certain institutionalized practices like involving local self-help groups (Kudumbashree) in door-to-door waste collection, and the slum networking programme in Ahmedabad, apart from the Mission for Elimination of Poverty in Municipal Areas (MEPMA) are all examples of successful implementation of infrastructure development schemes and processes in cities, that serve to be emulated for better prospects elsewhere.

A common take away from any of these successful cases is that to achieve the right standards of public service delivery, consistent performance evaluation of our infrastructure subsystems on a periodic basis is mandatory, so as to sustain the integrity of service delivery. There is a need to develop a performance-based evaluation model to measure municipal services both to aid citizens and allow policymakers to make more informed decisions based on their task of assessment (Joshi, 2004).

8.2.1 Importance of Performance Measurement

Performance measurement may be described as assessment or appraisal of the results (and outcomes) and efficiency of services or programmes. Its central function is to provide regular valid data on indicators of performance outcomes. Ideally, instead of constraining itself to data on outcomes, it should provide an insight into the causes of the outcomes. It is formally defined as '*measurement of results and efficiency of a service or programmes on a regular basis*'. Performance measurement and information gathered for this purpose help to fulfil one or more of the following objectives:

- Respond to public demands for accountability
- Help in making resource allocation decisions
- Help in highlighting and remedying performance problems
- Provide data for programme evaluations
- Support strategic and other long-term planning efforts.

8.2.2 Urban Service Level Benchmarking

It is with the perspective of the performance measurement paradigm that ‘Benchmarking’ is now well recognized as an important mechanism for introducing accountability in service delivery (by shifting the focus from infrastructure creation to service outcomes). It involves monitoring of service provider performance on a systematic and continuous basis. Sustained benchmarking can help utilities identify performance gaps and introduce improvements through the sharing of information and best practices, ultimately resulting in better services to people (Ministry of Urban Development, 2008).

Recognizing its importance, the Ministry of Urban Development (Government of India) in 2008 initiated the development of a common minimum Service Level Benchmarking framework for monitoring and reporting on service level indicators in four key service sectors, viz. Water Supply, Sewerage, Solid Waste Management and Storm Water Drainage.

The 13th (Finance Commission of India, 2015a, b) and 14th Central Finance Commissions (Finance Commission of India, 2015a, b) have endorsed these benchmarks and made compliance with them a necessary condition for urban local bodies to obtain performance linked grants. This paper will incorporate learnings drawn from a comparative assessment of these indicators across the cities selected for case study.

8.3 The Differential Mandate for the Delivery of Public Services

Unlike other basic urban services solid waste management is noted more as a management issue than a technical one (Infrastructure upgradation in the city core–conference proceedings presented at National Workshop for Urban Heritage Management, 2013). It has to do with the successful management of supply chains of waste on one side, while creating any possible demand for its reuse potential on the other. The sector essentially is embedded in the local institutional, sociocultural and economic context, which is further influenced by national politics, policies and legislation as well as national and global and economic factors (Da Zhu, 2007).

8.3.1 Legal Mandate of Solid Waste Management in India

Solid waste management (accompanied by Public Health and Sanitation) is one of the 18 statutory responsibilities stipulated in the 12th Schedule of the 74th Constitutional Amendment Act. Before any assessment pertaining to solid waste, it needs to be taken to account that the Municipal Solid Wastes (Management and

Handling) Rules, 2000 (in short MSW Rules, 2000) and establishes it as a municipal service while stating:

Every municipal authority shall - within the territorial area of the municipality - be responsible for the implementation of the provisions of these rules, and for any infrastructure development for collection, storage, segregation, transportation, processing and disposal of municipal solid wastes.

8.4 Objectives of the Study

In this study, the focus is to adopt the principles of performance measurement in the service delivery of municipal solid waste management, considering the cities of Chennai, Bengaluru and Hyderabad, and learn from favourable practices that have enhanced performance in service delivery. This focus is driven by a formidable fact that of the 83,378 metric tonnes of waste generated per day in the Class I cities of India, 35.43% of the total waste is generated from the 35 metropolitan cities, and worse still 51.79% of the metropolitan share comes from the seven mega cities (Ministry of Environment, Forest and Climate Change, 2000). We are hence considering three cities of comparable size, namely the fourth, fifth and sixth biggest metropolitan cities of India, i.e. Chennai, Bengaluru and Hyderabad.

While selecting the cities for the case study, the major criterion was to select comparable urban systems in terms of

1. Demographic indicators,
2. Extent of urbanization,
3. Size of urban area,
4. Comparable
5. Land-use patterns,
6. Comparable public attitudes and lifestyles,¹
7. Awareness and initiative,
8. Comparable land-use patterns.

The study of these three cities is facilitated through the following objectives:

- To review the existing model of municipal solid waste management in the study areas;
- To evaluate the performance efficiency in service delivery of municipal solid waste management system in the study areas;
- To identify potentials, issues and deficiency in service delivery in terms of municipal solid waste management.

¹The term lifestyle is governed by the author's interpretation of the cultural leaning of the residents from the cities based on the factors of caste, religion and mother tongue.

Note: The comparative assessment is conducted through an evaluation of the urban local governments in the three cities: Bengaluru, Chennai and Hyderabad, by analysing indices like the Urban Service Level Benchmark indicators, CPHEEO (Central Public Health and Environmental Engineering Organization) norms and other formal performance assessment parameters to help identify the gaps and areas that need prioritization.

The study is majorly based on secondary data available from respective Municipal Corporations and other reliable sources. This has been complemented with primary-level interactions with municipal officials, local NGOs and sector experts. Apart from this, some anecdotal evidences have been collected from citizens and operators. No primary household surveys have been carried out and the study has rather focused on performance-based comparative assessment between the three cities, based on institutionalized indicators like service level benchmarks.

8.4.1 Scope and Limitation

While conducting the performance assessment, the research evaluates the quality and accessibility of the service provided in terms of model, coverage, frequency and reliability; efficiency in optimal utilization of resources; financial viability of the service in terms of expenditure and revenue. Finally, we briefly evaluate the conduciveness for public–private partnership arrangements in the cities.

What constitutes the generic definition of waste, for the purpose of this study? The Municipal Solid Waste (Management and Handling) Rules, 2000, which states that '*Municipal solid waste includes commercial and residential wastes generated in municipal or notified areas in either solid or semi-solid form excluding industrial hazardous wastes but including treated bio-medical wastes*'. However, due to the different nature of waste and also the difficulty of acquiring data, we will not include industrial and biomedical (hospital) waste owing to the specialized modes of waste management measures involved in handling them due to their physical and chemical constituents.

8.5 Solid Waste Management Process

The system of solid waste management can be viewed as a framework of operations that revolves around the following stages of operation:

Collection → Conveyance → Treatment → Disposal/Reuse

The above simple four-stage process in terms of a typical waste management system can be elaborated as a cycle of operations involving the following steps (Da Zhu, 2007):

- Waste generation at source and storage
- Segregation, reuse and recycling at the household level
- Primary waste collection and transport to a transfer station or community bin
- Street sweeping and cleansing of public places
- Management of the transfer station or community bin
- Secondary collection and transport to the waste disposal site
- Waste disposal in landfills
- Collection, transport and treatment of recyclables at all points on the solid waste pathway (collection, storage, transport and disposal).

8.6 Solid Waste Management Indicators

With growing population, an increasing city size, environmental considerations and changing consumption patterns, solid waste management service is becoming more and more complex, technology-intensive and expensive. Municipal bodies are required to spend more than 10% of their resources on this service. The main components of a Municipal Solid Waste Management System are as follows: Generation, Collection, Transportation, Treatment, Disposal, Recycle and Reuse.

When measuring such performance indicators through service level benchmark, measurement of outcomes is done to evaluate whether the solid waste management service was provided adequately. This indirectly is a measure of the institutional capacity, financial performance and other parameters. In addition, to facilitate comparison between cities/service delivery jurisdictions, and changes in performance over time, it is important that the performance levels are benchmarked and monitored against those benchmarks (Table 8.1).

Table 8.1 Urban service-level benchmark indicators for SWM

S. No.	Indicators	Benchmark (%)
1	Household-level coverage of solid waste management services	100
2	Efficiency of collection of municipal solid waste	100
3	Extent of segregation of municipal solid waste	100
4	Extent of municipal solid waste recovered	80
5	Extent of scientific disposal of municipal solid waste	100
6	Extent of cost recovery in solid waste management services	100
7	Efficiency in redressal of customer complaints	80
8	Efficiency in collection of SWM-related user charges	90

Source Urban Service Level Benchmark Indicators, Ministry of Urban Development, Government of India (2008)

8.7 Comparative Analysis of Study Areas

The indicators considered for the comparative assessment of the cities Bengaluru, Chennai and Hyderabad will be aimed at assessing the following aspects of service delivery:

1. Service coverage
2. Street sweeping efficiency
3. Processing of waste
4. Workforce efficiency
5. Customer service.

8.7.1 Per Capita Generation of Municipal Solid Waste

The per capita generation of municipal solid waste is highest in Chennai with 0.69 kg/person, which is highest in Indian cities. Hyderabad has an average per capita generation of 0.69 kg/person and Bengaluru generating 0.44 kg/person (Table 8.2).

8.7.2 Service Coverage

8.7.2.1 Household (Door to Door) Level Coverage of MSWM Service

Door-to-door collection efficiency of waste ranges between 73% in Hyderabad to 80% in Chennai. It is observed that though the private agencies are involved in the

Table 8.2 Municipal solid waste generation in study areas

Name of the city	Area (in km ²) ^a	Administrative divisions ^b	Population as per 2011 census (in millions)	Avg. quantity of MSW generated (TPD) ^c	Per capita generation (kg/c/day) ^d
Hyderabad	625	5 zones/18 circles	6.8	4200	0.61
Bengaluru	794	8 zones	8.4	3700	0.44
Chennai	426	15 zones	6.5	4500	0.69

Source Bruhat Bengaluru Manhanagara Palike (BBMP), Corporation of Chennai (CoC), Greater Hyderabad Municipal Corporation (GHMC); Census of India (2011)

^aThis area only covers the urban core of the respective cities; it does not include the extended limits of the urban agglomeration

^bThe administrative divisions are the service clusters defined by the municipal corporations of the three cities, for their operational activities

^cTonnes per day—This data is collected from respective urban local bodies

^dThis needs to be understood with respect to the national average per capita waste generation which stands at 0.58 kg/c/day (c stands for capita)

activity, a major percentage of households in the cities are under the service of the corporation. In Bengaluru the door-to-door collection for about 71% of households and establishments of the city is undertaken by the corporation. While this is low for Chennai at 60%, in the case of Hyderabad, the ULBs partner with SHGs to cover 73% of the solid waste collection, while the remaining 27% is collected by RWAs. Overall, Chennai records 80% of overall door-to-door collection efficiency with private agency taking a major role (Table 8.3).

It can also be observed that corporation is responsible for door-to-door collection in majority of the city (as illustrated under ULB). On the other hand, the private agencies are more efficient in provision of door-to-door collection service when compared to corporation. The three cities are implementing more efficient door-to-door service coverage than the Indian Metro average of 59%.

The segregation of collected waste to dry and wet wastes at household level is not practiced in most Indian cities (of the three case study cities, it is practised in small measure in Bangalore only). The status of '*segregation of recyclables*' among households in Class 1 cities stands at 36% only (Asnani, 2006). In Bengaluru with the involvement of NGOs and other civic societies, very few residential colonies, i.e. about 10% of households, are following the two-bin system and handing over source segregated waste to Pura Karmikas or Corporation Health Workers. In the cities of Chennai and Hyderabad, the segregation of waste at household level is zero. The private agencies in all the three cities are also not segregating waste at source as it is not a part of their service agreements with the ULB.

8.7.2.2 Overall MSWM Collection Efficiency

The municipal solid waste is generated from many sources apart from household and commercial establishments like vegetable, fruit and flower markets, roadside community bins, restaurants, hotels, slaughterhouses, construction waste, etc. It is the responsibility of the corporation or the authorized service providers to collect and transfer the waste on daily basis by allocating a separate fleet of vehicles for each source. The statistics reveals that the Indian metro cities are very poor in collecting the entire waste generated on daily basis with 63% collection rate. The three study cities, though better than the other Indian metros in collection of waste, are falling short of the benchmark standard. Bengaluru is lowest among the three cities with 71% average daily collection efficiency. While Hyderabad is collecting 73% of waste generated and Chennai 80% collection, all the three cities leave about one-fourth of waste generated daily on roads (Table 8.4).

8.7.3 Street Sweeping Efficiency

The compliance rate of street sweeping in the three cities is above the national metro average of 72%. As per norms, a sanitary worker has to sweep a road length

Table 8.3 Door-to-door collection efficiency of different service providers engaged in MSWM service

Name of the city	Total no. of households and other establishments (in lakh)	Percentage of households and establishments handled by different agencies involved			Door-to-door collection efficiency of different agencies involved			Overall door-to-door collection efficiency in the city (in %)		
		ULB ^a	SHG ^b	RWA/NGO ^c	Private agency	ULB	SHG		RWA/NGO	Private agency
Hyderabad	20.28	73% ^d		27%	NA	70%		75%	–	73
Bengaluru	28.11	71%	–	–	29%	62%			80%	71
Chennai	17.11	60%	–	–	40%	75%			95%	80
Household-level coverage (door to door) coverage of SWM service										100

Source: BBMP, CoC, GHMC, 2012–13; India Infrastructure Publishing (2011)

^aULB Urban Local Body

^bSHG Self-help Group

^cRWA/NGO Resident Welfare Association/Non-Governmental Organization

^dIn Hyderabad, due to inadequate staffing in the department for waste collection, the ULB collaborates with local SHGs for waste collection

Table 8.4 Waste organization in the study areas (Ministry of Urban Development, 2008)

Name of the city	Agency responsible for transportation of waste in no. of zones/circles		No. of transfer stations in the city	No. of waste dumping sites
	ULB	Private agency		
Hyderabad	11 circles	7 circles	3	1
Bengaluru	3 zones	5 zones	0	4
Chennai	11 zones	4 zones	11	2

Source: BBMP, CoC, GHMC, 2012–13; India Infrastructure Publishing (2011)

Table 8.5 Activity of street sweeping in study areas

Name of the city	Total length of the road in the city (in km)	Percentage of road length against the agencies responsible for street sweeping			Presence of mechanical sweeping facility	Compliance rate of street sweeping (%)
		ULB (%)	Private agency	RWA's		
Bengaluru	11,812	100	–	–	✓	77
Chennai	2847	65	35%	–	✓	90
Hyderabad	7158	25	–	75%	✓	96
Compliance rate of street sweeping (benchmark)						100

Source BBMP, CoC, GHMC, 2012–13; '✓' indicates the presence of service in the city

of 500 m daily. All the major roads are usually swept on daily basis and the internal roads are usually swept on alternative days. All the three cities have introduced mechanical sweeping for the major arterial roads. Overall, Hyderabad tops in street sweeping activity with a compliance rate of 96% (Table 8.5).

The 'unique unit area method' followed in Hyderabad where the entire street sweeping is privatized to resident welfare associations achieved a huge success with the city having 96% street compliance rate daily. In Bengaluru, street sweeping is carried out by the corporation by engaging part-time contract workers in the newly added 5 zones. In the case of Chennai, the roles are shared across the ULB and private agencies.

8.7.4 Processing of Waste

Hyderabad and Chennai do not have any scientific disposal sites. In Chennai, the waste generated in vegetable market in Koyambedu is used to prepare compost by the market association. Biogas is generated from the waste which is converted to electricity and supplied to the southern city grid of Tamil Nadu Electricity Board.

Table 8.6 Scientific disposal facilities in the study areas

Name of the city	No. of scientific processing sites	Availability of weighing machine	Daily log of waste intake for processing	Percentage of waste processed in scientific disposal site under different activities (approx.) (A)			
				Composting	Waste to energy	Other	Total (%)
Bengaluru	3	✓	✓	37%	20%	0	57
Chennai	0	0	x	0	0	0	0
Hyderabad	0	0	x	0	0	0	0
Extent of scientific disposal of waste (benchmark)							100

Source BBMP, CoC, GHMC, 2012–13; ✓ - indicates availability of service ; x - indicates non-availability of service

Table 8.7 Extent of MSWM recovered

Name of the city	Percentage of waste processed at community level (or) city level under different activities (approx.) (B)			Waste recycled and recovered by rag pickers for their own (%) (approx.) (C)	Waste collected at dry waste centres (approx) (D)	Total extent of MSW recovered (A ^a + B + C + D) (%)
	Community level composting	RDF	Other			
Bengaluru	5%	0	0	3	2%	67
Chennai	6%	0	0	8	0	11
Hyderabad	0	10%	0	10	0	20
Extent of MSW recovered (benchmark)						80

Source BBMP, CoC, GHMC, 2012–13

^aIn (A + B + C + D), A is taken from the previous Table 8.6

In Hyderabad the rag pickers segregate recyclable material of the 10% of waste generated at the intermediate stations where dumper placers are kept and about another 10% of recyclables is to be collected by rag pickers of a private agency which transports the recyclable material to refuse derived fuel (RDF) plant situated at Shadnagar (55 km away from the city) (Table 8.6).

Bengaluru is the only city among the three having scientific disposal sites (Table 8.7). The city is having three scientific landfill sites with two compost plants and one waste to energy plant. About 57% of collected MSW of the city is processed in the three scientific landfill sites.

Table 8.8 Workforce for provision of MSWM service in the study areas

Name of the city	Regular staff	No. of temporary/daily wage workers	Total sanitary workers	% of regular staff out of total (%)	% of temporary staff out of total (%)
Bengaluru	4300	11,300	15,600	28	72
Chennai	9530	2523	12,053	79	21
Hyderabad	4118	15,984	20,102	20	80

Source BBMP, CoC, GHMC, 2012–13

8.7.5 Work Force Efficiency

In general terms, the departments dealing with solid waste collection are the highest staffed in a ULB. However, in addition to the in-house staff, ULBs generally contract temporary workers to carry out the activities.

GHMC is having about 20,100 sanitary workers engaging daily in the MSWM process out of which 80% of the workforce is temporary workers. BBMP is having a total workforce of about 11,300 out of which about 73% are temporary workers. In contrast, the Corporation of Chennai is having a workforce of about 10,100 out of which 80% is permanent workforce (Table 8.8).

8.7.5.1 Worker to Household Ratio

As per standard prescribed by CPHEEO, one sanitary worker has to be engaged for every 200 Households including commercial establishments. The Chennai Corporation employs one sanitary worker for every 130 Household units while Hyderabad employs one for every 173 households. Bengaluru employs a little over the standard threshold, with one sanitary worker for every 202 household units.

8.7.6 Efficiency in Customer Service

Complaint redressal system is one of the main reforms under governance, which has to be done effectively by all Urban Local Bodies (explained in Table 8.9). The various methods of registering complaints by citizens regarding solid waste management in all the three cities are through telephone, SMS, Email or by directly informing the nearby zonal office or the corporation. Some corporations like Hyderabad enable the citizens to register their complaints in the corporation website. All the metropolitan cities are showing high rates of efficiency in customer redressal system. The corporations are nowadays extensively using the IT-based technologies like GPS, GIS, etc. to track the movement of vehicles and to monitor them.

Table 8.9 Efficiency in redressal of customer complaints—ways of reporting/registering complaints

Name of the city/ULB	Customer (citizen) service: ways of making complaints						Computerized SWM redressal system		SWM monitoring methods—IT based	
	At utility office	Letter	Telephone	SMS	E Mail	Website			Vehicle tracking system	Offsite real time (OSRT)
Bengaluru	✓	✓	✓	✓	x	x	✓		✓	x
Chennai	✓	✓	✓	✓	x	x	x		✓	x
Hyderabad	✓	✓	✓	✓	✓	✓	✓		✓	✓

Efficiency in redressal of customer complaints (benchmark)

Source BBMP, CoC, GHMC, 2012–13

Ministry of Urban Development (2008), ✓—indicates its presence in the ULB, x—indicates non-existence

Hyderabad has launched a cell phone monitoring system called 'OSRT' (Off Site Real Time), to keep track of various activities of workers like attendance, working hours and location of sanitation staff, lifting of dumper bins, street lightening and activities related to town planning. This system provides real-time images along with specific details such as latitude, longitude, time and site map. These details are received by GHMC main server,² which are monitored by respective supervisors.

8.8 Public–Private Partnership in MSWM

The three cities have involved private sector/NGO/RWA participation and outsourced certain services for providing MSWM services. The private sector stakeholders involved and their entrusted activity is detailed in Table 8.10. All the three cities have achieved a high level of service efficiency for a few activities while lagging behind in the others.

In Bengaluru, in three out of eight zones, all MSWM services within the core city (east, west and south) are managed by BBMP. In the remaining five zones, various minor-level service contractors are engaged for door-to-door collection of waste from households and commercial establishments, for segregation of waste, street sweeping and transportation of the collected waste to nearby dumper placers³ (these vehicles are arranged by BBMP). The collected wastes from dumper placers and vehicles are transported to waste disposal sites by BBMP. Two to seven wards in the five zones, based on the geographical area, are divided into a unit and the service contractor is entrusted with the responsibility to collect waste from each household and commercial establishment. There are about 66 service contractors working in the five zones of the city. Out of the total households and commercial establishments in the city, about 70% are in the core city, where the service of door-to-door collection is carried out by BBMP.

Chennai is the pioneer in PPPs for SWM on a large scale. The municipal corporation has withdrawn its staff from four out of the ten zones of the city. A 7-year contract has been awarded to the private operator Ramky Enviro Engineers through a competitive bidding process for primary collection, street sweeping, secondary storage at a transfer station and transportation of waste to the disposal site. Onyx has engaged its own manpower, tools, equipment and fleet of vehicles. It is paid on tonne basis with an annual increase of 5% in this rate built into the contract. It was observed that with the involvement of a single private firm for the entire MSWM cycle in a demarcated geographical area (zone), the efficiency of service has gone up and the quantity of waste collected has increased

²These details can also be accessed by the citizens on the online portal <http://www.osrt:8080/igms>, in which the data is stored for 45 days.

³Dumper placers are the waste-carrying vehicles used for conveyance of solid waste.

Table 8.10 Summary of MSWM activities under PPP in the study areas

Cities selected for case study		Bengaluru	Chennai	Hyderabad
Total zones in the city		8 zones	15 zones	18 circles
Zones under private service		5 zones	4 zones	7 circles
Type of private agency involved		61 individual contractors	Single private agency	Several Resident Welfare Associations (RWAs)
Activity performed by respective private agencies	DTD collection of waste	✓	✓	✓
	Segregation of waste	✓	x	x
	Street sweeping	✓	✓	x
	Transportation of waste to dumper placer/waste collection vehicle	✓	✓	✓
	Transportation of waste to transfer station	x	✓	✓
	Transportation of waste to processing/landfill site	x	✓	x
	Processing and disposal of waste	x	x	x

Source BBMP, CoC, GHMC, 2012–13

substantially. The segregation of recyclable waste at source in terms of the MSW Rules 2000 is not a part of the contract.

In Hyderabad, door-to-door collection of waste from households and commercial establishments is done by the Corporation (GHMC) in eleven circles, which constitutes about 73% of the total households of the city. The door-to-door collection in the remaining seven circles is entrusted to Resident Welfare Associations (RWAs) and rag pickers, where the corporation provided a tricycle for each rag picker where he/she is responsible to cover 200 households and commercial establishments per day. The waste collected door to door by sanitary workers is usually carried in tricycles. Household-level segregation of waste is generally not practiced in Hyderabad. Waste collected in the seven circles is transferred to nearby dumper placer or waste transfer station.

With respect to street sweeping, Hyderabad initiated a ‘unique area method’ wherein the entire street sweeping is privatized and tendered out to different RWAs by eliminating the bidding process in order to involve local communities in delivery of service. Within this method, a group of workers is responsible for carrying out street sweeping daily for the allotted road length, which is monitored by respective agency/ corporation. Though it involves high expenditure, this method has been a huge success, illustrated by a daily 96% street compliance rate.

8.9 Municipal Solid Waste Management Models in the Study Area

8.9.1 MSWM Model in Bengaluru

See Fig. 8.1.

8.9.1.1 Reflections from the Study in Bengaluru

The indicators of Bengaluru are suggestive of its performance being higher than the national average, and this holds good for majority of the indicators. The city has incorporated innovative ideas such as establishing ‘Dry waste collection centres’, which has stood out as an example to be emulated by other cities. And more notably, Bengaluru is the only city having access to three scientific disposal plants and the rate of scientific processing of waste is much higher here, than in any other city in India. The presence of three scientific disposal sites under three different private agencies led to efficiency in processing and recovery of collected waste and higher financial savings. Certain practices like the removal of dumper bins in residential areas aiming at *bin-less localities* and transferring collected waste directly to the waste carriers have persisted due to a combination of both process and social engineering. In this regard, the active involvement of many agencies like private bodies, NGOs, SHGs, RWAs and housing communities have added momentum, having stated that the city has certain issues due to its vast geographical expanse that has affected its economies of scale and as such it lacks efficiency in collection of total waste generated. In terms of process re-engineering, the area of segregation needs to be worked and prioritized through efforts from the various agencies mentioned above. The mandatory policy of organizing associations among markets, parks and gardens for self-processing is a best practise to be followed by other cities. A major predicament is also the door-to-door collection efficiency in which areas served by BBMP is very low (at 62%), which is a major predicament (Table 8.11).

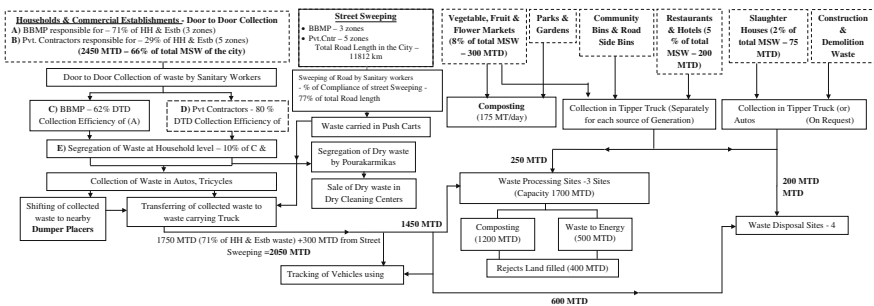


Fig. 8.1 Municipal Solid Waste Management process in Bengaluru *Source* Authors’ Analysis; SWM Department, BBMP, August 2013

Table 8.11 Salient features of MSWM in Bangalore

Service operator	66 contract blocks (different contractors)
Zones responsible	5 zones (Mahadevapura, RR Nagra, Yelhanka, Dasarahalli, Bommanahalli)
Scope of work	Door-to-door collection of waste; segregation of waste; street sweeping; transfer of collected waste to waste-carrying truck/transfer station Each worker assigned with 200 HH for DTD collection (or) 500 m of road sweeping
MSW generated in the area (5 zones)	1200 MTD (approx.)
No. of workers	7000
Payment criteria	Rs. 3800 @ worker/month
Total expenditure incurred by the ULB to the contractors	6500 workers × Rs. 3800 per month = 24.7 millions per month = 296 millions per year (approx.)
Average expenditure incurred per MT of MSW per day	Rs. 741 per MTD

Source Authors' Analysis; BBMP, 2012-13

The contractors discussed in the above table operate in 66 blocks, and are involved in door-to-door collection and from street sweeping collect waste and transfer it to either waste-carrying trucks or waste transfer stations. They are not responsible for transporting the waste to disposal sites. Collection of waste from bulk generation sources (markets, restaurants, debris, parks, etc) is not under their scope of work. Approximately, 30% of MSWM expenditure in Bengaluru is spent on transportation and disposal.

8.9.2 MSWM Model in Chennai

In terms of the MSWM process, the chain of activities that constitute the following have to be restructured, in the view of environmental and aesthetic stability (Fig. 8.2):

- placing of dumper bins, community bins and
- transferring of collected waste to the transfer stations

The city does not have any scientific disposal site to treat the waste. This apart the majority of waste collected is accumulated into huge piles, which is affecting the efficiency in management of the service (Table 8.12).

The total waste generating in Chennai is 4600 MTD. In Chennai about 42% (1943 MTD) of the total waste generated is from the four zones looking after by private agencies. In the remaining 11 zones of the city 2657 MTD of waste are being generated, which is taking care by Chennai Corporation. In the year 2012–13,

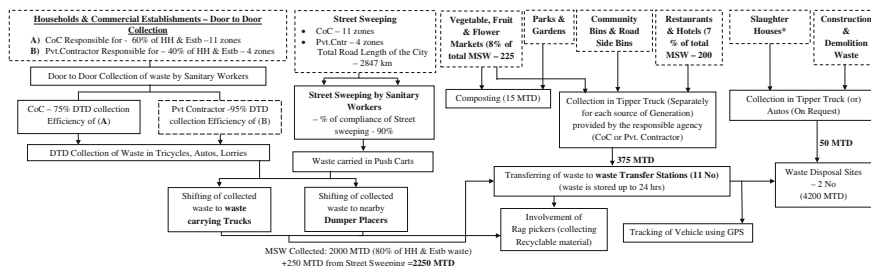


Fig. 8.2 MSWM process in Chennai. *Note* Zones under Private Agency—7, 9, 10, 13. *Source* Authors’ Analysis; SWM Department, CoC, August 2013

Table 8.12 Salient features of MSWM in Chennai

Name of the service provider	Ramky Enviro Engineers Ltd	Neel Metal Fanalca	CoC
Zones responsible	3 zones (zone 9, 10 and 13)	1 zone (zone 7—Erstwhile Ambattur Municipality)	11 zones (zone 1, 2, 3, 4, 5, 6, 8, 11, 12, 14, 15)
Scope of the work	Door-to-door collection of waste; street sweeping; collection of waste from bulk generation sources; transportation of collected waste to transfer stations; transportation of waste to disposal sites	Door-to-door collection of waste; street sweeping; collection of waste from bulk generation sources; transportation of collected waste to transfer stations; transportation of waste to disposal sites	Door-to-door collection of waste; street sweeping; collection of waste from bulk generation sources; transportation of collected waste to transfer stations; transportation of waste to disposal sites
Average generation of MSW (MTD)	1694 MTD from 3 zones	249 MTD from 1 zone	2727 MTD from 11 zones
Payment criteria (MTD)	Rs. 1469 @ MTD	Rs. 1173 @ MTD	Rs. 2107 @ MTD
Amount paid by the ULB to the Service Provider ^a	1694 × Rs. 1469 = 24.90 lakh/day (approx.) = 908.3 millions per year approx.	249 × Rs. 1173 = 2.92 lakh/day (approx.) = 106.6 millions per year approx.	2727 × Rs. 2107 = 57.46 lakh/day (approx.) = 2097.4 millions per year approx.

^a*Note* Presently, though the private contractors have to facilitate the collection from all sources (i.e. door-to-door collection of waste; street sweeping; collection of waste from bulk generation sources; transportation of collected waste to transfer stations; transportation of waste to disposal sites), there is no service for waste collection from bulk generation sources

Source Authors’ Analysis; CoC, 2012-13

the Chennai Corporation for the year 2012–13 estimated an expenditure of 3112.3 millions. At present the Chennai Corporation is only collecting waste from bulk generating sources like markets, educational institutions, railway stations, bus stands, etc., even in the four zones entrusted to private contractors

- Shifting of entire MSWM cycle in four zones for a single private contractor achieved efficiency in service and a higher financial saving for the ULB.
- The service efficiency of MSWM varies depending upon the size of the city—which is an aspect to be considered.

8.9.3 MSWM Model in Hyderabad

The ‘unique unit area method’ initiated by the city corporation for Street Sweeping—by eliminating the bidding process involving a private agency—has helped to build in the aspect of community participation and higher efficiency in service with 96 % street sweeping, higher than any other city in India. Adaptation of ‘Off Site Real Time Monitoring (OSRT)’ system has shown commendable results in monitoring cleanliness of bins, workforce efficiency and achieved transparency as the data is made available to the public through website. The city has complemented its favourable performances through more efficient usage of IT and GPS-based techniques in Solid Waste Management service. About 15–20% of the waste generated is collected by rag pickers in the city from the dumper placers located across the city. Involvement of a number of RWAs and Rag pickers for door-to-door collection in some circles does not achieve positive result. Segregation of waste is totally absent. A recent initiation in Hyderabad has been the ‘Women’s Neighbourhood Community Scheme’ by the GHMC which is a partnership programme with slums, to involve volunteers into solid waste collection. Such a

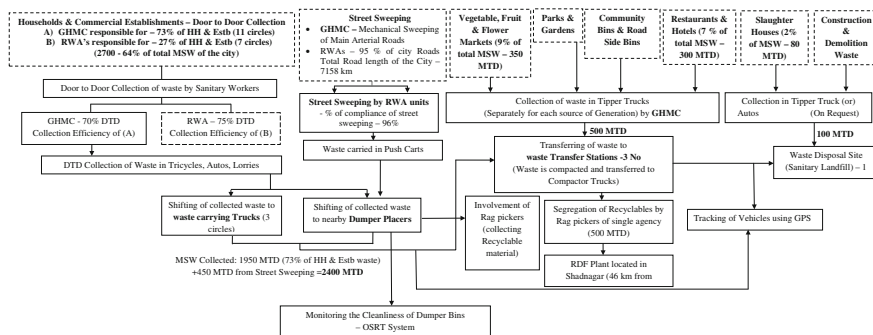


Fig. 8.3 Municipal Solid Waste Management process in Hyderabad. *Source* Authors’ Analysis; SWM Department, GHMC, August 2013

Table 8.13 Salient features of MSWM in Hyderabad

Service operators	Resident Welfare Associations
Scope of work	Street sweeping—Entire GHMC road length on daily basis
Total length of road assigned for sweeping	6800 km
No. of sweeping units	750
Average payment criteria per unit for wages	Rs. 97,200 per month/unit
Expenditure incurred by ULB for street sweeping	$750 \text{ units} \times 97,200 \text{ Rs./month} = 72 \text{ millions month} = 863 \text{ millions/year (approx)}$
Compliance rate of Street sweeping in GHMC	96%

Source Authors' Analysis, GHMC, 2012-13

programme would benefit the door-to-door collection efficiency in slums and in city as a whole (Fig. 8.3).

The city has access to only one dumping site and that too located about 35 km away from core city leading to high expenditure in fuel cost by the corporation. The presence of a large number of slums in the city leads to less coverage in door-to-door collection service (less than 70%) (Table 8.13).

8.10 Conclusion

The central theme of this study is to explore service outcomes in the three cities of Bangalore, Hyderabad and Chennai by assessing performance at the urban local government level for Municipal Solid Waste Management (MSWM) systems. In doing so, this paper also implies the importance of performance monitoring for urban infrastructure services. Due to the 'everyday nature' of municipal solid waste generation a culture of discipline with a systems approach (i.e. by organizing the dynamics at each segment of the solid waste value chain) is essential. The traditional 'command and control regulations' to govern the sector have proven inadequate and this (standards and legislations) should be backed by regular performance monitoring and evaluation followed by process re-engineering as due diligence.

It is essential to understand that only incorporating a system approach can still breed failure without addressing the lack of sensitivity—across government functionaries and citizens—to the implications of mediocre solid waste management. The nature of this insensitivity again is different across both these stakeholder groups and even more nuanced within each segment of these groups. (1) Most observations also conclude that institutional and financial issues are the most important ones which had shown improvements in solid waste management.

A reinforced commitment to manage municipal solid waste is certainly an imperative and as a national agenda, Swachh Bharat Abhiyan seems to be a hope in this direction. This should be strongly backed by an invigorated attempt to generate awareness of municipal officials and citizens on the various stages of the chain where their diligent role is imperative.

Few of the learnings derived from this study include the following:

1. Dry waste collection centres—as demonstrated in Bengaluru—are essential nodes to collect separated dry waste and this could be set up in each ward of the corporation, with public and sanitary workers getting updated and aware on the existence and operation of these centres.
2. The ‘Unique unit area method’ is a clearly evident best practice in Hyderabad for outsourcing street sweeping service contracts to a group of sanitary workers for a share of land [In Hyderabad, this is 8 km road length per 18 sanitary workers (Asnani, 2006)]. This method could be incorporated for unserved areas (with a certain residential population density⁴) and newly developed areas. However, municipal bodies need to consider monitoring such services, either by redressal feedback from the respective residential colony or some form of physical supervision by Health Inspectors.
3. A fundamental learning that is reinstated from the municipal SWM sector in general and the case studies specifically are the principle of *subsidiarity* (i.e. that matters preferably have to be handled by the most decentralized or lowest competent authority.). This principle could be adopted for:
 - Handling segregation of waste at the household level
 - Making self-composting of waste mandatory in the case of all parks, gardens and vegetable, fruit and flower markets.
4. One major area of learning across all three cities is the need for optimization of collection and conveyance by tipper trucks. This includes route optimization, organizing service contracts and responsibilities therein to the private service providers, all of which needs to be streamlined to function with a relatively fair level of periodic consistency. It clearly shows that if designed carefully, such collaborations with the private sector—as in Chennai⁵—can be very beneficial.
5. For bulk sources like—Restaurants & Hotels, Markets, etc.—collection and conveyance could follow a different routine with a dedicated fleet of tipper trucks (only for metropolitan cities).
6. The reuse potential of solid waste is a major economic imperative in itself to finance the cost of treatment and collection as well. It would be essential to organize the segregated waste generated from households and commercial establishments to waste processing sites for upscaling the reuse of waste.

⁴The density needs to be measured by the municipal body when deciding clusters for awarding contracts.

⁵In Chennai collection efficiency is 95% by private providers and 60% in the case of Municipal Corporation.

7. Heavy vehicles that collect and carry the municipal solid waste could be monitored through GPS tracking system as demonstrated in the case of Hyderabad. In the wake of the ‘Smart City’ concept, such initiatives are receiving programmatic support as well. Adequate capacity building—to incorporate such technology-enabled services for the relevant segments of the solid waste chain—would need to be delivered to the municipal functionaries.
8. A professionally uplifted standard for workers in the sector is an imperative in this regard. This could entail privatizing the service (like in the successfully demonstrated case of Chennai) or incentivizing the process for private service providers. The sense from observing the case of these three cities is that coverage of service can be done by any means but efficiency is a function of the process adopted.
9. Training and technical support for municipal officials should incorporate the adoption of learnings from other metros in India, which could incorporate workshops and exposure visits to other cities in India. This would be more beneficial as opposed to programmatic interventions like exposure visits to western countries, which are starkly different contexts for government functionaries to relate to.
10. It is essential to explore novel institutional avenues like building an association of waste collectors and sweepers to accommodate views, and opinions on issues and requirements for these service providers and to develop a premium standard of service for collection and conveyance of solid waste.
11. Most importantly, learnings from operations should be incorporated into policy provisions (for collection, conveyance, disposal and reuse of municipal solid waste).

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Chapter 9

Electronic Waste in Urban India: A Major Sustainability Challenge

Anwasha Borthakur

9.1 Introduction

Electronic waste (E-waste) or Waste Electrical and Electronic Equipment (WEEE) signifies a major waste stream in the contemporary global environment. E-waste consists of products that originate from discarded electrical and electronic equipments (EEEs). With an alarming growth rate of 3–5% per year, E-waste is the fastest growing waste stream in the world today (Wibowo & Deng, 2015). Our persistently evolving reliance on EEs in every walk of life results in this escalation of E-waste across the globe (Borthakur, 2015). According to the United Nations Environmental Programme (UNEP), today, E-waste averages to over 6.8 kg (15 lb) for every living person (Perkins, Drisse, Nxele, & Sly, 2014). Globally, about 30–50 million tonnes of E-waste is disposed off each year (Menikpura, Santo, & Hotta, 2014), signifying a disturbing trend and necessitating immediate attention from the scientific community and policymakers. Such an indiscriminate growth of E-waste could be attributed to factors such as societal needs, technological innovations, thriving consumer electronics industry, rapid development and changes in information and communication technologies (ICT) leading to fast obsolescence or replacement of existing EEs with new models, downward trend in prices of EEs and so on (Tanskanen, 2013; Yu, He, Li, Huang, & Zhu, 2014; Zeng et al., 2015; Umair, Bjorklund, & Petersen, 2015). Today's urban world, in particular, is becoming E-waste hubs with large quantities of E-waste generated in its major cities. Both developed and developing countries have adopted different measures to address their E-waste concerns from diverse perspective. For instance, in view of lower labour costs and less stringent environmental regulations, many developed countries export around 50–80% of their E-waste to the developing countries such as India, China, Bangladesh, Pakistan, Vietnam, West African countries, etc. for recycling and disposal

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purposes (Wu et al., 2015; Sthiannopkao & Wong, 2013). As a consequence, in addition to its domestic generation, developing world is burdened with illegally imported E-waste, causing serious intimidations to human health and the environment.

E-waste is a heterogeneous mixture of metals, plastics, glass and ceramics that often contains a range of toxic chemicals, including persistent organic pollutants (POPs), heavy metals (such as mercury, cadmium, lead, copper, zinc, etc.) and other potentially harmful substances (Wang et al., 2015). E-waste constituents pose serious threats to the environment and human health if not meticulously managed. Further, E-waste contains considerable portions of precious metals such as gold, silver, palladium, copper, etc., predominantly from waste printed circuit boards (PCBs). It has been observed that the precious metal contents in waste PCBs are almost 10 times higher than that in rich-content ores (Xiu, Qi, & Zhang, 2015). Thus, E-waste is a source of both precious metals and hazardous chemical toxicants (Borthakur & Singh, 2016). While hazardous chemical toxicants are of serious environmental and human health concerns, the precious metal components present in E-waste act as incentives for lucrative E-waste recycling businesses, flourishing in the developing world. Unfortunately, unaware of the health and environmental impacts, a large number of people in most developing countries are engaged in unsafe handling and management of E-waste (Menikpura, Santo, & Hotta, 2014). Owing to the high setup, operational and maintenance cost, environment- and resource-friendly recycling techniques and methods are not always viable options in developing countries. Therefore, primitive E-waste recycling technologies are adopted in the informal recycling sector in these countries leading to uncontrolled release of considerable amounts of hazardous contaminants including heavy metals and POPs (Fu et al., 2013). Another significant concern associated with informal recycling activities in India is that mostly, E-waste processing sites are located in abandoned fields near arable land in the vicinity of major Indian cities, facilitating heavy metal penetration through soil and providing plants sufficient opportunity to absorb the same (Pradhan & Kumar, 2014). As a result, there is a greater probability of E-waste toxicants entering the food chain, bioaccumulate or biomagnify in the process and cause irreversible damages to the human and animal health. Informal E-waste recycling activities coupled with its environmental and health apprehensions are therefore one of the grave concerns particularly faced by many cities in the developing world.

Similar to its compatriots in the developing world, environment- and resource-friendly management of E-waste is a serious concern in contemporary urban India. The growths of India's electronics market and information technology (IT) sector have been enormous during the last two decades, leading to an increasing penetration of EEEs into the country. According to MoEF (2008), the electronics industry has emerged as the fastest growing segment of Indian industry both in terms of production and exports. Once obsolete, all the EEEs currently in use become E-waste or WEEE, contributing significantly to the country's toxic waste stream. The already existent solid waste management problem in India has been aggravated manifolds with the advent of E-waste. According to the Central Pollution Control Board (CPCB), every year 146,000 tonnes of E-waste is recycled in India (Shinkuma & Managi, 2010). Urban India is responsible for the majority of

the E-waste generated in the country. A government report suggests that 65 cities in India generate more than 60% of the total E-waste in the country (MoEF, 2008). Among them, Mumbai ranks first followed by Delhi, Bangalore, Chennai, Kolkata, Ahmedabad, Hyderabad, Pune, Surat and Nagpur. Thus, E-waste illustrates primarily an urban problem in Indian context, although the penetration of EEEs is not anymore restricted to the urban areas alone.

While generation of E-waste in India has observed an exponential growth during the last decades, its management practices and policy initiatives are still at an embryonic stage in the country (Borthakur, 2015). Multifaceted aspects associated with E-waste management interventions in India construct a scenario with absolute complexity. For instance, E-waste management initiatives in India are influenced by a wide range of key societal factors such as market size, informal competitors, availability of national E-waste legislation, formal take-back systems, financing and trust between industrial players and so on (Wang et al., 2012). Addressing these factors, effectively and efficiently, is a fundamental yet intricate task. The following sections in this chapter are attempts to attend to the challenges associated with E-waste in India in an adequate detail, in terms of its multifarious definitional frameworks, growth and management complications and finally, towards a suggestive response.

9.2 Definitional Frameworks of E-Waste

Currently, there is no clear and standard definition for the term ‘E-waste’ or ‘WEEE’ (Tanskanen, 2013; Widmer, Oswald-Krapf, Sinha-Khetriwal, Schnellmann, & Boni, 2005). In the absence of a single, specific, globally acceptable definition, a number of countries have come up with their own definitions, interpretations and usage of the term for ‘E-waste’. As stated by Tanskanen (2013: 1001), “any definition of E-waste needs to consider the aspects of both the product becoming obsolete and the decision of its owner to turn it into waste: electronic products become waste at the time and place when their structure and state are no longer capable of providing the expected performance with respect to the purpose assigned by their owners”.

The range of uncertainties and unavailability of consistent information regarding the generation and management of E-waste could be attributed to its perplexing definitional frameworks to large extent. Nevertheless, the most widely accepted definition and description of WEEE/E-waste is as per the European Union’s (EU) directive¹ which incorporates a wide range of electrical and electronic appliances.² In the directive, electrical and electronic equipments are divided into ten broad categories and their subsequent subcategories (see Table 9.1).

¹Available on: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32012L0019>.

²The major features of this definition include the definition of “electrical and electronic equipment”, its classification into ten categories and its extent as per voltage rating of 1000 V for alternating current and 1500 V for direct current (ibid).

Table 9.1 EEEs covered under EU's definition of E-waste or WEEE

Sr. No.	E-waste Categories	List of Products Covered
1.	Large household appliances	Large cooling appliances, Refrigerators, Freezers, Other large appliances used for refrigeration, conservation and storage of food, Washing machines, Clothes dryers, Dish washing machines, Cooking, Electric stoves, Electric hot plates, Microwaves, Other large appliances used for cooking and other processing of food, Electric heating appliances, Electric radiators, Other large appliances for heating rooms, beds, seating furniture, Electric fans, Air conditioner appliances, Other fanning, exhaust ventilation and conditioning equipment
2.	Small household appliances	Vacuum cleaners, Carpet sweepers, Other appliances for cleaning, Appliances used for sewing, knitting, weaving and other processing for textiles, Irons and other appliances for ironing, mangling and other care of clothing, Toasters, Fryers, Grinders, coffee machines and equipment for opening or sealing containers or packages, Electric knives, Appliances for hair-cutting, hair drying, tooth brushing, shaving, massage and other body care appliances, Clocks, watches and equipment for the purpose of measuring, indicating or registering time, Scales
3.	IT and telecommunications equipment	Centralised data processing, Mainframes, Minicomputers, Printer units, Personal computers (CPU, mouse, screen and keyboard included), Laptop computers (CPU, mouse, screen and keyboard included), Notebook computers, Notepad computers, Printers, Copying equipment, Electrical and electronic typewriters, Pocket and desk calculators and other products and equipment for the collection, storage, processing, presentation or communication of information by electronic means, User terminals and systems, Facsimile, Telex, Telephones, Pay telephones, Cordless telephones, Cellular telephones, Answering systems, And other products or equipment of transmitting sound, images or other information by telecommunications
4.	Consumer equipment	Radio sets, Television sets, Video cameras, Video recorders, Hi-fi recorders, Audio amplifiers, Musical instruments, And other products or equipment for the purpose of recording or reproducing sound or images, including signals or other technologies for the distribution of sound and image than by telecommunications
5.	Lighting equipment	Luminaires for fluorescent lamps with the exception of luminaires in households, Straight fluorescent lamps, Compact fluorescent lamps, High intensity discharge lamps, including pressure sodium lamps and metal halide lamps, Low pressure sodium lamps, Other lighting or equipment for the purpose of spreading or controlling light with the exception of filament bulbs

(continued)

Table 9.1 (continued)

Sr. No.	E-waste Categories	List of Products Covered
6.	Electrical and electronic tools (with the exception of large-scale stationary industrial tools)	Drills, Saws, Sewing machines, Equipment for turning, milling, sanding, grinding, sawing, cutting, shearing, drilling, making holes, punching, folding, bending or similar processing of wood, metal and other materials, Tools for riveting, nailing or screwing or removing rivets, nails, screws or similar uses, Tools for welding, soldering or similar use, Equipment for spraying, spreading, dispersing or other treatment of liquid or gaseous substances by other means, Tools for mowing or other gardening activities
7.	Toys, leisure and sports equipment	Electric trains or car racing sets, Hand-held video game consoles, Video games, Computers for biking, diving, running, rowing, etc., Sports equipment with electric or electronic components, Coin slot machines
8.	Medical devices (with the exception of all implanted and infected products)	Radiotherapy equipment, Cardiology, Dialysis, Pulmonary ventilators, Nuclear medicine, Laboratory equipment for in-vitro diagnosis, Analysers, Freezers, Fertilization tests, Other appliances for detecting, preventing, monitoring, treating, alleviating illness, injury or disability
9.	Monitoring and control instruments	Smoke detector, Heating regulators, Thermostats, Measuring, weighing or adjusting appliances for household or as laboratory equipment, Other monitoring and control instruments used in industrial installations (e.g. in control panels)
10.	Automatic dispensers	Automatic dispensers for hot drinks, Automatic dispensers for hot or cold bottles or cans, Automatic dispensers for solid products, Automatic dispensers for money, All appliances which deliver automatically all kind of products

Recently, the new category 11 is added to the existing ten categories that is provided for any product with any electrical function (for instance, a gas cooker with an electric clock or light) to be brought into the scope of this directive from 23 July 2019. In this chapter, we consider the definition of E-waste or WEEE as provided by the EU by reason of its wide horizon.

In India, E-waste was first recognized as ‘hazardous’ in the “The Hazardous Wastes (Management and Handling) Rules, 2003” where it is briefly covered in Schedule 3 of the Rule.³ The lists of EEEs covered under the recent “the E-waste (Management and Handling) Rules, 2011⁴” are particularly limited. The lack of a common, globally

³Available on: <http://envfor.nic.in/legis/hsm/so593e.htm>.

⁴Available on: http://www.moef.nic.in/downloads/rules-and-regulations/1035e_eng.pdf.

acceptable and applicable definition of E-waste complicates the very concept of the E-waste itself and makes its assessment and management a complex task.

9.3 Growth of E-Waste in Urban India: Domestic Generation and Illegal Import

As one of the fastest growing global manufacturing activities, turnover associated with the production of EEEs exceeds even that of car manufacturers (Buekens & Yang, 2014). However, the question related to how much E-waste is actually generated with respect to its source of generation and eventual destination is rather complicated to comprehend. E-waste dilemma, particularly in the developing countries, is further aggravated by the existing system of collecting information in which secondary and waste products are by large hidden to national statistics in production, sale and trade-in goods (Nnorom & Osibanjo, 2008). Thus, E-waste's position both as 'waste' and 'secondary' product hinders its factual estimation. Nevertheless, it has been estimated that, globally, the volume of E-waste generated is expected to reach 93.5 million tonnes in 2016 from 41.5 million tonnes in 2011 at a Compound Annual Growth Rate (CAGR) of 17.6% from 2011 to 2016 (Yu et al., 2014). Signifying immense economic benefit, during the same time, the whole profit of E-waste market is expected to rise to 20.25 billion dollars in 2016 from 9.15 billion dollars in 2011 at a CAGR of 17.22% (Yu et al., 2014). In European Union countries, for instance, E-waste increases by 16–28% every 5 years with a growth rate three times faster than municipal solid waste (Rahmani, Nabizadeh, Yaghmaeian, Mahvi, & Yunesian, 2014). The situation in India is equally worrisome. Dwivedy and Mittal (2010) suggests that the amount of E-waste in India observes a growth rate of 7% per year. It is estimated that the country annually produces 480,000 tonnes of E-waste (Kaushal & Nema, 2013). Widmer et al. (2005) observe that while the per-capita E-waste production in India is reasonably low and estimated to be less than 1 kg per capita per year, the total absolute quantity of E-waste generated is huge because of the large population size. MoEF (2008) maintains that ten states in India are responsible for the generation of 70% of the total E-waste in the country. Maharashtra ranks first followed by Tamil Nadu, Andhra Pradesh, Uttar Pradesh, West Bengal, Delhi, Karnataka, Gujarat, Madhya Pradesh and Punjab in the list of E-waste generating states in India (MoEF, 2008). It has been observed that the process of urbanization has significant influence on the E-waste generation, although rural areas in India also produce significant volume of E-waste due to the penetration of EEEs to the farthest part of the country. As a still emerging process, urbanization in Indian cities demands a fast-paced life which, in turn, encourages increasing use of several EEEs for greater comfort and accessibility. However, all these EEEs have their respective lifespan and become obsolete after a specific period of time. The functional life of EEEs observes an ever-decreasing trend due to the emergence of an innovative, lucrative and

attractive electronics market. In the absence of a proper disposal mechanism, once obsolete, these EEEs are mostly concentrated in the informal recycling centers in urban slums causing serious environmental and human health concerns.

9.4 Domestic Generation of E-Waste in Urban India

After the first phase of economic liberalization, i.e. after 1990, problems associated with E-waste started evolving in India (Wath, Dutt, & Chakrabarti, 2011). As put forth by Reddy (2015: 166), “the celebratory narrative around IT locates in the development of the IT sector a signature moment in India’s postcolonial modernity, namely its imminent passage from a developing nation to a world economic power entering the time of global capital”. However, IT sector is one of the largest contributors to the E-waste stream in the contemporary urban India. Likewise, the hard competition in the market in terms of brands, quality, price and services offered between the various Indian and foreign companies stimulated the growth of electronic and consumer durable industry in India (Wath et al., 2011). In due course, all these progresses are responsible for contributing significantly to the country’s E-waste generation during the last two decades. Heeks, Subramanian, & Jones, (2014) observe that local organizational consumers of information and communication technology (ICT) create the majority of E-waste in India. As India’s Information Technology (IT), Business Process Management (BPM) sector has the potential for a projected growth of \$300 Billion by 2020⁵; it is evident that the problem of E-waste (in the form of ICT equipments) from the IT sector will continue unabated in the near future. The single most dominant component of ICT-related E-waste from the IT sector is computers (including Personal computers, Laptop computers, Notebook computers and Notepad computers) and associated hardware. The major reason for exceptionally high substitution and desertion rate of computers from the IT sector could be attributed to the launch of new and modified versions of software every few months. Many times, the older hardware is not compatible with the new software, thus forcing the companies to accept newer hardware at regular intervals (Borthakur, 2014). As a consequence, estimated 30,000–40,000 computers become obsolete every year from the IT industry in Bangalore alone (Needhidasan, Samuel, & Chidambaram, 2014). As documented by Reddy (2015), in the year 2005, it was estimated that 30% of the computers used in Bangalore’s IT sector become obsolete every year and that 8000 tonnes of toxic E-waste are generated per annum. By 2009, this volume had risen to over 14,000 tonnes and the figure rose to an astounding 37,000 tonnes by 2013. Bangalore, famously known as the ‘Silicon Valley of India’, is today the third-largest producer of E-waste in India, after Mumbai and Delhi. Home to more than 1200 foreign and domestic technology firms, Bangalore figures prominently

⁵<http://www.makeinindia.com/sector/it-and-bpm>.

among the Indian cities faced with intense E-waste hazards (Needhidasan et al., 2014). Likewise, in the city of Pune (another IT hub of the country), significant portion of E-waste is generated from key stakeholders such as IT industries, banking sector, educational institutes and households (Borthakur, 2014).

As one of the fastest growing economies in the world, India's domestic demand for consumer durables has been enormous (Sinha-Khetriwal, Kraeuchi, & Schwaninger, 2005). Consequently, the amount of EEEs placed on the Indian market has been increasing every year (Manomaivibool, 2009). Government reports suggest that the country's already vast consumer base of EEEs has the potential to achieve a consumer electronics market of \$29 Billion by the year 2020.⁶ The lucrative market of EEEs coupled with the ever-decreasing lifespan of consumer durables is a major concern in urban India. At the household level in the city of Pune, for instance, it has been observed that people tend to exchange their older EEEs with new ones at a faster rate. This tendency is more during the festive seasons when lots of offers (in terms of exchange offers and discount on purchase of new EEEs) come up regularly (Borthakur, 2014), both in the retail stores and online e-commerce sites. Such attractive offers allure consumers to purchase EEEs while their older ones are still functional and have the potential to serve the owner for another few more years. Such a trend of ever-increasing consumption of EEEs whilst decreasing user life of the same is a common characteristic of urban India. Hence, considerable quantities of EEEs become obsolete while still fully functional, contributing to the country's domestic E-waste generation in the process. Thus, it is certain that, similar to the IT-BPM sector, E-waste from other consumer durables, especially in urban India, will observe a continuous growth in the coming decades. This calls for immediate policy attention towards sustainable management of E-waste in the country.

9.5 Issues Concerning Import of E-Waste in India

Import of E-waste from the developed to the developing countries signifies one of the most vital problems in present-day Asia. Sthiannopkao and Wong (2013) approximate that 70% of the E-waste processed or disposed of in India is believed to originate abroad, with Delhi being its primary destination, while Bangalore handles more of domestically produced E-waste. It has been observed that in addition to the importation of E-waste from Europe and the US, there is also a flow of E-waste material within the Asian region, for instance, from Japan to South-East Asia (de Oliveira, Bernardes, & Gerbase, 2012). India has been a popular destination for such importation activities since long, with this trade chiefly fuelled by the presence of a large informal E-waste recycling sector within the country. At present the main E-waste disposal mechanism followed by most developed countries is export to the

⁶<http://www.makeinindia.com/sector/electronic-systems>.

developing world in the name of ‘bridging the digital divide’ (Nnorom & Osibanjo, 2008). Locating the loopholes in the Basel Convention,⁷ a number of developed countries are constantly transporting their E-waste to the developing world without much hurdle. As argued by Tong, Li, Tao, and Cai (2015: 32), “the localisation of imported waste recycling from North to South is driven by the demand for low-cost raw materials to alleviate domestic shortages and by the need to promote labour-intensive industries that generate employment opportunities for unskilled labour”. Although the justifications provided by the developed world in favour of this ‘toxic trade’ looks convincing, many studies question the actual purpose behind the same. For instance, Pradhan and Kumar (2014) and Agoramoorthy (2006) argue that inexpensive labour and weak environmental law enforcement are the primary reasons behind shipping of millions of tonnes of E-waste to developing countries (such as India, China, Bangladesh and Pakistan) in the name of recycling.

Import of E-waste contributes significantly to the growth of informal recycling sector in urban India where a lot of urban poor are involved in primitive E-waste recycling by adopting perilous means to extract various E-waste components for economic benefit. As argued by Needhidasan et al. (2014: 4), “over 1 million poor people in India are involved in the manual recycling operations of E-waste and most of the people working in this recycling sector are the urban poor with very low literacy levels and hence very little awareness regarding the hazards of E-waste toxins”. Involvement of a large number of women and children in such recycling activities further intensifies the problems associated with E-waste recycling activities in the country (Borthakur, 2015). A report by Toxics Link (2004) reveals that considerable portion of the total E-waste collected by the recycling units in New Delhi is observed to be essentially exported or dumped by developed countries. Recycling in India is financially profitable for the developed world. The cost of recycling of a single computer in the United States, for instance, is \$20 while the same could be recycled in India for only US\$2, suggestive of a gross saving of US\$18 if the computer is exported to India (Chatterjee & Kumar, 2009). Agoramoorthy and Chakraborty (2012) reveal that around 50,000 tonnes of E-waste is dumped into India by the developed countries every year. Consequently, domestic generation and illegal import contribute to the total volume of E-waste generated in the country.

9.6 Forecasting the Future Generation of E-Waste in India

Robinson (2009) argues that electrical and electronic items are essential for the functioning of all but the most primitive economies. Therefore, the recent trends in E-waste generation signify a process in which the global production of E-waste

⁷The Basel Convention is a key piece of law governing the international toxic waste trade. The spirit of the Convention is to prohibit the dumping of hazardous waste from developed ‘countries to developing’ countries. See: Lepawsky (2015).

observes consecutive changes with the growth of economies and innovation potential. Premalatha, Tabassum-Abbasi, Abbasi, and Abbasi (2014) state that the shorter the lifespan of an electrical or electronic item, the greater its proportion in a given pile of E-waste. For instance, mobile phones and personal computers (PCs), having an average lifespan of 2–3 years, constitute a greater proportion of E-waste than television sets, refrigerators, washing machines, ovens, etc. having lifespan of approximately 10 years or more. Dwivedy and Mittal (2010) report that E-waste is growing at a rate of 7% per year in India. A joint report by United Nations Environment Programme (UNEP) and United Nations University (UNU) predicts that by the year 2020, E-waste from old computers alone would observe a growth of 500% in India, and E-waste from discarded mobile phones would be about 18 times higher than the 2007 level in the country (Lu et al., 2015). Considering the still inadequate E-waste management options in India, such growths are rather alarming. Yu, Williams, Ju, and Yang (2010) argue that after the period of 2016–2018, the generation of E-waste in the developing world, in terms of obsolete PCs alone, will observe a dramatic rise. By the year 2030, the numbers of obsolete PCs in developing regions at 400–700 million units will be double than that of developed regions at 200–300 million units. Further, mobile phones in general and smartphones in particular experience a constantly growing market share in the present urban Indian scenario. As illustrated by Suckling and Lee (2015: 1182), “mobile phone represents a unique incursion of technology into the life of consumers, providing a level of integration and interaction with a wider social and technological sphere possibly unequalled by any other technology”. The persistently evolving integration of mobile phones as an integral part of consumers’ day-to-day activities contributes to its immense growth during the last two decades. It could be affirmed that the growth of E-waste in India has the potential to continue unabated in the coming decades. Indian EEEs market is still evolving and it is still far from saturation. Thus, with the advent of new technologies, considerable portions of old EEEs (both non-functional and functional) will become obsolete and continue to contribute to the country’s emerging E-waste stream.

9.7 Management of E-Waste in Urban India and Associated Challenges

E-waste is a complex category of waste which calls for its special collection, handling and disposal attention. E-waste contains considerable portions of hazardous chemical toxicants and precious metals. While precious metal components (including gold and silver) present in E-waste provide significant incentives for recycling, hazardous chemical toxicants (mainly in the form of persistent organic pollutants and heavy metals) pose serious threats to the human health and environment if not meticulously managed. Many studies carried out in Indian cities report potentially high level of pollutants from E-waste dumping sites and its

recycling activities. The study by Subramanian, Kunisue, and Tanabe (2015), for instance, suggests that carcinogenic and environmentally perilous Poly Aromatic Hydrocarbons (PAHs) present in the road dust of New Delhi and Bangalore in India seems to be a serious matter of concern. This could be attributed to solid waste and E-waste dumping sites which act as prominent sources of pollution from chemical toxicants in Indian metropolis. Up to diverse extents, several countries and regions across the globe have implemented (1) green engineering, (2) improved collection and recycling and (3) increased reuse as three main approaches as endeavors towards the alleviation of growing E-waste concerns (Milovantseva & Fitzpatrick, 2015). However, in the Indian context, it could be argued that approaches like these are not entirely purposeful and triumphant due to concerns such as the current E-waste disposal practices and preferences influenced by low environmental awareness, dominance of a large informal E-waste recycling sector involving a large number of urban poor, financial concerns associated with green engineering adoption and so on.

9.8 Current E-Waste Disposal Practices and Preferences in Urban India

Considering the present global scenario, it is certain that the number of electronic devices used per capita at the global scale will continue to increase in the coming decades (Sepulveda et al., 2010) and urban India is not an exception to this trend. Indian cities, in particular, have observed a significant growth of E-waste in the last few years due to a lucrative and alluring consumer electronics market. The first major problem associated with E-waste management in India is its ever-increasing quantity, and second is its critically significant scientific and environment-friendly disposal practices (Wath, Vaidya, Dutt, & Chakrabarti, 2010). However, it has been observed that E-waste management practices in Indian cities are largely rudimentary with an omnipresent lack of sincere interest among its citizens towards execution of sustainable E-waste management initiatives. Awareness on improper disposal of E-waste and associated environmental and human health consequences is still inadequate in India which demonstrates an alarming trend in a country laden with intense E-waste pollution problems from domestic generation and illegal import.

Having observed India's E-waste disposal practices and preferences, Sinha-Khetriwal et al. (2005) argue that although environmental concerns seem not to be as relevant in the country as many other more critically significant concerns, Indians are culturally loathed to waste. This ensures that EEEs often find second-hand and even third-hand users farther down the income chain, thus delaying the entry of E-waste into the toxic waste stream. Thus, on a positive note, in a populous country like India such practices of handing over used EEEs are encouraging from an environmental sustainability perspective. Nevertheless, it is estimated that in India, 75% of electronic items are stored due to uncertainty of how

to manage them appropriately (Ramachandra & Varghese, 2004). A study carried out in the IT hub of Pune confirms large volume of obsolete EEEs stored unattended for several years at various banks, businesses, educational institutes, households and so on (Borthakur, 2014). Further, India's E-waste management system encompasses some peculiar characteristics. For instance, unlike its Western counterparts, in India it is the waste collectors who pay consumers a positive price for their obsolete electrical and electronic appliances (Sinha-Khetriwal et al., 2005). A common practice of E-waste disposal in the country is either through auction or by selling to the scrap dealers (kabadiwalas) which in turn are sold to the recyclers in the informal sector (Raghupathy & Chaturvedi, 2013). Such disposal behaviour encourages the growth of a large informal E-waste recycling sector in the country.

9.9 Dominance of the Informal E-Waste Recycling Sector

Although India is second only to China in processing of E-waste (Sthiannopkao & Wong, 2013), most of the E-waste recycling activities in the country are carried out in the informal or unorganized sector that have undesirable impacts on the environment and human health (Raghupathy & Chaturvedi, 2013). E-waste is one of the most complex categories of waste and its labour-intensive recycling attribute makes its environmentally sound management practices expensive in countries with high labour costs (Breivik, Armitage, Wania, & Jones, 2014). Therefore, availability of cheap labour acts as an incentive for developed countries to send their E-waste to the developing world. Marginalized populations, especially in the industrializing countries, bear the brunt of improper E-waste practices as most E-waste recyclers here, in either the formal or informal sector, are poor and less educated as compared to the respective population average (Perkins et al., 2014). Further, the involvement of a large number of women and children cause serious intimidations to the already intense E-waste recycling apprehensions (Borthakur, 2015). Estimation by the International Labour Organization suggests that, because of their small, nimble hands that can easily dismantle discarded EEEs, children are considered ideal E-waste workers; encouraging increasing involvement of them in E-waste recycling activities (Perkins et al., 2014). In particular, slums in urban India have become E-waste recycling hubs with lots of recycling activities regularly being carried out in those areas without appropriate health and safety measures.

E-waste recycling offers a source of income for people with limited academic qualifications and economic opportunities. Urban India has observed an entirely new business- or market-driven flourishing E-waste recycling system (Sinha-Khetriwal et al., 2005) coming about without any government intervention (Widmer et al., 2005). Bangalore, for instance, is fast emerging as a home to E-waste entrepreneurs and informal recyclers who are engaged in disassembling and recycling of obsolete EEEs. As per an environmental NGO Saahas's study, the city has a massive informal E-waste sector comprising 150 E-waste recyclers and 250 scrap dealers (Reddy, 2015). Thus, the informal E-waste recycling sector in the

city provides ample employment opportunities to a large number of people consisting mainly of urban poor migrants. Further, Mandoli industrial area in Delhi has a prominent position as one of the major informal E-waste recycling sites in India. It comprises around 60–80 mid-scale and household-sized industries engaged in recycling of printed circuit boards, Cathode Ray Tubes (CRTs), cables, batteries and so on (Pradhan & Kumar, 2014). Pradhan and Kumar (2014: 7915) further states “the informal recycling operations are ongoing here about 10–12 years ago, and now, around 700–1000 workers are engaged in whole recycling process starting from collection of E-waste to extraction and sale of metals”. It has been estimated that approximately 1000 tonnes of plastics, 300 tonnes of lead, 0.23 tonne of mercury, 43 tonnes of nickel and 350 tonnes of copper are annually generated in Bangalore from E-waste recycling activities (Needhidasan et al., 2014). These informal E-waste recycling areas are sites for uncontrolled emission of potentially hazardous chemical toxicants. The study by Ha et al. (2009), for instance, concludes increasing concentrations of trace elements such as Copper, Zinc, Cadmium, Indium, Tin, Mercury, Lead and Bismuth in soil from E-waste recycling sites in the city of Bangalore with the level of Copper, Antimony, Mercury and Lead exceeded screening values proposed by US Environmental Protection Agency (EPA).

9.10 Stakeholders’ Involvement and Awareness

Identification of key stakeholders is the foremost essential step towards addressing the E-waste crisis both at the local and global scale. Recognition of stakeholders and evaluation of their E-waste generation and management potentials aid in dealing with the problems associated with E-waste from its roots. Figure 9.1 shows the involvement of different stakeholders along the E-waste flow particularly in urban Indian context.

A large proportion of E-waste is generated and subsequently managed in their own respective ways by these various stakeholders at each level of the flow in urban India. Assessing the quantities of E-waste generated and managed at each level is essential in order to formulate an E-waste inventory and policy plan in the country.

Regarding the awareness level, it has been argued that the awareness level associated with E-waste in India is still in its infancy (Borthakur, 2015). A study carried out with four different stakeholders, namely, IT sector, banking sector, educational institutes and households in Pune complements this low level of E-waste awareness (Borthakur, 2014). The study implies that large piles of E-waste are stored at various branches of several banks, educational institutes and households in the city due to the lack of suitable management options influenced by the absence of consumers’ essential E-waste awareness (Borthakur, 2014). Kwatra, Pandey, and Sharma (2014) reveal that considerable fraction of middle-class population of Delhi is still unaware of the E-waste issue. Unaware of the appropriate methods of disposal, many households and other institutes dispose off their E-waste

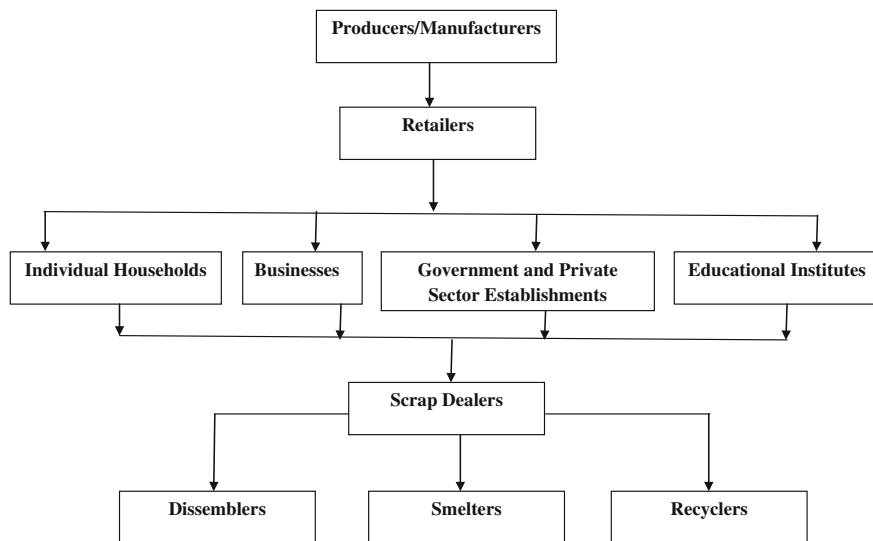


Fig. 9.1 Involvement of different stakeholders along the E-waste flow in urban India. *Source* Borthakur (2012)

with regular municipal solid waste (Borthakur, 2015). The study by Rode (2012) in the Mumbai Metropolitan Area reveals that most of the E-waste produced in the area is disposed off in the bins. Considering the presence of potentially harmful chemical toxicants in E-waste, such practices in major Indian cities signify a disastrous trend which needs to be addressed in an adequate detail by the Indian scientific community and policymakers.

9.11 Conclusions

Electronics industry, today, is the world's largest and fastest growing manufacturing sector (Wath et al., 2010). Influenced by the enormous consumer demands, the growth of this industry is expected to continue unabated in the coming decades. Therefore, it is certain that the amount of E-waste produced both at the global and local scale will continue to observe an unprecedented growth in the near future. Complementing the global scenario, apparently, E-waste in urban India is anticipated to observe an exponential growth in the coming years because of the increasing infiltration of EEEs in every stratum of society. Government reports already suggest that electronics industry in India is the fastest growing segment among Indian industries in terms of both production and export. The omnipresent urge to build a digitally empowered India in the form of an 'information' or 'smart' society will further promote the EEEs surge in the country. With increasing

technological innovations and attractive market strategies by the electronics giants, many EEEs are expected to become obsolete while in their functional lives. Our experiences in some major Indian cities justify this trend. For instance, IT sector in major Indian cities such as Pune and Bangalore contributes to majority of the E-waste generated because of its particularly high desertion rate. As one of the foremost industrial sectors in contemporary global environment, IT sector observes introduction of newer and modified versions of software every few months. In most of the cases, older hardware is observed to be not compatible with the new software which forces this sector to opt for new hardware at regular intervals. Such practices result in considerable portion of E-waste generated from this sector with studies illustrate that approximately 30,000–40,000 computers become obsolete every year from the IT industry in Bangalore alone. Moreover, considering the illegal import of E-waste into India from the developed world, in fact, significant volume of toxic E-waste finds its way to some of the poorest communities in the country where it becomes a source for uncontrolled emission of pollutants. Thus, domestic generation plus illegal import contribute to the total volume of E-waste generated in India.

Nevertheless, it has been observed that initiatives undertaken in the Indian cities to manage their respective E-waste, in an environment-friendly and resource-friendly manner, are still rudimentary and not able to offer satisfactory results. We have observed that E-waste management practices in urban India possess some peculiar characteristics which need to be considered while formulating any E-waste management strategy and associated policy initiatives in the country. For instance, E-waste is considered as ‘resources’ by a large group of people involved in informal recycling activities in India who are engaged in extracting of precious metals and other valuable components from E-waste. Even the regular urban consumers of electronics consider E-waste to have some value and thus are reluctant to dispose it off immediately. Consequently, large volumes of E-waste are observed to be stored in Indian households, banking sector, educational institutes, IT industries, business houses, etc. Only with some kind of financial compensations, consumers in urban India are willing to discard their obsolete electronics. This contributes to the growth of a large informal recycling sector in the country where, unlike several developed countries, E-waste collectors or scrap dealers (popularly known as ‘Kabadiwalas’) pay consumers a positive price for their obsolete electronics. Especially, the presence of large numbers of reclaimable precious metals in electronic devices has been promoting the rapid growth of E-waste recycling industries in the recent decades (Fu et al., 2013).

E-waste in urban India has a number of economic, social, cultural, environmental and human health implications. Recycling in India, for instance, is driven by economic necessity associated with poverty which encourages a large number of urban poor migrants to be a part of the recycling industry. Thus, recycling of E-waste in urban India provides ample employment opportunities to unskilled or semi-skilled people with limited academic qualifications and economic opportunities. However, informal E-waste recycling practices involve rudimentary extraction techniques with the involvement of a large number of women and children. Thus,

informal E-waste recycling areas act as sites for uncontrolled emission of hazardous pollutants and have significant human health and environmental implications. We may conclude that E-waste has multifaceted distinctiveness especially in the urban Indian context. Considering these atypical characteristics, our experience calls for 'locale specific' E-waste management strategies in India based on diverse socio-cultural, economic, political, ethical, health and environmental aspects associated with E-waste.

Our experience also calls for stringent policy instruments that should be implemented in order to address and control the E-waste crisis from its roots. The E-waste (Management and Handling) Rules, 2011 (which came into effect from 1 May 2012) was an appreciated first step in this regard. This rule, however, was implemented almost after 20 years since the IT revolution began in India during the early 1990s. Posing a great challenge, considerable portion of E-waste had already been generated by the time E-waste rules are enforced in the country. In continuance with the previous rule, the very recent E-Waste (Management) Rules, 2016 (to come into force from the 1st October, 2016) is another welcoming step towards ensuring responsible management of E-waste in India. Further, certain market-based policy initiatives have potential to instigate appropriate E-waste disposal behaviour among diverse consumers. It is essential to adequately explore policy instruments such as Advance Recycling or Disposal Fee, Deposit-Refund System, Tax Credits, Virgin Material Taxes, Pay-as-you-throw and so on, for maximizing the sustainable E-waste management perspective in India. The only challenge lies in aligning these initiatives to fit into the native characteristics of the country.

Awareness and knowledge on consequences of irresponsible disposal of E-waste on the environment and human health should be prioritized as a major management and policy component. It is also essential to stimulate and enhance public awareness through publicity and education in order to facilitate purchase and use of products that are produced with and ultimately generate little hazardous waste (Buekens & Yang, 2014). Considering its unprecedented potential for growth in the coming decades, time has arrived for ensuring sustainable and responsible disposal of E-waste among its diverse stakeholders in urban India. Otherwise disastrous consequences are inevitable.

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Chapter 10

How Expensive is the Decay of East Kolkata Wetlands? An Estimation of Opportunity Cost for Kolkata

Debanjana Dey and Sarmila Banerjee

10.1 Prelude

The city of Kolkata is the home of 4.5 million¹ people with population density of 24,252 per square kilometre (Census, 2011) and is generating 1112 ML of sewage and 4460 metric tonnes of solid waste per day (CSE, 2011). Nearly, 78% of this wastewater goes to the wetlands located at the eastern side of the city, popularly known as East Kolkata Wetlands (EKW) through an intricately designed canal network for natural treatment. During the process of treatment the bacteria-rich wastewater gets converted into algae and produce planktons which are a source of nutrient-rich fish feed. EKW has been designated as an international Ramsar site in 2002 where wise-use practices have evolved around sewage-fed fisheries and garbage farming over the century. This age-old practice has seriously been threatened by aggressive urban encroachment. After the development of Salt Lake City during the sixties and the Eastern Metropolitan Bypass during the eighties, this eastern fringe of Kolkata has become well connected with the main city and as an obvious consequence, the spill-over pressure of urbanization has made EKW a

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¹The day population inclusive of floating population is close to 10.5 million (KMC, 2015).

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hotspot for urban land speculators and promoters. Now the neighbourhood of the core wetland area is infested with high-rise buildings and institutional establishments creating opportunities for different types of modern vocations for the local people.

A sharp tendency to switch from traditional to modern vocations has already been noted in the buffer area where the land-use pattern has undergone significant changes (Dey & Banerjee, 2013a). Another study has recently been conducted by us in the core area, which due to legal interventions did not experience much change in land use over time. However, a demonstration effect is likely to influence the younger generation with respect to their choice of vocation as well as livelihood options. Attempt has been made to identify the socio-demographic cohort which may cause this tendency of switching vocation from traditional wetland-based to modern urbanization-based vocations. If the younger generation is more interested to acquire skills suitable for the modern vocations, then that ecosystem balance would be disturbed even without any significant change in the pattern of land use of the core area. Once this extremely ingenious tie-up between Kolkata's waste treatment and EKW's livelihood dependence would break, how much will it cost the municipal authorities of Kolkata annually to treat her sewage water?

In this backdrop this paper wants to carry out a comprehensive analysis of the changing perspective of the management of municipal waste for the city of Kolkata in the face of a gradual change in the ecological as well as economic profile of EKW. The rest of the discussion has been organized as follows: Sect. 10.2 summarizes the development of the existing sewage disposal system of Kolkata and discusses present management and treatment of her wastewater. Section 10.3 briefly discusses the special structural features of the wetlands to create an opportunity of treating wastewater naturally through unique stage correspondence between this waste treatment process and the practice of sewage-fed fisheries. In fact, this correspondence has culminated into a typical livelihood pattern in terms of a set of interdependent vocations in the area that has made the ecosystem of Kolkata and that of EKW complementary to each other. So if the livelihood practices in EKW undergo drastic changes then that may hinder the option of natural sewage treatment available to Kolkata. Section 10.4 presents in a nutshell the aggressive nature of urban encroachment in the buffer area of EKW and the legal interventions initiated to thwart the process at least for the core area. Section 10.5 reports the results from a primary survey conducted on the residents of the core area on their pattern of occupational survey engagement over different socio-demographic groups. Section 10.6 presents an estimate of the opportunity cost of Kolkata from an alternative arrangement of sewage treatment through the Sewage Treatment Plants (STPs). Finally Sect. 10.7 concludes the paper with an overall assessment.

10.2 Management and Treatment of Sewage in Kolkata

10.2.1 Brief History

It has been discussed at length in Ghosh (2005) that the city of Kolkata is ecologically subsidized due to the presence of River Hooghly to the west, the saltwater marshes to the east and the numerous tributaries and distributaries of Ganges intersecting the whole area. Mukherjee (2009–10) argued in favour of the strategic role that these ecological advantages played in selection of the city as the seat of imperial capital. Through planned interventions the natural environment was gradually tamed, controlled and modified to create a system suitable for trade, transportation, drainage, sewerage and sanitation. The urbanization process initiated by the British rulers presents a successful case of this complex hydraulic management. The first formal documentation of East Kolkata Wetlands dates back to the colonial period. British rulers took the *firman* from the then Mughal Emperor in the year 1677–78. This has been followed by the birth of the city of Kolkata² consisting of a narrow strip of land on the bank of river Hooghly surrounded by swampy jungles and brackish lagoons on all sides. Though selection of the land can be questioned due to a number of difficulties, the enormous advantage of using tributaries of river as trade routes connected the city to areas like Khulna, Faridpur presently in Bangladesh, the presence of saline marshy land on the Eastern side almost inaccessible provided the city with a safety barrier against any enemy. In addition, substantially low cost of land acquisition paved ways for growth of the city as British capital (Mukherjee, 2015, 2016). At that time Bidyadhari was used for dual purposes: until early twentieth-century Bidyadhari was the main drainage line for the city of Calcutta and that was a major transportation route for commerce from the north-east hinterlands of Bengal like Assam, Chandpur, Khulna, Dhaka, Barisal, etc. (Fig. 10.1). In early 1770 Major William Tolly, Chief Engineer of the city, was permitted to excavate the Tolly's Nullah (the silted up bed of Adi Ganga) at his own cost so as to collect toll (tax) from the cargo boats. In the year 1776, the Tolly's Nullah was completed which connected Bidyadhari (near Shamukpota) and river Hugli (near Hastings) resulting in diversion of the headwaters of Bidyadhari and a consequent rise in the siltation rate in the lower reaches of the river (Bose, 1944).

Mouth of river Bidyadhari opened into Bay of Bengal through river Matla and influenced by tidal actions, created saltwater lakes as spill reservoirs of the tidal channel. These saltwater lakes were utilized for brackish water pisciculture to produce *Bhekti*, *Parse*, *Bhangar* and *Prawns* and the annual production was around 148 kg/ha.

²The British named it "Calcutta" which has been established out of three small villages Sutanuti, Kolkata (Kalikata) and Gobindapur by Job Charnok in 1690. In this paper the two names "Calcutta" and "Kolkata" have been used interchangeably.



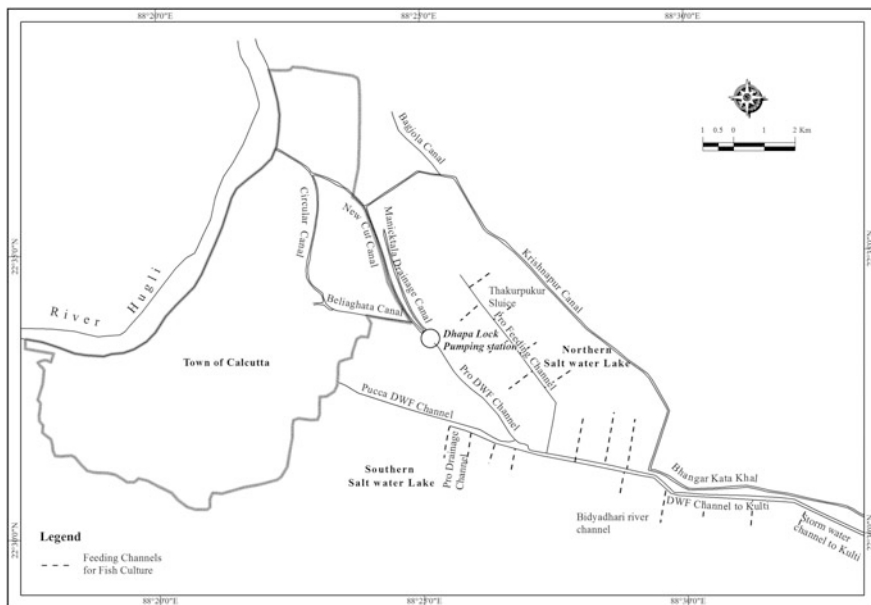
Fig. 10.1 EKW in the early nineteenth century (1827). *Source* Princep (1828)

10.2.2 Development of the Waste Disposal System

To develop an advanced system for the disposal of the city sewage and excess rain water, in 1803, the then Governor-General of India, Lord Wellesley appointed an expert committee which recommended construction of underground drainage through a network of west-to-east canals into the saltwater lakes, river Bidyadhari, Matla and ultimately to the Bay of Bengal to take advantage of the natural gradient of the city³ and to avoid contamination of water of river Hugli which was then the principal source of drinking water. It was not, however, till 1855 that Municipal Commissioners recommended the adoption of this scheme (which is popularly referred to as Mr. Clark's scheme) to the Government. Ultimately the first phase of the drainage scheme was completed in 1883 with construction of the underground sewer, canals, sluices, bridges and Dhapa Lock.

In 1934, a new plan, credited to city engineer B.N. Dey, was conceived for draining of the excess sewage from the ponds through an intricate canal network along with the construction of storm water flow (SWF) channel from Bantala to Kulti. In 1943, after the completion of the project, the outfall system was changed from Bidyadhari to Kulti Gung (river) which is ultimately drained by river Raymangal into the Bay of Bengal (IWMED, 1997) (Map 10.1).

³The natural elevation of the city of Calcutta is 6–7 m along the levee of the river Hugli in the West and only 0.26 m at the eastern wetland side (Chattopadhyaya, 2001).



Map 10.1 General layout of the feeding and drainage channels in EKW in 1943. *Source* Bose (1944)

10.2.3 Present Arrangements for Sewage Management in Kolkata

The city of Kolkata is one of the most populous cities of the World spread over 187 km², consisting of 15 boroughs or administrative blocks and 141 municipal wards. It stretches over more than 96 km along the Hugli River that flows by the western boundary of the city. The city generates 1112 ML of sewage (CSE, 2011) and 4460 metric tonnes of solid waste per day (Das & Bhattacharya, 2013). The volume increased from merely 68 MLD⁴ in 1875 to 590 MLD in 1943 and further to 1112 MLD by 2011, i.e. an increase of 2802 ML per year on an average. Only 50% of the city population is covered by sewerage network which covers 55% of the city area. The length of sewerage network is 1610 km of which 180 km is brick sewer line and the rest is piped sewer line (KMC website).

Till the initiation of the Ganga Action Plan (GAP) in 1985 there was no technical sewage treatment facility available in Kolkata.⁵ Under GAP, 3 Sewage Treatment Plants (STP) was set up in the outskirts of the municipal limit of Kolkata Municipal

⁴MLD: Million litres per day.

⁵In fact, the river Hugli is the downstream of river Ganga and, hence, cleaning up of Hugli water also came under the purview of GAP.

Table 10.1 Sewage treatment plants in Kolkata

STP town	STP capacity new plant (MLD)	STP commissioned/not commissioned	Mode of wastewater disposal
Garden reach	47.5 ASP	Commissioned	Via Monikhali Canal to river Hugli
South sub urban (E)	30 OP	Not commissioned	Discharged into the Churial Khal extension which leads to river Hugli, STP yet to be commissioned
Cossipore-chitpur (Bangur)	45 ASP	Commissioned	Disposed to Bagjola Canal which leads to river Hugli and partly used in irrigation

Note ASP activated sludge process, OP oxidation pond

Source Status of sewage treatment plants in Ganga Basin, CPCB, June (2003)

Corporation at Garden Reach, Cossipore-Chitpur (Bangur) and in South-Suburban (East) respectively, with total planned treatment capacity of 122.5 MLD. The first two have started working since the end of 1990s and the third one is yet to be commissioned. Another STP has been planned to be set up in Bagha Jatin by KMC with a meagre capacity of 2 MLD which has not started functioning yet (Table 10.1).

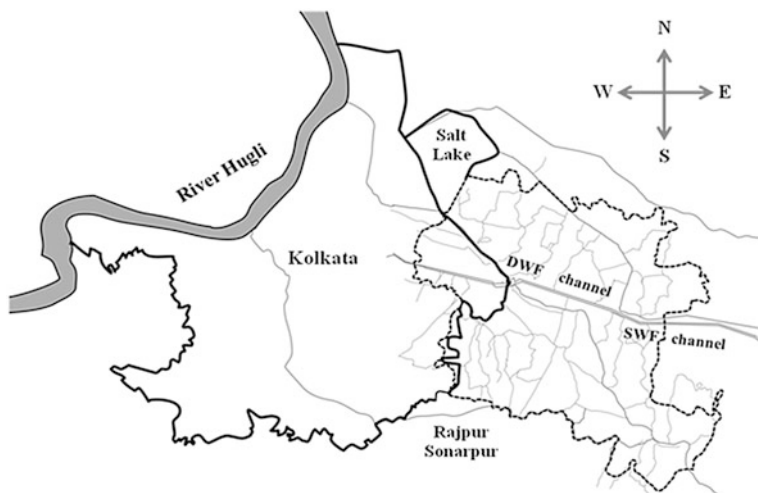
In fact, most of this city sewage is disposed⁶ through her Eastern fringe in EKW via an intricately designed canal network for natural treatment and recycling (Wetlands International, 2008). It is located between the levee of the River Hugli to the West and that of the River Bidyadhari, to the East. The area extends almost equally on both sides of the Dry Weather Flow (DWF) Channel (Map 10.2). This channel acts as a connector to discharge off sewage from the city of Kolkata into the Kulti Gong (Ghosh & Sen, 1987).

10.3 Wastewater Aquaculture: An Instance of Unique Complementarity

10.3.1 Natural Conditions for Water Purification

The wastewater of Kolkata flows through underground sewers to pumping stations in the eastern fringe of the city and is then pumped into open dry weather flow channel. The essential factors in the purifying process are (a) the hot and humid climate, (b) the shallow ponds, (c) adequate sunshine and (d) abundance of water hyacinth.

⁶Only 15% of this huge amount of wastewater gets treated through sewage treatment plants (STPs) and a significant portion of the rest (nearly 78%) goes to EKW.



Map 10.2 Canal network—East Kolkata Wetlands. *Source* extracted from the GIS map prepared by PAN network, 2010

The geographical location of Kolkata⁷ provides it with a hot and humid climate throughout the year with average rainfall of 1600 mm, and ensures the area to act as a natural incubator for a diverse group of microbes with rich presence of biodiversity (Aich & Kundu, 2010). The shallowness of ponds gives a better ratio between pond volume and pond surface than a deeper pond and creates more favourable condition for photosynthesis process to take place. Due to this low depth there is full vertical circulation of water to the surface where algal blooms occur. So sufficient oxygenation is provided to allow for efficient BOD⁸ and pathogen/faecal coliform reduction through a unique phenomenon of algae–bacteria symbiosis (Ludwig, Oswald, Gotaas, & Lynch, 1951; Oswald, Gotaas, Ludwig, & Lynch, 1953). The solar energy is trapped by a dense population of plankton which plays a significant role in degrading the organic matter. Water hyacinth plays a special role in the functioning of this complex ecosystem by leaching out heavy metal ions from the surrounding water, known as rhizofiltration,⁹ where the plant roots act as bio-curtains or biofilters for the passive remediation of wastewater.

However, the overgrowth of planktons becomes a problem for pond management since they cause excessive algal bloom. It is at this critical phase of the ecological process that the fish plays an important role by grazing on the plankton. Double dividends are generated through simultaneous attainment of natural

⁷Approximately between latitudes 22° 25'–22° 40' North and longitudes 88° 20'–88° 35' East.

⁸BOD: Biochemical oxygen demand.

⁹Rhizofiltration: A process in which the plant roots are used to absorb pollutants, mainly metals from water and aqueous waste stream.

purification of wastewater (nearly 80% reduction of BOD on an average) and substantial production of freshwater fishes like Indian Major Carps (*Rohu*, *Catla*, *Mrigal*), Silver Carp, Grass Carp, Common Carp, Tilapia, Catfish, etc.

10.3.2 Rare Stage Correspondence: Sewage-Fed Fishery and Wastewater Treatment

The sewage treatment process in EKW is a rare example of a parallel connection of two originally independent ecosystems to create a symbiotic network. In general, wastewater treatment and aquaculture appear to be two unrelated activities, but here both are connected and complementary as a part of an integrated aquatic ecosystem. The natural gradient of the city from west to east takes almost entire city sewage to the wetlands without any additional cost.

In a typical wastewater treatment plant under-engineered method initially wastewater is passed through grit chambers for preliminary treatment. All the physical impurities (e.g. floating bodies, larger solids) are removed essentially by skimming and sedimentation in primary treatment in the sedimentation tank. Secondary treatment involves chemicals or biological organisms¹⁰ to remove the dissolved minerals and colloidal particles from the sewage water. The purification process is almost complete after this stage and the wastewater is almost purified by all previous steps. However, some harmful pathogens still exist in the wastewater which has to be disinfected in tertiary treatment procedure. Chlorination, ultraviolet ray treatment and ozone treatment are some of the methods used in disinfection process (Basu, 2015).

From the thermodynamics point of view, any product in the world will inevitably turn into waste in the end; yet every 'waste' is bound to be a 'resource' that is useful elsewhere in the biosphere (Yan, Wang, & Wang, 1998). The mutual dependence of the city of Kolkata and East Kolkata Wetlands is a unique evidence of this waste to resource conversion where wise-use practices have evolved around sewage-fed fisheries and garbage farming over the century.

Five types of ponds are needed over the entire process of fish production: egg pond, nursery pond, rearing pond, stocking pond and harvesting pond, each requires proper inlet and outlet channel management mostly controlled by natural gravity. The passing of sewage water through these different sequences of ponds is basically equivalent to the biophysical process of a typical wastewater treatment plant through grit chamber, sedimentation chamber and so on (EPA, 2004; Basu, 2015; Yan et al., 1998). The physical appearance of these interconnected *bheris* seems like a mirror image of sequence of chambers used in wastewater treatment plant. Figure 10.2

¹⁰Organic matter is used as nutrient for the biological microorganisms (for example, activated sludge process). Fine suspended matter is filtered (for example, trickling filter).

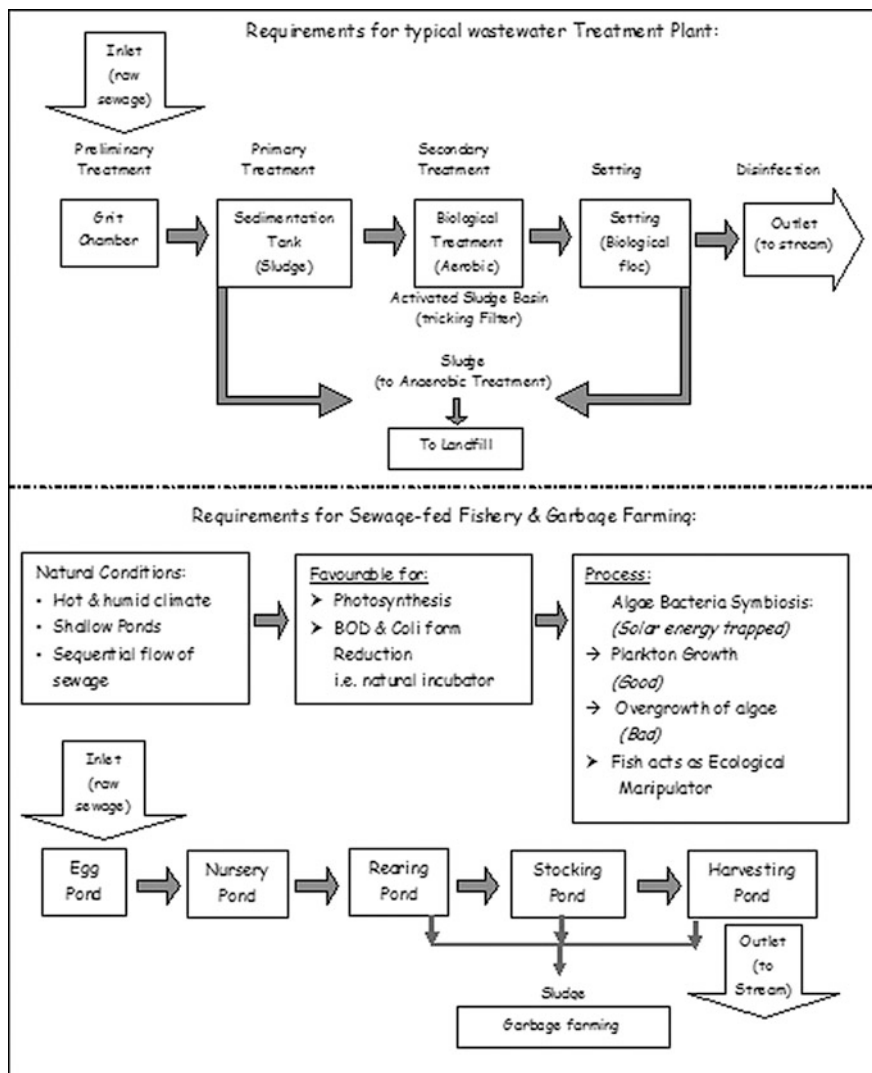


Fig. 10.2 Correspondence between the processes of sewage treatment and fish production. *Source* Authors' understanding

summarizes this unique alliance of wastewater treatment and sewage-fed fishery practices integrated through a rare type of stage correspondence.

When the sewage arrives in the series of interconnected *bheris*, it is kept standing in the sun, which results in biodegradation of the wastes through an algae–bacteria symbiosis. This remarkable phenomenon opens up an opportunity for ‘Natural Treatment’. While preparing ponds for aquaculture the elaborate procedure helps in removing all kinds of impurities from wastewater. Through their traditional

knowledge gathered from years of experience the local fishermen have converted the most unfavourable non-productive sewage disposal swamp into a profitable area for pisciculture. They know exactly how to excavate the ponds to the correct depth, clean the water by spraying kerosene, lime and *khol*, mix the right quantity of sewage, allow optimal time for conversion of the waste into fish feed, when to add spawns, how to protect the embankments through water hyacinths and so on (Dey & Banerjee, 2013b).

The fish farmers of EKW have developed such a mastery of these resource recovery activities that they are easily growing fish at a yield rate which is 2–4 times higher than that obtained from normal ponds and their production cost is also unmatched by any other freshwater fish ponds of the country. The volume of annual fish production from sewage-fed fisheries of EKW was of the order of 18,000 metric tonnes in 2008 accounting for 44% of fish production of the state, used to meet nearly one-third of total fish demand of the city (Wetlands International, 2008).

Besides wastewater fisheries, the other connected activities in the area include paddy cultivation by utilizing fishpond effluents, organic waste-based farming of vegetables, poultry and animal husbandry. Thus, the cumulative social and economic gain from such sustainable management in an eco-friendly way is crucially contingent on the livelihood dependence of the local people on these traditional vocations, especially fisheries (Yan et al., 1998).

Kolkata is enjoying *ecological subsidy* (Ghosh, 2004) where wastewater treatment is possible without incurring much added cost. The pivotal role is played by the wastewater pisciculture contained in an intricate ambience of wise-use practices conferred Ramsar status on EKW in 2002. Double dividends are generated through simultaneous attainment of natural purification of wastewater (nearly 80% reduction of BOD on an average) and substantial production of freshwater fishes like Rohu, Catla, Mrigal, Silver Carp, Grass Carp, Common Carp, Tilapia, Catfish, etc. (Ghosh, 2005; Chattopadhyay, 1990).

10.4 Urban Encroachment and Institutional Interventions

10.4.1 Growing Population Pressure

East Kolkata Wetlands are spread over 32 *mouzas*¹¹ with more than 11,000 water bodies covering nearly 36% of this area. Since the development of Salt Lake City and the construction of the Eastern Metropolitan Bypass, the connectivity of EKW with the main city has improved and the pressure of urbanization is leading to conversion of wetlands into urban settlements (Dey & Banerjee, 2013a). According to 2011 Census records the population of Kolkata is nearly 4.5 million and that of Salt Lake City and Rajpur Sonarpur Municipality are 0.2 and 0.4 million,

¹¹An indigenous term: rural administrative unit (almost equivalent to village).

respectively. Mention has been made of these two townships as because they are in the eastern part of Kolkata bordering EKW and are expanding at fantastic rate over the years. Between 1981 and 1991, the increase in population of Salt Lake City was 202% and between 1991 and 2001 the change in Rajpur Sonarpur was 460%. So all the bordering areas of EKW are already saturated making the wetlands more and more attractive from the land developers' perspective. From the compilation of available records it has been found that between 2003 and 2011 nearly 10% of land of EKW has been converted from wetland to urban settlement (Wetland International, 2008; Dey & Banerjee, 2013a).

10.4.2 Change in Land Use: Evidence from GIS Map of 2011

Three types of land-use changes are commonly observed, viz., from water body to urban settlement, from agricultural field to urban settlement and from open space to urban settlement. Map 10.2 shows the location of Core and the Buffer areas within EKW where the gradation for each *mouza* is made according to its share of area under water body. Evidence from GIS map¹² shows that some of the core wetland areas, adjacent to the city of Kolkata, have already been converted into an urban settlement. If there is change in all these three counts then we have considered it as high change; if on any two counts, then moderate change; and if on only one count then low change. Map 10.3 identifies 12 *mouzas* where significant changes have been noted. Simultaneous reading of Maps 10.3 and 10.4 shows the presence of urban conversion not only in the outer and inner buffer but to some extent in the core area as well.

This encroachment is disturbing the age-old eco-balance achieved through the integration of sewage treatment with wastewater aquaculture by making the sewage water pisciculture less profitable. To protect the ecosystem a number of public interest litigations have been initiated by the civil society and as a consequence, conversion of wetland into any other alternative form of land use has been legally prohibited in the core wetland area.

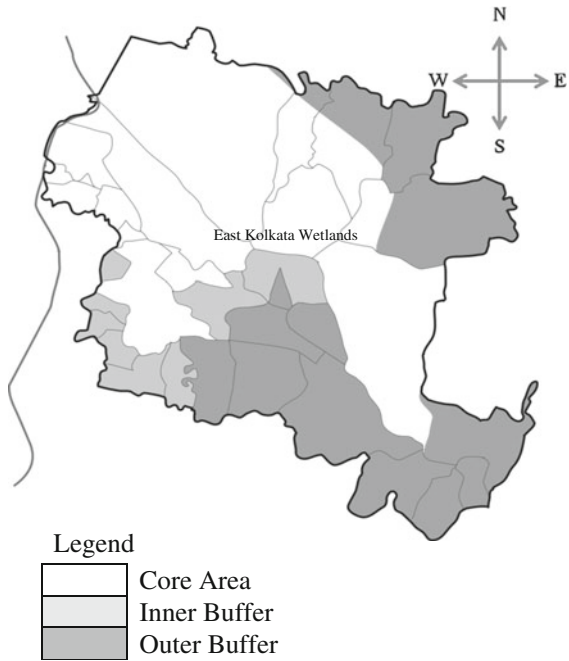
10.5 Legal Initiatives to Protect EKW

A landmark in the history of EKW conservation is its recognition as an international RAMSAR site on the 19 August 2002.¹³ According to the RAMSAR Information Sheet, “EKW is one of the rare examples of environmental protection and

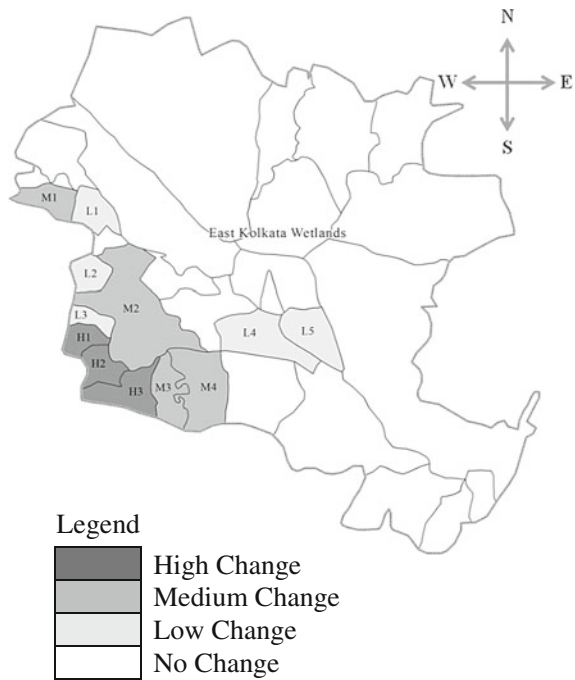
¹²Prepared by the PAN Network in 2010.

¹³Retrieved April 10, 2016 from <http://www.ramsar.org/pdf/sitelist.pdf>.

Map 10.3 Core and buffer area. *Source* Developed on the basis of report by Department of Environment, Government of WB (2001)



Map 10.4 Change in land-use pattern. *Source* Dey and Banerjee (2013a)



development management where a complex ecological process has been adopted by the local farmers for mastering the resource recovery activities". The legal history of EKW in the recent past has clearly two phases: from the beginning of the post-Independence planning till the end of the millennium, when this marshy area has been conferred the Ramsar status and the post-Ramsar attempts to protect this unique heritage site.

10.5.1 Pre-RAMSAR—Efforts in Appreciation of Uniqueness

Dembowski (1999) presented an excellent account of the institutional arrangements and legal initiatives affecting the wetland in the pre-Ramsar period. The position papers of Calcutta Metropolitan Planning Organization (CMPO)¹⁴ and that of the West Bengal State Planning Board (WBSPB) are evidence of strong objection to the eastward expansion of the city since early 60s (Banerjee, 2012). Filling up of water body was prohibited under the Town & Country Planning Act in 1979. In spite of that, the Salt Lake City was extended and the Eastern Metropolitan Bypass was constructed on reclaimed wetlands during the 80s, making the core wetland area more accessible as well as vulnerable. However, in 1984 West Bengal Inland Fisheries Act was passed to stop filling up water body (with amendment in 1993) in order to hold back the extensive reclamation of ponds for construction purposes. The Institute of Wetland Management and Ecological Design (IWMED)¹⁵ was set up in 1986 with the primary objective of carrying out studies related to wetland; however, it was never given the statutory powers needed to play the role expected from it.

Thus, during the 70s and 80s there was a drastic shift in position at the level of urban development authority whereby the eastern fringe of the city suffered from a predominance of unplanned, uncoordinated urban growth. The first major resistance came from the civil society in the year 1992. A pressure group called PUBLIC (People United for Better Living in Calcutta) filed a writ petition in the High Court to protect EKW from urban encroachment. The petition included a map of the '*waste recycling region*' which had been drafted by the IWMED some years back. For the first time, the term '*East Calcutta Wetlands*' was legally equated with the '*waste recycling region*'. On 24 September 1992, High Court Justice Umesh Chandra Banerjee delivered the first major judgment on the matter in favour of protection of the core area of EKW. He ruled that *the wetlands were a gift of nature* and it is the court's job *to strike a balance between development and environment*. Court also mentioned that the wetlands were *too precious to be sacrificed for a mere township*.

¹⁴Later merged with Kolkata Metropolitan Development Authority (KMDA).

¹⁵Later it was renamed and extended as Institute of Environmental Studies and Wetland Management (IESWM) in 2005.

The exclusive protection of the *waste recycling region* has one major drawback. Those eastern fringes of the city not covered by the High Court's order have since been exposed to rapid, inadequately planned urbanization. The buffer area to the wetland seems to have no control over encroachment and this particular problem was first highlighted by a public interest litigation (Surojit Srimani vs. the State of West Bengal), which was filed in May 1995 to control Calcutta's eastern sprawl. In the meanwhile in connection with another public interest litigation related to the cleaning of the Ganga water (MC Mehta versus Union Government) the National Environmental Engineering Research Institute (NEERI) carried out chemical analysis of the sewage in the Eastern Kolkata where tanneries are mostly concentrated and the wastewater was found to contain heavy metal like chromium and zinc beyond tolerable limits. Hence, the Supreme Court directed the State Government to arrange for relocation of these tanneries and accordingly the Calcutta Leather Complex has been developed in Bantala (17 km away from the main city) in plots adjacent to EKW. In the new complex common effluent treatment plant has been installed and that started operating since 2005.

10.5.2 Post-RAMSAR—Where Do We Really Stand?

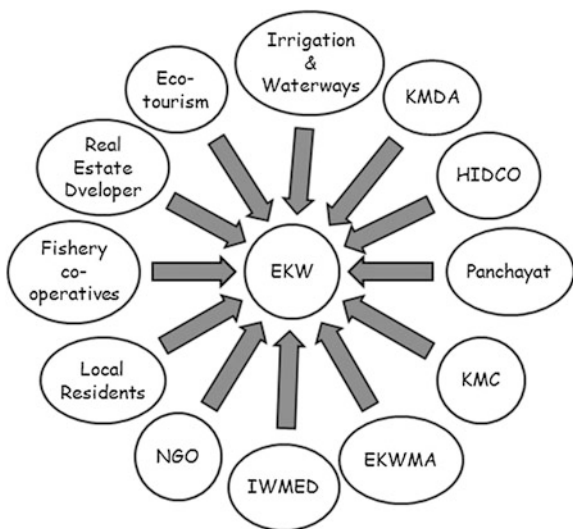
Following this international recognition, in the year 2006 East Kolkata Wetlands Conservation and Management Bill was passed and 12,571 ha of land was brought within the wetland boundary. According to this bill not only any new construction within EKW will be severely penalized but all existing constructions within this area would have to be demolished with immediate effect. In spite of these legal barriers the attempt to encroach has become a perennial problem for EKW and the East Kolkata Wetlands Management Authority (EKWMA) was formed under the provision of the East Kolkata Wetlands (Conservation and Management) Act, 2006 to resist these attempts. In 2008, an order was issued barring local authorities (municipal corporations, Panchayat, etc.) from issuing licenses or sanctioning building plans for commercial activity without a clearance from the East Kolkata Wetland Management Authority (EKWMA). Another problem emerged in March 2011 which started affecting the ingenious fishery practices. Scooping out silt from the canals of EKW, that carry 1300 ML of wastewater into the *bheris* (small ponds) everyday, has made them deeper, changing the natural gradient and obstructing the flow into some parts. Fish production had dropped in these areas (CSE, 2012). In the same year, the state government has developed a management plan and in 2012 a high-powered committee has been appointed to look into the matter (Raju, 2012).

However, the legal authority failed to understand the crucial role played by the buffer area (area between the main city and the wetlands) for the protection of the core area. For a metropolitan city which is growing leaps and bounds in the eastern side, the fringe area enjoys an enormous socio-economic significance. If there exists no legal binding on the land-use pattern in buffer areas, it is practically impossible

to resist any attempt of encroachment in the core area. The core area will experience different covert attempts of land conversion and at a micro-level majority of small pond owners/fish growers will find the offer of land transfer financially lucrative enough to be acceptable. The problem lying in the legal sanction of this practice may be avoided by adopting different illegal practices. The procedure will follow a surreptitious path but the ultimate outcome would be observable and overt. Whether a mere legal protection to wetland alone is adequate for preserving the ecosystem-based livelihood in EKW is our primary concern. What is most important in this context is the perception of the local residents. If the local people are confident about the strength of this legal protection then they would like to continue in their traditional vocation and the livelihood would be protected. However, when the legal standing is only a formal façade which is not backed by public confidence then everyone would be interested in switching to the modern vocation to reap the advantage of the newly created opportunities. Here, legal provisions alone would fail to protect the ecosystem.

The regulator is enacting different legal provisions for the protection of land-use pattern, which are creating confusion among the local people and in the absence of strong political will nothing is getting enforced with appropriate thrust. There is not much coordination between the Kolkata Municipal Corporation (KMC) and the Kolkata Metropolitan Development Authority (KMDA), where the former relies on EKW for cost-free natural treatment of wastewater and the latter is in charge of urban expansion and development. In fact multiple stakeholders (Fig. 10.3) (starting from KMC, KMDA, WBHIDCO, NGOs, Fishery cooperatives, local residents, eco-tourism resort owners, real estate developers, and finally wetland institutes like IWMED, EKWMA) with their multiple agendas regarding the wetlands are not in harmony rather confronting each other at times (Dey & Banerjee, 2015).

Fig. 10.3 Coordination failure. *Source* Dey and Banerjee (2015)



Lack of transparency and understanding of the issue at ground level is hindering the system to achieve its intended sustainability. Everyone is contemplating corrective moves from his/her own standpoint and in the process the retarding influences on others nodes are passing unnoticed. Though the East Kolkata Wetland Management Authority has evolved with an intention of managing this complex and challenging issue, it does not enjoy adequate statutory power till date to ensure effective coordination.

In fact, evidence indicates that urban territories are becoming more and more heterogeneous as a result of the growing social and economic differentiation of urban society; this social fragmentation is demonstrated by the growing socio-spatial inequalities in cities. But fragmentation is also reflected in the government structure with a greater number of local authorities and ad hoc bodies in metropolitan areas; and with the increase of the participation of NGOs. Interventions in protecting the eco-balance of the twin ecosystems of Kolkata and EKW indicate the lack of comprehension and coordination on the part of different stakeholders about the destabilizing long-run impact of this myopic planning. This in essence instead of promoting coordination, negotiation and building consensus, increases the fragmentation of the capacity of collective action and sets a paradox for city planning.

10.6 Vocational Preferences: A Report from the Field

10.6.1 Survey Location and Questionnaire

In August–September 2013, a time diary survey had been conducted in the nineteen *mouzas* which have not experienced much change in land-use pattern in terms of conversion to urban settlements. We came up with exhaustive vocation listing in EKW from that survey and a subsequent survey was conducted in the area in December 2013 to check the engagement of local people in these vocations across age, sex and the level of education. The vocations have been classified as traditional, containing (a) fisheries and related [F]; (b) agriculture and related including horticulture [A]; (c) duck rearing, poultry and animal husbandry [H]; and (d) traditional shops and services [S] and Modern, containing (a) own business [OB], (b) self-employed including professionals [SP] and (c) workers including salaried persons [WS] (Dey & Banerjee, 2016).

The questionnaire¹⁶ is divided into a few sections concentrating on the socio-demographic characteristics of the members of the household including age, sex, level of education, their status as worker (nonworker, student), status of employment (owner, worker, etc.), length of engagement to the major vocation,

¹⁶We acknowledge sincere efforts from the National Field Services of India in helping us to collect field data.

their correspondence between expenditure and income (both at the individual as well as family levels), land ownership other than homestead and their inclination to change vocation.

10.6.2 *Sample Composition*

In all 240 households were selected randomly with at least one adult member engaged in traditional activities. The average size of the household being 4.084; in all 980 individuals were covered out of which 434 (44%) were working; in terms of socio-demographic features 76% of working population is male, 30% of working members are within 30 years of age (younger) and 52% is either illiterate or having education up to primary level (low education). Coming to the type of vocation 301 (69.35%) are solely engaged in traditional activities, 64 (14.75%) involved in purely modern vocations and out of the rest 69, 26 has modern vocations as their major occupation but are still keeping involvement with traditional activities and the remaining 43 are partially in modern vocations with dominant engagement in traditional jobs.

10.6.3 *Vocation Switching*

The urban encroachment in the vicinity of core area is disturbing the eco-balance of the system through unplanned aggressive interventions, which makes traditional practices less remunerative and the opening up of newer options in modern jobs is encouraging people to change vocation. From the sample observations it is found that only 19.6% of those engaged in purely traditional vocation are 'young' and almost (60–70%) of those engaged in modern vocations, fully or partially, are with 'high' educational attainment. This information provides some idea about the background of residents who are more likely to shift from traditional to modern vocations. To further investigate into the matter, a LOGIT regression of the dummy variable MOD (with 0 for purely traditional engagement and 1 otherwise) has been run on AGE (actual), SEX (dummy variable with 0 for male and 1 for female) and EDU (an index of education constructed by comparing the attained level of education with the maximum possible attainable level) for the working individuals. The result shows the following:

$$\text{MOD} = 1.408 - 0.068 \text{ AGE} - 0.240 \text{ SEX} + 0.007 \text{ EDU}$$

$$\begin{matrix} (2.91^{***}) & (-6.41^{***}) & (-0.89) & (1.99^{**}) \end{matrix}$$

$$n = 434; LR(\chi^2) = 71.36^{***}.$$

The regression shows strong causality between the decision to move away from the traditional vocation and the age of the individual and it appears that younger

people are more likely to switch. Again, the educated ones are shifting more, however. SEX has no compelling effect on the possibility of switching. In terms of the marginal effect¹⁷ a unit increase in age will affect the success probability (P_i) adversely by 0.013 whereas one extra stage of educational attainment will positively influence P_i by 0.0014. So the adverse effect of AGE is tenfold stronger than the favourable effect of EDU.

From the field experience it has become obvious that traditional wetland-based livelihood practices are no longer a profitable vocational choice to the residents of EKW and with the increased availability of alternative options the fisheries and related activities are losing their attractiveness. This situation is quite disturbing in the sense that if people's interest in wastewater fisheries wanes then due to complementary relation of this practice with the sewage treatment in EKW the city of Kolkata will eventually lose her low-cost option of natural STP. The opportunity cost of this loss is assessed in the following section.

10.7 Opportunity Cost for Kolkata

10.7.1 Cost of Sewage Treatment at STP

From the official documents relevant information has been collated to estimate the cost of treatment incurred by two active STPs of Kolkata located in Garden Reach and Bangur. Information is needed on (a) set up cost, (b) length of the project, (c) actual use and (d) operation and maintenance cost including energy cost.

- (a) The capital cost is given as Rs. 280 million for Garden Reach plant (CSE, 2011) in 1994 prices and since the STP in Bangur has similar technology as well as capacity, in the absence of any specific information, the same value has been taken for Bangur STP.
- (b) According to a document of the Asian Development Bank (ADB, 2000), the sponsor of the Kolkata Environmental Improvement Project (KEIP), the lifespan of STP is 30 years. The information on actual volume treated is obtained from the report of the Central Pollution Control Board (CPCB, 2005) on the status of STP in India.
- (c) Some plant-specific information on operation and maintenance cost has been reported in another document of the CPCB (2003) on the status of STP in the Ganga Basin, which is a performance assessment report prepared after the first phase of the GAP.

A document of Centre for Science and Environment on STP Technologies and Their Cost Effectiveness has also reported standard capital and O&M cost for STPs. Since the capital cost reported there is similar to the capital cost structure of Garden

¹⁷Marginal Effect: $\frac{\partial P_i}{\partial X_{ji}} = \beta_j [P_i(1 - P_i)]$, $j = \text{AGE, EDU}$.

Reach STP (at 1993–94 prices), the O&M cost has been taken as Rs. 0.6¹⁸ million per MLD per year at the same price level excluding energy cost and the information on energy consumption available from the same report has been utilized to calculate the energy cost in terms of the prevailing tariff rate of the Calcutta Electric Supply Corporation (CESC). To estimate the cost figures for 2010–11 the available dated figures have been suitably transformed into equivalent current prices by using appropriate inflators.¹⁹ Table 10.2 presents the estimated treatment cost per million litre of wastewater in STP.

Annualized Capital Cost: If Rs. 560 million (at 1994 prices) has to be incurred to create a treatment capacity of 92.5 MLD (47.5 MLD for Garden Reach and 45 MLD for Bangur) for a period of 30 years then the annual capacity would be $(92.5 * 365)$, i.e. 33, 762.5 ML. So the Actual Capital Cost (ACC) would be $560 = A (\text{capacity})^\alpha$, $(0 < \alpha < 1)$; $= A (33, 762.5)^{0.75}$ which will give the value of $A = 0.22$. Given this value of A for each STP the ACC can be estimated corresponding to the actual volume of sewage treated. A range of values are suggested for actual treatment lying between 55 and 83 MLD with an average of 75% capacity utilization.

With this utilization rate the annual treatment would be 25321.88 ML. This is only 6.24% of the total volume of wastewater [and not even the 15% as reported in the CSE (2011) document]. The corresponding Ideal Capital Cost (ICC) should be $(0.22 * [25321.88]^{0.75}) = \text{Rs. } 451.32$ million. However, the actual capital cost (ACC) incurred being Rs. 560 million indicating an inefficiency burden of the order of Rs. 108.68 million.

The annualized value of this investment can be obtained under the standard assumption of 15% annual rate of interest with 30 years lifespan of the project by using the present value factor: $\left[\sum_{t=1}^{30} (1/1.15)^t \right]^{-1} = 0.152300198$ Multiplying the ACC with this PVF gives $(560 * 0.152300198) = \text{Rs. } 85.29$ million as annualized value of capital cost at 1993–94 price. To get the corresponding value for 2010–11, the GDP inflator 2.74 has been used to get the final current value as Rs. 233.69 million. The annual excess cost incurred due to administrative inefficiency at the implementation level turns out to be of the order of Rs. 45.35 million and the remaining Rs. 188.34 million is the ideal cost at efficient implementation level.

Annual O&M Cost: The operation and maintenance cost obtained from the CSE document is Rs. 0.6 million/MLD/Year, at 1993–94 prices. With appropriate price adjustment using inflator 2.74, the value becomes Rs. 1.64 million/MLD/Year. Hence, the total cost of treatment of 25321.88 ML (i.e. 75% of total installed capacity) turns out to be Rs. 114.05 million. In the same document the electricity

¹⁸An average of O&M Cost ranging from Rs. 0.5 to 0.7 million/MLD/Year has been considered.

¹⁹Adjusted for inflation.

²⁰A fractional value of α to ensure a falling fixed cost per unit of production; for any common effluent treatment plant the value of α is generally taken as 0.75 (see Anuradha, 2005; Bagchi & Banerjee, 2013).

Table 10.2 Treatment cost of sewage at STP of Kolkata (Rs. millions)

Cost item	Estimation	Source
Actual capital cost (ACC) $CC = A (\text{capacity})^\alpha, \alpha = 0.75$	560 at 1993–94 prices	CSE (2011), ADB (2000)
Annual capacity	92.5 MLD * 365 = 33762.5 ML 560 = A (33762.5) ^{0.75} A = 0.22	CPCB (2003)
Present value factor	$\left[\sum_{t=1}^{30} (1/1.15)^t \right]^{-1} = 0.152300198$	Anuradha (2005), Bagchi and Banerjee (2013)
Annualized value of actual capital cost at 1993–94 price	560 * 0.152300198 = 85.29	
Annualized value of actual capital cost at 2010–11 price	85.29 * 2.74 = 233.69	RBI (2013)
Actual capacity/year	Range: 55–83 MLD i.e. 60–90% average: 75% With 75%: 33762.5 * 0.75 = 25321.88 ML	CPCB (2005)
Ideal capital cost (ICC)	A(actual capacity) ^{0.75} = 0.22(25321.88) ^{0.75} = 451.32	
Cost due to inefficiency at 1993–94 price	Actual capital cost (ACC) – ideal capital cost (ICC)	
Annualized inefficiency cost at 1993–94 price	108.68 * PVF = 108.68 * 0.152300198 = 16.55	
Annualized inefficiency cost at 2010–11 price (A _c)	16.55 * 2.74 = 45.35	RBI (2013)
Annualized value of ideal capital cost at 2010–11 price (A _b)	233.69 – 45.35 = 188.34	
Annualized capital cost (A) = (A _c + A _b)	188.34 + 45.35 = 233.69	
Operation and maintenance cost per MLD at 2010–11 price	0.6/MLD/year at 1993–94 price inflater: 2.74 (2010–2011)	Majumder (2004), RBI (2013)
	0.6 * 2.74 = 1.644 at 2010–2011 price	(continued)

Table 10.2 (continued)

Cost item	Estimation	Source
Total operation and maintenance cost at 2010–11 price (B_o)	O&M cost * STP capacity * actual capacity = $1.644 * 92.5 * 0.75 = 114.05$	
Total Energy Cost (B_e)	Energy requirement * energy charge = $200 \text{ kWh/ML} * \text{Rs. } 5.25 * 25,321 \text{ ML} = \text{Rs. } 26.59 \text{ million}$	Majumder (2004), CESC (2012–13)
Total variable cost at 2010–11 price ($B) = (B_o + B_e)$	$114.05 + 26.59 = 140.64$	
Total cost at 2010–11 price	$+(B) = 233.69 + 140.64 = 374.33$ for 25,321.88 ML	
Cost of treatment per ML	$(374.33/25321.88)$ per ML = 0.0148 million = Rs. 14,780 per ML	

Source: Authors

requirement of STP (for ASP type) was reported as 180–225 kWh/ML. Considering 200 kWh/ML as average electricity consumption, for 25,321.88 ML the energy consumption would be 5,064,375 kWh. According to the tariff chart of the Calcutta Electric Supply Corporation (CESC) the average energy charge for Public Water Works and Sewerage, Pumping Station under local Authority is Rs. 5.25/kWh in 2010–2011. Thus Rs. 26.59 million is spent on this count.

So total variable cost turns out to be Rs. 140.64 million. Hence, the total cost of treatment becomes Rs. 374.33 million. If this is the cost of treating 25321.88 ML wastewater then cost of treatment per ML wastewater would be Rs. 0.01478287 million, i.e. Rs. 14782.87/ML (Banerjee & Dey, 2016).

10.7.2 Contribution of EKW in Saving Municipal Cost

The estimated annual cost of treatment for total sewage of the city, i.e. 405,880 ML, would be Rs. 6000.07 million/year²¹ which is equivalent to USD 0.1 billion.²² Since EKW is treating 78% of that in a natural process, EKW is providing an annual ecological subsidy of Rs. 4680.06 million to the city of Kolkata by extending opportunities of natural sewage treatment. The city is further generating 4460 MT of solid waste per day and 95% of this is getting disposed at Dhapa dumping ground which has been operating since 1867 (Furedy, 1987). The people of EKW are putting this garbage into different uses through their ingenious ventures related to resource recovery.

10.7.3 Financial Provision from KMC

The budgetary allocation of KMC on Sewerage and Drainage in 2012–13 was only Rs. 1693.9 million. This is supposed to be utilized for (a) running of the STPs, (b) running of the pumping stations (60 in number, KMC website, list of drainage pumping stations), (c) maintaining the drainage pipeline and (d) partial maintenance of the canal network. According to the CPCB document (2003), the annual cost incurred by each pumping station is Rs. 0.2 million at 2000–01 prices. So after suitable price adjustment for inflation, the current commitment for operating the pumping stations would be Rs. 20.80 million. This will leave nearly Rs. 1.50 billion for maintenance of the 1610 km long drainage line which is already facing severe

²¹If the cost estimate is carried out for 60% capacity utilization then the total treatment cost would be Rs. 5410 million per year and for 90% capacity utilization it would be Rs. 4193 million per year.

²²\$1.00 is approximately equal to Rs. 60.00.

clogging problem due to sedimentation and silt. In the absence of this support service from EKW, the financial provisions appear utterly inadequate and the opportunity cost of this decay of EKW would be enormous for the city (KMC Budget, 2012–13).

10.8 Overall Assessment

Kolkata, one of the most populous cities of the world, does not face much trouble to manage the wastewater, whose volume is increasing manifold over the years. More than 80% of city sewage is sent to EKW for natural treatment where wastewater treatment and fishery practices are integrated through a rare correspondence of stages. The city of Kolkata enjoys generating double dividend through a subsidized service of wastewater treatment as well as low-cost supply chain of fresh fish, vegetables, etc. However, it has been shown in this paper that this delicately balanced ecosystem is threatened by the aggressive eastbound urban growth of the city. A significant change has been observed in the pattern of land use in the buffer area. To protect the wise-use of the wetland any further change in the pattern of land use in the core area has been legally prohibited. In spite of that a tendency towards vocation switching is noted all over the place. If this propensity continues and especially, if fisheries stop dominating the livelihood option of the local residents, then that will not only affect the low-cost supply chain available to the city dwellers and will challenge continuity of the waste management practice as well.

This paper tried to posit an integrated framework where based on the physical characteristics of the wetland area and the urban waste management practices adopted by the adjacent city of Kolkata an intricate interactive socio-economic canvas has evolved where this unique ecosystem generated a number of sustainable livelihood options to the local society through the wise-use practices that encouraged them to live creatively with nature. In the absence of a comprehensive understanding of this integrated framework, the paper also discussed the irreversible risks the society is inviting by designing inappropriate intervention strategies. Myopic attempts, at this stage, are leading to absolute coordination failure. If not checked immediately, this will threaten the mere existence of this low-cost sustainable service in the near future.

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Chapter 11

Urban Ecologies in Transition: Contestations around Waste in Mumbai

Sneha Sharma and D. Parthasarathy

11.1 Introduction

Huge mounds of waste are synonymous not only with developing countries but increasingly in cities of the global north as well. The increase in population and consumption has given rise to more waste generation. World cities are urbanizing at a rapid pace and it is projected that 66% of the world population will live in cities by 2050 (United Nations, 2014). High quantities of waste pose a serious problem for emerging cities. At a global level, some of the largest landfills are in new emerging cities like Laoganga in Shanghai, and Gramacho in Rio de Janeiro receiving more than 10,000 tonnes of waste per day (Hornweg, Bhada-Tata, & Kennedy, 2013). Indian cities experience similar challenges. Increased supply of goods and services encouraged new patterns of consumption. Simultaneously the urban population of India was increased on a massive scale. The population of India has increased by more than 181 million during the decade 2001–2011. The population in 1991 was 846.42 million which increased to 1210.19 million in 2011 (Census GOI, 2011). Cities are expanding at a rapid rate in India. The population in major cities is provided in Table 11.1.

Due to rapid urbanization and increase in population there is an acute shortage of land which can be earmarked for dumping along with causing minimum harm to the ecological balance. The paper captures the case of a growing coastal megacity Mumbai in India, where finding space for dumping becomes problematic and controversial with increasing pressure on urban land. The crisis of dumping grounds in

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Table 11.1 Population in major cities

City	Population (millions)
Mumbai	18,414,288
Delhi	16,314,838
Kolkata	14,112,536
Chennai	8,696,010
Bangalore	8,499,399

Source Census data, GOI (2011)

the city has resulted in the forceful conversion of a pristine mangrove ecosystem to a dumping site where mixed waste in huge quantities, generated from the densely populated city of Mumbai is being dumped without any segregation and processing. The paper interrogates the reasons behind the crisis, the actors involved and how faulty governance has given rise to public protests around the dumping site.

11.2 Dumping Grounds in India

The crisis of dumping grounds in India is such that public parks, wetlands, ecologically sensitive areas and residential areas are being used for dumping waste. Two major impediments in waste management today is scarcity of land located at a safe distance from population settlements, and lack of waste segregation both at the source and before dumping. Indian cities are facing a crisis in waste disposal mechanisms as the existing landfill sites are unable to cope with the increasing pressure. This has led to the twin problem of people living in unhealthy conditions and protesting for the closure of dumping grounds, as dumping causes health hazards for people in the vicinity (Sharholy, Ahmad, Mahmood, & Trivedi, 2008). The crisis of dumping grounds has attracted lot of resistance in cities by the local community and green activists. Both state and central governments are left to deal with the growing population, pressure on infrastructure and lack of suitable land for dumping and are forced to locate landfills in environmentally sensitive zones or near residential houses where scientific methods of disposing waste like a sanitary landfill are not fully developed. These government decisions are resisted by local people because they are located in close proximity to residential areas or violate environmental rules and cause severe health hazards. A survey of various newspaper reports of Indian cities by the researcher reveals that these cities are facing a crisis in waste disposal mechanisms as the existing landfill sites are near to their closure and no alternate dumping grounds have been successfully located. Similar situations have been reported in Trivandrum, Pune, Bangalore, Surat, Bhiwandi, Chennai and Kolkata. According to Sahu (2007), the coastal cities like Mumbai, Vishakapatnam, Kolkata and Chennai prefer to dump their municipal waste in the nearby creeks. Other cities like Kanpur, Delhi, Bangalore and Jaipur dump their waste near the riverbanks or near highways. Places like Vilappilsala in Trivandrum,

Mandur (Bangalore), Urali (Pune), Kanjurmarg (Mumbai) have witnessed protests by the locals as well as NGOs and environmentalists against the location and quantity of waste dumped at these grounds. Apart from health impacts, these dumping grounds also have severe environmental consequences. Trivandrum is encountering a deadlock in the garbage disposal systems with a crisis of dumping grounds. Attempts by the government to allot an alternate dumping ground have attracted a lot of public protest. In Bangalore the problem is not just limited to unsegregated garbage collection but the civic administration has been grappling with the crisis of dumping ground resulting from local protests. The agitation in Surat, Gujarat pertains to both the scarcity of dumping grounds as well as inefficient governance and monitoring of waste disposal. Indore generates 600 TPD (Ficci, 2009), is now among the Critically Polluted Areas (CPA) in the country is facing charges of unscientific handling of waste. Kolkata, which generates 2920 MT/day as per official figures (Corporation, 2005) in 2003 which is estimated to have escalated to 5224.76 tonne/day in 2010 (Das & Bhattacharyya, 2013) has absence of an appropriate system for segregation of garbage. New site is being searched as the current Dhapa dumping ground is nearing exhaustion. In Bhiwandi near Mumbai, untreated open dumping of waste is being speculated as the major cause of malaria, typhoid and other viral diseases. Waste is dumped or burnt in an unscientific manner because of technological and administrative limitations (Annepu, 2012). These dumping grounds not only affect the environment by air, water and soil pollution but also damage the property in the vicinity (Sahu, 2007). This concern is emerging as a pan-Indian problem in Solid Waste Management.

Existing literature mostly deals with generic institutional structures or technical aspects of managing waste. It does not sufficiently engage with the politics between institutions and state actors which often result in faulty governance and planning of urban services. In the context of a developing city, urban conflicts and environmental justice should be understood against the background of goals and responses of urban governance in dealing with a crisis. By raising questions on gaps in governance and environmental justice which leads to this socio-environmental protest, the paper lays open the debate around localized urban transitions and justice issues which are pertinent for urban sustainability.

The case study discusses the protests around a controversial dumping ground—Kanjurmarg situated in the heart of the metropolitan city of Mumbai in India. Data for the study was collected in the form of semi-structured interviews and the sample size comprised of twenty people including local residents, party leaders, NGO and Brihanmumbai Municipal Corporation (BMC) ward members over a 6 month period. Apart from this, two focused group discussions were conducted in the neighbourhood. The targeted number of civic officials could not be interviewed because of unavailability as cited in most cases or refused to comment on the controversy and only the chief engineers at the local ward office could be interviewed.

11.3 The Case: Environmental Violations, Popular Protests and Juridical Deadlock

As per official figures in 2006 Mumbai generates waste of approximately 7025 metric tonnes per day (MTPD) of solid waste, out of which 5000 MT is general municipal waste and 2000 MT is construction debris. Latest figure in 2013 by Joshi, Patil, and Mourya (2013) states that 9624 TPD is received by the three operational dumping grounds in Mumbai, which are Mulund, Deonar and Kanjurmarg out of which the first two are due for closure for more than 5 years.

Kanjurmarg falls in the S-ward in the eastern suburbs of Mumbai with several residential colonies and is marked by several mangrove covered creeks (see Map 11.1). The site was originally a salt pan land which had already expired (extending from 19° 3' 29"N–19° 4' 9"N Latitude and 72° 55' 13"E to 72° 56' 13"E Longitude at Kanjur village) was handed over to the municipal corporation after a Supreme Court directive in 2003 for developing it into a scientific dumping ground which could handle around 4,000 metric tonnes of garbage per day. During the acquisition of the land the state government and the civic authorities claimed that the land was suitable for a dumping ground as it was outside the CRZ-I¹ (GOI, Coastal Regulation Zone Notification, 2011). Permission was given and land was handed over to the civic body Brihanmumbai Municipal Corporation (BMC) for the project but subject to strict compliance to MSW rules. However, the Environmental Clearance (EC) stated that out of 141.77 hectares (ha.) which the BMC had marked for the landfill, “52.5 ha (37% of site area) falls under Coastal Regulation Zone-III and 86.72 ha of area is free from Coastal Regulation Zone. 20.76 ha of area is affected by mangroves. Balance area available for project development is 65.96 ha” (Environmental Clearance, 2009). The project was approved by the Ministry of Environment and Forests (MoEF) and a private company was awarded the contract of SWM under the PPP model (Public–Private Partnership). As opposed to the area mentioned in the EC, the satellite map shows that around 30 ha are filled with dense mangroves and the entire area is a wetland with a rich and diverse marine ecosystem along with an old residential colony, Kannamwar Nagar situated very close to the site. It is one of the largest colonies in India, comprising of inhabitants from all strata of the society. The residents of the colony alleged that they were not informed of this decision during the acquisition process.

¹The Ministry of Environment and Forests (MoEF), Government of India, on February 19, 1991 and revised on January 6, 2011 for the purpose of protecting coastal resources from depletion and degradation and to manage developmental activities along the coastline, issued the Coastal Regulation Zone (CRZ) Notification in 1991 under the Environment (Protection) Act, 1986. This notification declared the coastal stretches of seas, bays, estuaries, creeks, rivers and backwaters influenced by tidal action up to 500 m from the ‘High Tide Line’ (“HTL”) and land between ‘Low Tide Line’ (“LTL”) and the HTL as the Coastal Regulation Zones (CRZs). Restrictions were imposed on developmental activities and the notification would regulate the use of land within 500 m of the coast and 100 m along the tidal-influenced water bodies. CRZ is divided into I, II, III with I being the most sensitive and rich in biodiversity.



Map 11.1 Satellite map showing Kanjurmargin dumping site, surrounding mangrove cover and residential colony. *Source* Author (from Google Earth)

The wetland was reclaimed by dumping of debris and the natural flow intertidal water was also disturbed due to the bund (a 12 ft tall compound boundary wall) built in October 2010 thereby affecting the mangroves. This had direct impact on the ecological balance of the area as mangroves began to perish. Large amount of unsegregated waste from BMC was redirected to this new site and dumped without any scientific processing as per the newspaper reports. Untreated leachate polluted the nearby creek and entered the sea waters. Strong stench covered the area because of unscientific dumping of garbage. The dumping ground caught attention of a local NGO called Vanashakti, and the matter gained momentum with the involvement of neighbourhood inhabitants.

Vanashakti alleged that the project violated environmental laws, CRZ notification, Wetland Rules, 2010 and also the Municipal Solid Waste Management Rules, 2000. The terms of EC were ambiguous as the 20.76 ha area of mangrove land was classified as non-CRZ but this clause was deemed contentious by the NGO as mangroves are always found in CRZ-I and the entire allotted site was a mangrove zone. Repeated complaints were made to the civic body by the locals whose daily lives were disrupted due to continued stench from the dump. BMC responded by claiming to have held a public hearing as part of obtaining environmental clearance but the residents denied this. Appeals and complaints were made to the Maharashtra Pollution Control Board (MPCB) and the Maharashtra Coastal Zone Management Authority (MCZMA) but things remained unaffected for long. This site was not only surrounded by one of the largest housing colonies in India but also had schools, colleges and hospitals. This dense mangrove zone was also a proposed Ramsar site.²

²India is a signatory to Ramsar Convention on Wetlands signed in Ramsar, Iran, in 1971, is an intergovernmental treaty which provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. It also lists wetlands of international importance (www.ramsar.org).

In 2012 uncontrolled dumping began in full swing with hazardous gases emitting from the ground. Residents faced severe health complications and suffered from the strong stench that got worse in the monsoons. A massive protest was organized with the help of NGOs and local political leaders. A Public Interest Litigation (PIL) was filed by Vanashakti that demanded the closure of the dumping ground but significant action was not taken by the authorities which would solve the problem of the people. The matter was taken to the High Court which found that the bioreactor technology being used by the private contractor was non-scientific and outside the environmental clearance conditions. Fresh environmental clearance was not taken which is mandatory if the conditions of the project are to be changed. BMC officials responded to the complaints through local newspapers, stating that it has clearly demarcated the mangrove and non-mangrove areas and that relocating the ground would increase the time and transportations costs. Temporary measures were taken by the High Court by sending show cause notices to BMC and contractor, implementing a 1 month stay on dumping of waste, etc. These measures failed to bring relief to the locals and endured a tussle between the monitoring bodies—MPCB and MCZMA. They issued show cause notices to BMC to stall dumping for interim period or asked BMC to use the technology as agreed in the contract. In November 2013, appeals made to the Ministry of Environment & Forests (MoEF) to either issue fresh clearance or demolish the wall. The MoEF directed BMC to replace the wall with barbed wire (as it falls in the CRZ zone) which allowed vegetation cover and flow of water for the mangroves.

Another appeal was made to National Green Tribunal (NGT)³ by Vanashakti, questioning the MoEF clearance regarding the use of 65.96 ha and the excess land which was allegedly reclaimed by the private contractor. As per the orders passed by the NGT (Tribunal Order no. 2, Feb 6, 2014) on 6th and 12th February 2014 (Tribunal Order no. 3, Feb 12, 2014), the NGT ruled that the wall should be demolished (as it prevented inflow of air and was environmentally detrimental). MCZMA was asked to map the area, submit a report and oversee the demolition of the wall. The NGT order dated 12 February 2014 as per order no. 3, stated “The record shows prima facie that the infrastructure activities like roads were under progress in excess of limits of 65H. It was also noticed that the construction of landfill site was in progress for which rampant reclamation was being carried out, although the landfill site is being developed as per Environmental Impact Assessment”. Further, it ordered the private company to restrict any dumping activity till the State Environmental Impact Assessment Authority (SEIAA)

³The National Green Tribunal has been established on 18.10.2010 under the National Green Tribunal Act 2010 for effective and expeditious disposal of cases relating to environmental protection and conservation of forests and other natural resources including enforcement of any legal right relating to environment (www.greentribunal.gov.in).

approved for change in technology or gave a fresh clearance (Lukose & Khan, 2014).

The NGT ruling was challenged by BMC and the private contractor in the High Court. The pressure of increased waste generation and closure of an old dumping ground were reasons cited by BMC officials in various newspaper reports. The High Court order was challenged by Vanashakti in Supreme Court and it directed the private contractor and BMC to comply with the High Court orders as the MCZMA's report indicated that "one of the mangrove patches is highly degraded and the mangroves are dying... The wall was a major cause for the degradation of the mangroves" (Service, 2014).

Meanwhile, the BMC requested the MoEF to relax the norms, citing that originally, the land was not a mangrove zone but became one later when old bunds were broken and tidal waters flushed in. Vanashakti is fighting the legal battle for the wall to be demolished which still stands at the site and also suggested alternate dumping sites on the outskirts of the city. The argument kept shuffling between the MoEF issuing a fresh clearance (post facto clearance) or BMC taking down the wall for which it tried to justify, stating that the compound wall was a buffer to protect the surrounding mangroves and followed the Solid Waste Rules 2000. The case was also made sub judice in Supreme Court meaning 'under judicial consideration' which prohibits it from being discussed in public forum. BMC commissioned the bioreactor plant in 2015 (as contradictory to the windrow composting technology mentioned in the clearance) to process methane gas from the waste, promising the citizens of odour-free waste processing in the city.

Apart from the legal battle, the complaints by locals with the help of political parties and residents associations regarding the stench and increased cases of respiratory diseases did not yield significant action from the authorities.

Recently in January 2016, the BMC approached the MCZMA (Pinto, 2016) to use 52 ha of land in addition to the 65.96 ha granted by MoEF. It is to be noted that this excess land falls under the CRZ III. While the case is stuck in legal battle, locals are protesting actively in the area in form of signature campaigns, demonstrations and letters to prime minister in the backdrop of Swachh Bharat Mission⁴ (India, 2014) which has stirred up the issue to the forefront. Residents with access to internet are using social media to gain attention of the authorities and larger community.

⁴Swachh Bharat Mission translates to Clean India Mission in English. It was launched on October 2, 2014 as a nationwide call to clean India and improve hygiene by building toilets to eradicate open defecation. The cleaning drive was started by Prime Minister Mr. Narendra Modi which gained immediate momentum. One of the mission objectives is to 'Introduce modern and scientific municipal solid waste management practices' by 2019.

11.4 Complexities in Governance, Role of Actors and Institutions: Some Insights

The chain of events and responses of the state point towards mismanagement of waste originating from faulty governance on parameters like public participation, consent, accountability, transparency, proper handling of waste and inclusive urban planning. Lack of accountability and decision-making without the consent of the residents or local people are the prime problems. Bureaucratic complexities and procedures make it difficult for the people to navigate the system for timely and quality delivery of services. Governance in the present research cannot be restricted to models of PPP but will also be understood through the everyday agreements, disagreements, contestations, negotiations, interactions and conflicts which surround dumping grounds in Indian cities. The study throws up some pertinent relating to:

- *Selection of the site*

Any project being implemented must be outcome-oriented and achieved through larger stakeholder consensus building (Singh, 2008). The narration of the case raises some questions on the decisions taken by the civic body on the location of the dumping ground: Why was this site chosen and who were to benefit from this project? Was the decision of choosing this site influenced by vested interests and commercial/real estate networks? Was it a strategized decision to locate the dumping ground on a wetland within the proximity of residential area? Keeping in mind the demographic profile of Kanjurmarg, it can be argued that the area chosen was economically vulnerable and less powerful as compared to other areas in the city which were probably near high-income settlements. The very fact that the site is located away from the habitations of the urban elite explains how inequalities are at play in a democracy to benefit only a section of the people. Also, this act can be seen as attempts to reclaim land which can be then imitated for other projects, including the ones backed by real estate or profit-making houses. The state itself gets involved into destroying environmentally sensitive land such as the coastal areas which fall under CRZ clause.⁵ A question to be asked here is who decides how the common property is to be utilized and what are implications of land-use patterns by the state? The livelihood of more than 300 fishing families was at stake as the dumping would release toxic chemicals into the creek and contaminate consumable fish.

- *Selection of the private player*

In the given case the PPP model seemed to be ridden with discrepancies and environmental violations which becomes the cause of delay and inefficiency of the government. The private company was degrading the environment and the green activists claimed that on several occasions BMC tried to protect the

⁵As per CRZ Notification 2011, under section 3, sub section (V) prohibits discharge of untreated waste and effluents from industries, cities or towns and other human settlements.

contractor who was violating laws. Was there a lack of monitoring by the BMC of the work done by contractors? Administrative accountability can be put to question. As it emerged from the study, selection of the private player by the civic authorities was not transparent. The funding given to a private player should be valued for its worth which implicates that it becomes difficult to monitor the resources being handed to the private player, particularly if it involves common property resources. Is the benefit received from the project worth the public resource which is sacrificed?

- *Deviation from Environmental Clearance agreement regarding the technology used*

For a long time, the private contractor openly dumped garbage as claimed by the locals and shifted to temporary spraying methods to curb the stench since no system was in place to collect the leachate and gases. The contractor, supported by the civic authorities used a non-conventional disposal technique called bioreactor landfill which was used as an experiment. India had never tested the efficiency and limitations of this new technology. It should be noted that this was not part of the original environmental clearance which had 'windrow composting' as the agreed technology. In the interviews, representatives from the residential colony and the NGO found violations of terms of the EC.

- *Accountability and inter/intra department coordination*

The detailed study of the case points to lack of transparency within and between departments of the civic authorities and stakeholders for poor handling of waste management issues, for example there was no coordination between the BMC and consultant/contractor regarding seeking fresh clearance for change in technology. The project failed to comply with environment regulations due to gaps in accountability of regulatory bodies like the state/national pollution control board and civic body. The lack of transparency and secrecy that have been associated with the administrative system from colonial times besides cases of corruption, also led to injustice and favouritism (Singh, 2008). The judiciary failed to adequately come to the rescue of environmental and people's problems until recently.

- *Resentment towards the government*

The interviews clearly reflected dissatisfaction of the locals with the BMC. Unattended complaints and inaction were the usual responses from the side of the state. Breach of trust and responsibility by the official result clearly confirms the loss of confidence of the people on the administrators and government as multiple complaints from the local residents were ignored and avoided by the BMC. Focused group discussions revealed that residents felt that the responses from BMC lacked willingness to help the people. Environmental activists and the resident representatives of the residential colony believe that multiple vested interests had led to the present crisis. They suspected involvement of a strong builder's lobby to get the land reclaimed by the government which could be later opened up to real estate. Another allegation is that because of corruption

illegal dumping of debris is done at the ground for which no official records are found and money is exchanged between the officials and builders for violating the laws.

- *Role of civil society and NGOs*

Governance is not restricted to only governments but includes a range of other actors like market, civil society and non-governmental organization. In a democracy where decentralization and participation become important tools of governance, the NGOs and civil society become active stakeholders. Decision-making by the government gets legitimized by the involvement of civil society. In this case when NGOs took up the role of watchdogs taking up the cause of people and environment, their advocacy and suggestions were overlooked and ignored. These actors seek to bring transparency, accountability and public participation which are the pillars of good governance. The involvement of NGOs formed a network of community organizations, media and political activists promoted discussion and debate about environmental issues in the public sphere which caught immediate attention.

Government institutions are not only encountering practical problems like organization, under-employment, lack of funds but they are also instruments for democratic accountability and political authority representing the goals of government. Governance comprises of various actors like the state, market, civil society and their interactions need to be understood in terms of agreements, disagreements and negotiations. The next section further discusses violations of green laws, environmental degradation, role of various actors in governing waste management and questions the decisions taken by the government.

11.5 Inequalities and Risks Emerging from Attitudes Towards Waste in India

The attitude of avoidance of waste is grounded in inequalities in India which can be traced to the old caste system and notions of pollution and purity associated with it (Gupta, 2007). Municipal governance is also influenced by this attitude which propagates dumping of the waste somewhere out of sight; to redistribute it rather than to reduce waste generation or recycle it. The fact that dirt and pollution are inevitable for some periods and locations is linked to the idea that if some are pure, other must be impure (Milner, 1987). This results in a high level of preoccupation with individual cleanliness and rejection or avoidance of dirty public spaces. If cleanliness is perceived as redistribution of dirt rather than its elimination, it is not surprising that most acts of cleaning involve only moving dirt from private areas to public areas. This influences the location of dumping grounds both at the level of inside–outside, public–private and at community level of the rich and poor. Efforts are made to keep residential areas clean and the garbage is thrown in community

bins away from homes. People prefer dumping of waste out of their homes instead of attempts to reduce or recycle it. Garbage from these community bins further travel to dumping grounds which have a higher degree of resignation attached to it as compared to the community bin. Inhabitants perceive the dumping grounds as environmental hazards, which should be located away from human habitation. The rationality behind this is that for the city to be clean some areas have to be designated as dumps to contain the city's garbage. Since some privileged communities have to be kept clean others absorb their pollution. People living on the margins are made to pay for the nation's pollution (Bullard, 1993). Most of the government decisions distribute environmental hazards to poor and minority populated areas. These communities do not have the resources to leave the hazardous zones and continue living in the polluted neighbourhoods. In India, the peri-urban areas are home to the poor and migrated families who cannot afford to live in the heart of the city. Also these areas are strategically chosen as waste dumping sites since they offer almost less resistance and are away from the homes of rich and the powerful.

11.6 Public Participation: Contestations and Negotiations from Whom and for What?

This section discusses forms of public participation, particularly drawing from protests and environmental justice movements. New forms of urban governance have emerged in India post liberalization which stress on decentralization, new role of the state and public participation. Civil society and stakeholder partnerships have taken new dimensions. Studies by Baud and Dhanalakshmi (2008), Harriss (2005), Sivaramakrishnan (2006), Baud and De Wit (2008), Singh (2012) provide insights into forms of urban governance like the Public-private partnership (PPP) model, decentralization of governance, multi-stakeholder arrangements, waste management, community-based organizations, Advanced Locality Management and also ways in which various stakeholders respond. The different collaborative strategies under these partnerships are exposed to unequal pressures from various sections of the society, mainly the powerful and the civil society. The concerns of the minority population who are vulnerable and less influential get 'ignored'. This act of ignorance by the state arises from exercise of power, also called as the second dimension of power in Steven Lukes's work⁶ 'Power: a radical view' (Lukes, 2005) and maybe called the politics of ignorance. Power is exercised in visible and invisible ways.

⁶Steven Lukes gives three-dimensional view of power, the first deals with the most visible forms of power, for example decision-making by the state. The second-dimensional view of power talks about the act of decision-making as well as non-decision-making, for example the act of ignoring or not responding to grievances. In the third dimensional view of power Lukes includes forms of power which are not observable 'invisible power', like the deliberate attempts of the powerful to manipulate thoughts of the powerless. The powerless are often not even aware that they are being subjected to manipulation and this is done to prevent formation of grievances.

Civil society negotiates with this ignorance by participating in various forms of protests and resistance even in informal ways. In some ways this kind of participatory development appears to be consistent with the liberalization agenda (Williams, 2004) but obsession with participation has its own dangers, as it tends to homogenize communities and conceals the inequalities of repressive structures (of gender, class, caste, ethnicity). In a country like India, there is immense focus on engaging civil society to participate at local levels to make the system more democratic and to bring citizens closer to decision-making processes. Civil society comprises of distinct class categories which organize themselves to achieve certain ends like a slum free zone (Ghertner, 2011) or a garbage free residential society (Singh & Parthasarthy, 2010). The middle class, in the form of civil society tries to impose its own interests in the public domain (Kaviraj, 1997; Gherter, 2011; Ghertner, 2012; Roy, 2004). These participatory models are exclusive in nature and leave out certain sections of the population. Often, a move towards ecological conservation “articulate civic concerns in a manner that constitutes a public that excludes the city’s poorer sections” (Baviskar & Ray, 2011: 5). Alternately some urban movements can be based on specific groups as theorized by Partha Chatterjee as ‘political society’ (Chatterjee, 2006) or on new forms of urban citizenship revolving around inequalities or a conflict, conceptualized as ‘insurgent citizenship’ by Holston (2008). These forms disrupt the traditional state recognized forms of citizenship and produce new experiences which push the boundaries of democracy.

Most of the government decisions redistribute environmental hazards to areas occupied by poor and minority sections. These risks are unequally distributed by policies and government decisions which adversely affect some communities more than the larger society (in our case for example the location of landfills). It has been observed that people living on the margins of the society have to bear the brunt of a nation’s pollution problems (Bullard, 1993). “US histories of property development are intertwined with histories of ethnoracial oppressions, philosophies of park design and land-use systems” (Wolch, Byrne, & Newell, 2014: 235). In many instances as studied by Bullard, institutional racism influences government decisions in siting of hazardous waste disposal facilities in United States and seeking environmental justice becomes difficult. These communities do not have the resources to leave the hazardous zones and continue living in the polluted neighbourhoods. In India, the peri-urban areas are home to the poor and migrated families who cannot afford to live in the heart of the city. Also these areas are strategically chosen as waste dumping sites since they offer almost no resistance and are away from the homes of rich and the powerful. Mike Davis, in his book titled “Planet of Slums” describes cases all over the world where the poor have been victims of environmental risks.

A kind of infernal zoning seems to surround dangerous industrial activities and transport infrastructures with dense thickets of shanty housing. Almost every large Third World city has a Dantesque district of slums shrouded in pollution and located next to pipelines, chemical plants, refineries (Davis, 2006, p. 129).

Zones are created in cities either naturally, as some areas are valued more than others, or by the urban planners. The political elite and policymakers decide who gets what and how much.

11.7 Unequal Urban Transitions and Socio-environmental Justice

Rapid urban transitions raise questions on inequality, environmental and social justice. With the city space being constantly reproduced, urban ecologies should be understood in form of flows and interactions which are shaped by power relations. Here I make an attempt to locate changing urban ecologies within the unequal distribution of urban landscape. In cities particularly in global south, space is differentially distributed. “Access is often highly stratified based on income, ethnoracial characteristics, age, gender, (dis)ability and other axes of difference” (Wolch, Byrne, & Newell, 2014: 235). Understanding the power relations at a micro scale between actors equips one to further unpack the visible contestations in a society. The rising popular protests in India against dumping grounds can be deciphered as part of environmental justice movements.

Environmental justice has become more complex because of class differences. The poor suffers more as against the rich but the middle class also suffers in the long run from environmental degradation. For instance in the Kanjurmarg case shows how the economically weaker sections of the society become the victims of faulty government decisions. Within the economically vulnerable community it is the poor and lower middle class which gets marginalized as compared to the (lower) middle class. Environmental risks are unequally distributed by policies or government decisions and adversely affect particular communities. On one hand there are conflicts between the rich and poor, and on the other, between the rich and middle class thus making it difficult for them to raise the issues of environmental justice and environmental concerns. Also there are conflicts within the poor communities themselves. The composition of these vulnerable, minority groups is very heterogeneous and relative. Compartmentalizing them into one category is unjust and problematic. This can be explained in the following three points. First, the classification between rich and poor is a very generic dichotomy though reflects a multitude of inequalities that have been widely discussed and debated. Second, the fast gaining recognition of civil society as an important part of the governance process is evident. We should ask what constitutes the civil society which is usually imagined as a community whose members are aware of their rights and responsibilities, are educated and raise strong voices against injustice. Most of the protests involve only the middle classes. As mentioned in the previous section scholars like Amita Bhaviskar, Ananya Roy, Asher Ghertner, Yoko Taguchi have discussed about middle class activism in their work. The civil society or middle class imposes its own notions of civic sense, aesthetics, cleanliness to re-assert their class

boundaries. Does the civil society really include the poor as often imagined in dominant discourse (like the slum dwellers, street hawkers, pavement dwellers, transit camps residents) or is it dominated by the educated middle class who have sufficient resources and can afford to move out of hazardous sites. Thirdly, the 'poor' comprise of extremely low-income groups, one of the very vulnerable people who can hardly afford two meals a day, have no resources to even express their needs and the other of the lower middle classes who earn less but are relatively in a better economic condition. The profiles of these categories are not static and changes in meaning and composition with time. These complexities of the socio-economic stratification of Indian society impact the difficulties in seeking environmental justice in India. In most cases, environmentalism has taken the form of a middle class pursuit of ecological conservation where the civil society "mobilize the discourse of 'public interest' and 'citizenship' to articulate civic concerns in a manner that constitutes a public that excludes the city's poorer sections... called as Bourgeois environmentalism" (Baviskar & Ray, 2011: 92).

Another way of understanding urban social movements and resistance takes us to Mary Douglas's work on risk and blame. According to Douglas, any attempt to counter a risk is influenced by culture (Douglas, 1992) and it can be extrapolated to make sense of people's protests against the perceived risks in a city. Douglas understands that risks and its management is a social construction, it is not objective or technical but a cultural phenomenon. There are different patterns of blaming which emerge as strategies on the part of society to hold particular persons or communities accountable for these risks and dangers. Douglas explains how people's perspectives on risk are influenced by their underlying values and assumptions. This applies to small communities as well as to highly complex modern societies. Risk (in our case environmental risk) today is highly politicized in the policy debates and unevenly distributed in society. As discussed earlier, many cases have revealed that people of colour and low-income persons have borne greater environmental and health risks than the society at large (Bullard & Johnson, 2000). There have been several grassroots movements from the minority sections of the society against faulty government policies and decisions which expose these communities to environmental hazards. Such environmental movements for social justice have changed the way environmentalism is understood today.

11.8 Conclusion

Green spaces in cities improves the life of inhabitants and also provides ecosystem services, therefore these play a crucial role in urban ecology. Coastal cities like Mumbai create pressure on the state to reclaim land for so-called 'development' process, altering the land-use patterns and increasing unplanned or faulty built area coverage. In Mumbai's case, reclamation activities have long been converting the

green coastal landscapes in the city, by converting the land into concrete towers for real estate, dumping ground, wastewater disposal or by industrial activities. “The remaining healthy mangrove stands are under constant threat of being impacted by the urban activities and expansion” (Kaujalgi, 2010: 7).

Land-use patterns are influenced by various factors like regional plans and policies, redevelopment projects, master plans, commercialization and also by the state, real estate lobby and global projects. However, the choice of land should not benefit some while depriving others of basic living conditions and health. Environmental and social costs and benefits should be given equal footing prior to implementing waste treatment facilities. It is important to understand that the bureaucracy and politics in Indian administration as various dimensions of solid waste management are directly dependent on the nexus between government and private actors. There are common problems like corruption and nepotism in the selection of contactors and allotment of projects. In this case, the regulatory authorities can be more vigilant and ensure the conditions of the contract are followed by the private parties. As seen in the Kanjurmarg case the stakeholders, particularly the actors in the PPP were passing accountability on each other instead of finding a way out of the crisis. A possible way out would be to address the complaints of the locals and impose strict checks by the regulatory bodies to ensure that proper treatment of the waste is carried out and scientific measures are followed. Based on the appeals of the locals, the government should reconsider uncontrolled dumping at the site and involve the civil society to implement integrated solid waste management practices. The implications on public health should be immediately taken into account while deciding the future of the site. The state of solid waste management can be viewed as an indicator of the governance of the city and the way of life of the inhabitants, and local conditions play a crucial role to an effective service delivery system. The status of solid waste shows the government’s priorities towards civic services like health, environment, sanitation and ambience.

Urban transitions are taking place rapidly and the new-built environment is creating new environmental challenges. The need is to be critical of the transitions of urban spaces and question the nature of transformation taking place in cities. The policy and governing mechanisms in growing cities should be adaptive of the resource strains while being aware the existing social inequalities on the ground. The decentralization process and public–private partnerships need to be more democratic, transparent and recognize the embedded inequalities and marginalization in Indian society. The process of conflicts and negotiations in governance has been explored here which raises concerns on how sustainable is the development process and the study stresses on connecting the overarching needs of the society with local environmental factors. Environmental justice can also be conceptualized as an issue of conflict and disruption between the state and its citizens. Urban socio-environmental movements and contestations are processes which urban inhabitants employ to assert their rights to the city. Using the case of a dumping ground and contestations around it the paper has tried to raise questions on the nature of transitions in urban ecology and space.

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Part III
Exploring Ecologies and
Environmentalisms

Chapter 12

Sustainability or (Sustain)ability? Environmentalism and Shades of Power in a Metropolis

Amit Jain

12.1 Introduction

Unlike Said's study of Orientalism, however, I pay closer attention to the development of the discourse through practices.... "There is always, in Said, the suggestion that colonial power is possessed entirely by the colonizer, given its intentionality and unidirectionality. This is a danger I seek to avoid by considering the variety of forms with which Third World people resist development interventions and how they struggle or create alternative ways of being and doing."

(Escobar, 1995: 11)

The alliance of neo-liberalization and globalization has led to the formation of a particular cultural imagination of an urban space due to the flows of culture which Hannerz (1987) terms as 'creolization' of the world. All this has led to the imagining and branding of the city of Delhi as a microcosm of the global world, which has further trapped it in the branding of being a 'world class city' by its 'consuming cultures' (Campbell, 1987). This imagination and branding of an urban space is an outcome of a bourgeois aesthetic requirement. In case of Delhi, environment operates more as a culturally trained set of habits or aesthetic dispositions. This results into the normative assessment of the space which is affected by the dominant discourse (Ghertner, 2011).

As argued by Duncan and Duncan that the aesthetic choices seem to be apolitical but they are political in nature. This does not mean that aesthetics are consciously being used for politics. The apolitical acceptance of aesthetics makes them what they are. Aesthetics being a political tool of middle class has led to the emergence of an idea that slums or the illegal settlements are causing pollution. This idea has

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227

affected the state and judicial discourse in Delhi. This is evident from the Delhi Master Plan and court judgments like *Wazirpur Barton Nirmata Sangh Vs Union of India and Others* (2002)¹ and *Kudasiya Court Judgment* (2006)². In these judgments, court considers the illegal settlers along the *ghat* of Yamuna as the causal agent who are responsible for polluting the river.

But, an urban space is a complex social space having different imaginations entailed by various social actors. These different meanings and associations with it have led to the unleashing of power struggles amongst these different set of actors. The struggle and power dynamics involved within it can be understood by delving deeper into the issues of 'natural' resources and the politics associated with it. Scholar like Baviskar (2004a, b, 2007, 2008) argues that after 1990, in the city of Delhi, the Bourgeoisie aesthetic requirements of 'clean and green Delhi' have been fulfilled by the state and its' policies. Interestingly, the upper middle classes have shown their activism via using judiciary and Public Interest Litigations (PIL) as their weapons to meet their imaginations of 'environment', which she terms as 'Bourgeoisie Environmentalism'.

Such an understanding of power operation represents the poor as hapless victims and misses out the ways in which power is often negotiated in an everyday life. The intention of this paper is to interrogate the question of understanding the power dynamics, involved in the process of appropriation of space and natural resources based upon different perceptions about use of 'natural' resources. The linkages between the 'environment' and 'development' understood through the above queries can be an appropriate window to understand the complex nature of power operating in an everyday life, and the nature of participation in a democratic setup; as India is the largest democracy, which will further help to understand the discursive formations around development, as most of the claims of environmental reality and need for a particular way of appropriation is justified in the name of development. The paper tries to explore these queries by doing a qualitative study of a bathing *ghat*; Kudasiyaghat, at the bank of river Yamuna in Delhi. The state led displacement in 2006 after the court ruling and the strategies employed for mitigating the loss gives an entry point into the above-mentioned complex relationship.

The stretch of Yamuna bank is located on the *Bela Road* in front of *Kashmiri Gate* ISBT. The *ghat* before the demolition had several bathing *ghats*, small temples, an *Akhara*, a Sanskrit *Vidyalaya* and residences of the Pundit families. I landed up in the 'field' in August 2012 and came to know about the brutality of the state machinery and felt residents' anger against demolitions. A Pundit on asking about demolitions, all of a sudden turned into a foul-mouthed brute from a learned Brahmin. He said, "Ye ###@### sab barbadkargaye". The demolition was done as the land 'legally' belongs to DDA (Delhi Development Authorities) and

¹Wazirpur Barton Nirmata Sangh Vs Union of India and Others Court Judgment, 2002.

²Kudasiya Court Judgment, 2006.

was part of urban planning under the ‘Delhi Master Plan’. This firsthand experience in the field made me curious to delve more into the underpinnings of the demolitions and displacement.

12.2 Squinting at Field, Methodology, and Challenges

Because social space is inscribed at once in spatial structures and in the mental structures that are partly produced by the incorporation of these structures, space is one of the sites where power is asserted and exercised, and, no doubt in its subtlest form, as symbolic violence that goes unperceived as violence.

(Bourdieu, 2000: 126)

In the common parlance a neighbourhood is understood as a geographical localized community within a larger city. But a sociological understanding of it may reveal a complex image of it. Just by the virtue of being in a predefined physical space does not ensure an individual to think the other individuals in that area as their neighbours. In other words, to whom an individual considers his or her neighbour is an important feature for defining a neighbourhood. The case of Kudasiyaghat was not an exception to it. Social ties and horizontal network were important prerequisites for the formation of a neighbourhood at the *ghat*. By mentioning it one cannot deny the importance of the physical proximity and markers as they form an important condition for these networks to develop.

The unstructured interviews both at the *ghat* and the new localities where the displaced families settled surfaced the fact of the transformation of the neighbourhood into a form which transgresses the physical markers and not an end to it. Many respondents who have moved to different physical space do not see it as their neighbourhood. Multi-cited ethnography facilitated visits of the new neighbourhoods, where the displaced had settled. They feel out of the community there as they are mostly Brahmins and their lifestyles and profession does not match with those; mainly *jats*. There was no willful movement and hence, hardly any choice was available with them. One of the respondents said that despite being nice and sweet to them (*jats*) they do not feel them as part of their community as they did not have any property there and are mere tenants whose entire day spends at the *ghat*. She added that their homes looked very different from inside and due to different lifestyles and profession their desire for things and topics of common conversation and gossips are extremely different. The other respondent said that they had spent their childhood at Kudasiyaghat and hence they feel attached to that physical space. A female respondent said, “*Yahankhele-kude bade hue, ye ghat hi meragharhai, meramohallahai, yahan sab apnehain*”. It means that despite being displaced she felt the *ghat* as her neighbourhood and home as she had childhood memories associated with this space.

Laxmi,³ a 45-year-old woman spent her childhood on the *ghat* and still cherishes the moments like playing with the left over material from the rituals performed at the *ghat*—thought only for the *visarjan* (for flowing in the running Yamuna stream). She got married from here and came back from her in-laws home back to his father's home after 5 years of marriage along with her husband and settled here only. She was a mother of a 2-year-old male child. She became mother of two more children while staying here. There were relatives here amongst whom she was highly popular because of her good nature. She said that she and her sister in law never had fight as both of them decided that in case of anger the person who is speaking less will take the refuge of silence and let the other one to vent out the anger. Such an understanding worked well for their relationship.

After the displacement she had to leave the *ghat* as their livelihood requirements were not met and they were bullied by the police officials regularly. This caused a lot of embarrassment for her in front of her children. This made her move to the nearby area where they had to pay the rent which accounted for nearly 40% of their monthly income and for her it was a huge burden for her and her husband. The trail of events further led his elder son to become a school dropout as he was supposed to help his father for meeting the daily requirements of the family. She herself has opened a small tea stall near the *ghat* her younger son assists her. She added that its difficult to sit here alone now as the DDA has converted the part of the *ghat* for parking trucks and other heavy vehicles. This has led to the coming of strangers at the *ghat* and alone she feels unsafe and hence, she asks her younger son to be with her. She also brings her daughter here as the new house which she has shifted after the demolition is not a 'safe' area for her to leave her daughter alone at the house. The family feels safe here because of togetherness and also the known ones at the *ghat* who are informally engaged in the religio-economic activities at the *ghat*.

She feels the tear in her social life which was evident when she said that on *rakshabandhan*⁴ her son's hands were full of *rakhis* when they used to live here on the *ghat* but now there are times when no relative turns up on the day. This indicated a significant change and loss in her relationships with her relatives which she cherished a lot. Like Lakshmi, most of the earlier residents do not have houses at the *ghat* after the demolition of 2006, but still they imagine the *ghatas* their neighbourhood. This is partly because the new neighbourhood does not offer them horizontal networks. Therefore, in case of *Kudasiya Ghat* a complex picture of neighbourhood emerges.

In such a backdrop, I took the idea of 'field' from Gupta and Ferguson (1997) because for understanding the displacement I had two social actors on which I had

³The respondent gave the permission about writing her name and profession. Hence, the ethical part of this experience sharing has been taken into consideration.

⁴It's a festival where sister ties the designer threads on her brother's wrist. In turn the brother takes a vow to protect her from the problems of her life.

to focus. I had state institutions and the local residents of the *ghat*; both the displaced and ones who are living there. The residents after demolitions had moved to multiple sites in Delhi and hence I had to go and meet them at their places. Hence, my field was not located at one particular site, rather it was dispersed. This gave me a fair vision about how the research topic determines the sprawl of the field. I studied the court judgments and Delhi Master Plan 2021 to understand the state's view and its inter-linkages with the discourse of 'bourgeois environmentalism'. I focused on collecting narratives and my attention was drawn by the *ghat* and new settlements of the displaced people. After completing my pilot visits, I decided to choose unstructured interviews, Marcus' idea of multi-sited ethnography, visual technique like still photography, observation in field and reading of court judgments as my key methodological tools. The selection of these methods was based on an understanding developed during pilot visits. The major determinants for the selection of methods were objective of research and time available.

Multi-sited idea of field when clubbed with unstructured interviews formed a powerful union. If the former on one hand increased my horizon for conducting interviews, the latter on the other hand gave me an 'emic' view of the field. Unstructured interview gave me the liberty and flexibility to conduct the interviews and collect data as required by the situation. While conducting an interview I was conscious that an interviewee is both the respondent and informant. That means s/he is part of a community and also subjected to their subjective experience. As an interviewer I was always careful about this and tried to maintain a balance between the two by oscillating between the questions which dealt with both the roles of an interviewee. To eliminate bias in sample selection for interview I chose 'convenience sampling'. Such a sampling was chosen as suitable to the objective of the research and the demand to trace all the displaced people after displacement was not possible. Both the methodological tools helped me to develop a better understanding of a neighbourhood and understanding the power dynamics in the city of Delhi through the study of a neighbourhood.

12.3 Locating Power: Perceptions on Space and Environment⁵

As argued by Peet and Watts (1993) that development always manifested itself and kept itself alive by reconfiguring the relationship between the state, market and civil society.⁶ Delhi Master Plan 2021—a manifestation of state's perception about

⁵I'm using the term in a circumscribed sense as argued by David Harvey. For more details please see, *The Nature of Environment: The Dialectics of Social and Environmental Change*. *Socialist Register*, 29: 1–51.

⁶I'm using the term in the Gramscian Sense. For more details please see, *Selections from the Prison Notebooks* (1971).

development induced planning of an urban space—perceives the river Yamuna and its banks as a recreational space. The idea is induced from the Thames river of London. But, various scholars have critiqued it as culturally alienated, outcome of an exclusionary development and also as induced by the aesthetic requirements of the upper middle class of Delhi. Scholar like Baviskar (2004a, b, 2007, 2008) argues that after 1990, in the city of Delhi, the Bourgeoisie aesthetic requirements of ‘clean and green Delhi’ have been fulfilled by the state and its policies. Interestingly, the upper middle classes have shown their activism via using judiciary and Public Interest Litigations as their weapons to meet their imaginations of ‘environment’, which she terms as ‘Bourgeoisie Environmentalism’.

She discusses that the idea of clean and green Delhi is itself a bourgeois requirement created by popular discourses on environmentalism in post 1995 era across the globe. Its a cultural value coupled with commercial capital. Since 2001, there was a powerful attempt to remake the urban landscape of Delhi. This is done in a planned way by shutting down ‘polluting industries’ and removal and relocation of *jhuggi* squatter settlements from the public lands. This has generated pressure on Delhi as its spaces are visible and many ‘important’ people live and visit the city. Concerns about the physical and social welfare of concentrated human populations—mostly upper class and upper middle class, were thus channelled into the desire for a planned city, where they converged with the high nationalist fervour for modernization. Fulfilling this desire seemed to be preeminently a responsibility of the state (Baviskar, 2008: 90). There were two trajectories visible for the urban planning. One encouraged mixed land use for a multi-class and multi-ethnic society with spatially overlapping functions. Other was based on the segregation of population and functions. The latter was considered to be ‘best’ suited for Delhi since colonial times. The master plan wanted a hygienic, modern and beautiful city, but even this required cheap labour and which was not considered. Thus, along with this, grew shanty town which were not an aberration of the plan but an essential requirement for the same.

If planning gives civil society a medium to transact their perception into policy then the state uses it to facilitate ‘Foucauldian governmentality’⁷ (Holston, 1989; Scott, 1999). Along with the state and civil society, political society⁸—in this case the displaced people on the *ghat* have their own ways of perceiving the river Yamuna. Various scholars have touched upon these perceptions. If for the upper middle class and the state it is the site of recreation, then for the displaced bank and the river were the sources of their livelihoods. If the first approach has a notion of distance, then the second one is about the close association of bank and river with livelihood (Bharucha, 2006; Dutta, 2009; Vela, 2010). In other words, if the case for rich is entwined with worries of clean and green environment, bourgeois aesthetics

⁷For more details please see, Michel Foucault, *The Birth of Biopolitics: Lectures at the College de France, 1978–1979* (2008).

⁸I’m using the term in a sense used by Partha Chatterjee, based upon the distinction between legal and illegal, for political society being in the realm of illegal. For more details please see, *The Politics of the Governed: Reflections on Popular Politics in Most of the World* (2004).

and the ‘wilderness’ as a space for recreation (Fishman, 1987; Duncan & Duncan, 2004; Nair, 2006), then the case for poor is about the livelihoods and sustenance, but with an ecological edge (Gadgil & Guha, 1994; Martinez–Alier, 2007).

The above discussed literature suggests that the ‘environmental’ planning in Delhi—as collaboration between the state and the upper middle class, as a means to ‘governmentality’ which is legitimized by the discourses of development, planning and ‘environmentalism’. These together form a repressive–discursive formation—often resulting in planned illegalities (Bhan, 2013), of which the displaced, poor and the marginalized are the subjects. The perceptions of the upper middle classes feed into the dominant discourse and power operates from rich to poor in the realm of cultural politics. In this sense, the form of power operating as understood in the existing literature is unidirectional; it attempts the power question in the language of domination and resistance. My attempt in this paper is to move beyond such an understanding of power—though paying it its full tribute.

12.4 The Power Question: Beyond Unidirectional to Dispersed

The French Post-structuralist philosopher Bourdieu (2000) enlightens us not to consider the ‘marginalized’ or the ‘victims’ of urban planning and spatial politics as hapless victims or romanticize them as rebels against an oppressive order. But rather acknowledge the ways through which agents negotiate reality and make life meaningful. This reminds me of Appadurai’s deepening of democracy and assertion of citizenship (Holston & Appadurai, 1996) in a democracy which considers everyday negotiations and the agency of poor (Appadurai, 2001).

Since 2001, there is a powerful attempt to remake the urban landscape of Delhi. The objective was met by the means of urban planning which mandated the shutting down of ‘polluting industries’ and removal and relocation of *jhuggi* squatter settlements from public lands. This is evident from the Delhi Master Plan and court judgments like *Wazirpur Barton Nirmata Sangh Vs Union of India and others* (2002)⁹ and *Kudasiya Court Judgment* (2006).¹⁰ In these judgments court considers the illegal settlers along the *ghat* of Yamuna as the causal agent who are responsible for polluting the river. These judgments decided the fate of the residents of Kudasiya *ghat*. At that time there was the ‘Notified Area Committee’, which changed to ‘Land and Development Committee’, which now is Delhi Development Authority (DDA). Before demolition the Supreme Court of India set up a monitoring committee to clean Yamuna which involved judges, social workers, professors, scientists. They conducted a survey to make a list of encroachers and gave it to the court. In the survey, they found that the property is being misused, i.e. used

⁹See footnote 1.

¹⁰See footnote 2.

not for religious purposes but commercial too. The projection of *Kudasiyaghat* in the Delhi Master Plan is a manifestation of the imagination which shoots up from the idea of abstract space. The *ghat* in the plan has to be developed by Delhi Development Authority as a site of leisure; parks and sports club. This indicates also towards the idea of imposed homogenization, where a *ghat* from a site of religious activities, traditional sports and cultural transmission has to be transformed into a site of leisure.

A former resident gave an account of the demolition and its background. The area demolished was between Buddhist Monastery and ISBT. Allotment was given to them (his ancestors) since 1914. According to the local residents, the *ghat* was given to the owners by the British. Since then, there was a lease for every 5 years, which was renewed successively after the completion of every 5 years. Some owners occupied the *ghat* and got dependent on it economically, socially and culturally as they performed their traditional jobs of performing rituals to earn in both cash and kind and settled on the *ghat* along with their families. Some Brahmins who did not want to settle on the *ghat* maintained their possession by renting their patches. Mostly, it was given to the Brahmin families but, two tenants being washermen by their profession also hold the status of tenant. In 1970s, when the government stopped the renewal of the lease, the owners and the tenants did not leave the premises of the *ghat*. Their legality was now turned into illegality. Most of the residents of the *ghat* kept on paying the house rent to the MCD. The land of the *ghat* was legally under the control of DDA. The act to get a document by the MCD was an expression of posing legality over the illegal land. In government records, they were encroacher and resident, both at the same time, or in other words, both illegal and legal. But looking it from a different angle, it also indicates towards the importance of document in proving legality and also about the thinness of the line between legal and illegal. Also, the act of paying house tax to 'Municipal Corporation of Delhi' was a clear act of negotiation, because it was intentionally done to claim their legality when the residents were defined illegal.

There was a notice put on Saturday, when they first knew about it. On Sunday morning everything was demolished. Since, it was an off day for the court, they could not get any help. A respondent said that as a Hindu Brahmin, he felt very bad that old renowned temples and *Sanskrit Vidyalyaya*, where students from different parts came to learn *Vedas*, were also demolished. He added that one could remove people but not God. He felt ashamed of being a Hindu because he could not do anything. He accused Sheila Dixit of being a Hindu Brahmin and not honouring anything which is close to their identity. They first called a community meeting. Since, the court was closed they called their religious leader MadhavShankaraMaharaj. The respondent also told that some people asked to call *Shiv Sena* because they thought that *Shiv Sena* could even die for Hindus. He said that there was not enough time for protest. Besides, there was no unity between the owners and tenants. For some tenants it was an opportunity to 'illegally' capture their landlord's *ghat*.

The rationale for the demolitions, shared with the community, was an allegation for polluting the river. But, some respondents said that instead being the polluters

they were the ones who cleaned the *ghat* made unclean by the visitors. They care for the mother Yamuna unlike the city which opens up their drain to tarnish the clean and holy Yamuna. After demolition in 2006, *Kudasiya Ghat* was declared as land under the control of DDA.

Two landlords told that they accept their fault of being on illegal land but they said, “Why isn’t *Majnuka Tila*, *Tibetan Market* and parts of Yamuna Bazaar not demolished?” They themselves answer the question by linking these areas with their population and a strong political backing. All the *sardars* in *Majnuka Tila (MKT)* Gurudwara had come together to stop demolition. For them, if they misused the premises, then what about MKT drug dealing? Another respondent’s family displaced from the physical site of neighbourhood and moved to *Buradi* was becoming nostalgic about the power which they exercised over the *ghat*. She said, “We miss the ‘DADAGIRI’, we were living with, we were the owners there, we had our own big space but here we are the tenants and no matter how well we behave we still being treated as tenants by our landlords”.

But, after the demolition one can still find Brahmins sitting on the *ghat* and performing rituals for the visitors. On special occasions when holy dips in the river are performed then separate spaces on the *ghat* are created for men and women to bathe. Women usually take bath inside a rectangular form made by a sari surrounded around four pillars of bamboo dug deep in the silt of the river. Though, demolition and displacement have made situations tuff for the residents but most of the families are still dependent upon the *ghat* for their economic necessities. What does this imply for understanding the power dynamics in the wake of the cultural setting of a *ghat*? Does it mean the power dynamics in terms of domination and resistance or more than that? The school of subaltern studies illuminates us in understanding and unpacking these questions.

The first volume of Subaltern Studies in which Guha (1982) defines subaltern space alternatively as ‘autonomous domain’ (4) untouched by elite politics, or as reactive to exploitative relations, locking Indian history into a ‘structural dichotomy’ (6). Significant works like that of Scott (1985, 1990) shed light on the everyday forms of resistance which are less evident, but he has been criticized of using oppositional terms, such as onstage/offstage and public/hidden transcripts, which in a way inhibit a complex explorations of the meaning and practices that inform the everyday struggles of subordinated people (Gal, 1995).

Few families have chosen to stay on the *ghat* itself by making temporary structures of bamboo and grass. Staying at *ghat* is a mixed experience for the families but make it possible with negotiations in an everyday life. Uma Shaker, a Brahmin, occupies the *ghat* as he is unable to perform any other work and is good at performing rituals associated with the river. He offers bribe to the police officials who patrol and often chase him. But, the act of giving bribe made his stay possible on the *ghat*. He haggles with the officials on an everyday basis but, the rates of bribe on the specific monthly festivals are fixed. He shared that now he does not feel any hesitation offering free services to the police officials as its a ‘rent’ which he pays for his place. He also shared that this exchange ensures his *ghat* from other people as after lack of proper document, only such forms of exchange can ensure his right

at the *ghat*. Another respondent, who was also an owner of the *ghat* told that they had to pay the police to stay on the *ghat* (3000/- a month). For every festival rates are fixed (150/-). He said, “*chahe hum do rupaye kamayen hume police ko pure paise dene padte hain*”. (Despite of whatever we earn. We have to bribe the police for being on *ghat*.) Encroachers were removed from the land and are not supposed to stay on the land. But, by the act of giving money to police; a representative of state, which for someone may be corruption but to me its a negotiation which further results in the dispersal of power in the form of ability to negotiate.

12.5 Conclusion

The above discussed narratives and everyday forms of negotiation between the ‘legal’ and ‘illegal’ via acts of bribing, formations of temporary houses and performance of rituals, in a sense indicates towards the regeneration of the *ghat* after displacement. Also, on the power question it clearly indicates that the displaced are not the hapless victims. These acts may be sidelined, ridiculed or ignored, but they establish agency of the ‘poor’ in culturally meaningful ways; adherence to their traditional roles, or in other words, it indicates towards the ‘performativity of culture’ (Butler, 1997). The resistance of the displaced community, in this case is not something which is outside the realm of culture. Such a manifestation of the agency of poor does not project them as passive recipients of power. Rather, perception of space and river in different ways; from recreational, to the mother, to the sacred, and multiple ways of acting based upon such perceptions, blurs the boundary between domination and resistance and further makes this vocabulary redundant for understanding environment and society relationship in an everyday life. Such a blurred understanding would leads us towards a more nuanced understanding of power which cannot be framed in the binaries of domination and resistance, but power will reflect as a scattered phenomenon which cannot be understood by looking in terms of poles.

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Chapter 13

Gentrification and Rising Urban Aspirations in the Inner City: Redefining Urbanism in Mumbai

Dwiparna Chatterjee and D. Parthasarathy

13.1 Overview of the Problem: The Contemporary City Space

Mumbai, once the land of flourishing cotton textile mills¹ located in the central part of the city,² is in a process of transformation. The process of deindustrialisation followed by the prolonged textile mill strike that lasted for 2 years (1982–83) led to an eventual but gradual closure of the textile mills. This culminated into city space transformation where redevelopment and regeneration of the built environment

¹The industrialization of Mumbai is traced back to the mid eighteenth century after the British East India Company leased the seven islands comprising Bombay from King Charles II for trading. The then Governor of Bombay Gerald Aungier (1672–1675) encouraged mercantile communication from the western coast of India and ensured the freedom of trade. The first mill—the Bombay Spinning and Weaving Company—was set up in 1854 by a Parsi Businessman, Cowasjee Nanabhoy Davar and it started functioning in 1856. There were 58 textile mills in Mumbai with 32 privately owned and 25 sick mills that became nationalized in 1971 and run by the National Textile Corporation formed under the provisions of the Sick Textile Undertakings Ordinance (GKSS 2005). The growth of textile mills up to 1960 was quite phenomenal. Profitability and productivity compared to other industries was very high. But with time, ploughing back of the phenomenal profit in the industry reduced considerably. Besides introduction of quota system, competition from the power loom sector, high and fluctuating cost of raw materials, high indirect taxes, and unequal competition became the major causes of decline (D'Monte, 2002).

²The cotton textile mills are located in Lower Parel, Parel, Lalbagh, Chinchpokli, Elphinstone, Sewri, and Dadar areas of Mumbai (D'Monte, 2002; Krishnan, 2000).

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Fig. 13.1 Old working class neighbourhood. *Source* Author

became the main mantra. The emergence of the new landscape with service sectors, firms, IT industries, creative sectors, cheek by jowl shopping malls, high end restaurants, pubs, night clubs, fashion houses and gated communities juxtaposed with long rows of chawls³ (houses for the working class) in the old working class neighbourhood resulted in an exorbitant land values and reproduced the space as a landscape of contrast, contestation, negotiation and aspirations (Fig. 13.1).

Modern architecture and world-class design along with functionless cold chimneys and eroded mill structures are presently standing as a palimpsest on the mill lands. Ninety- to hundred-year-old chawls, high rises with gated community, surrounding slums, slum redevelopment buildings, along with the sale components of real estate builders, and small-scale manufacturing industries in the ex-textile mill compounds brought heterogeneity to the area. What was initially a mill land has transformed into a space of plurality, a space of contrast. The arrival of the upwardly mobile middle class and the spill over effect of bourgeoisie culture deeply disturbs the older urban rhythms related to space, place, work and life. The presence of different classes of people in the same arena without complete displacement or substitution of one by the other transforms urban space and processes. The working class houses getting ghettoized and entrapped by the high walls of emerging gated communities on the mill lands creates not only a sense of discontent but ignites a process of negotiation, bargaining and rising aspirations in the process of redevelopment. Within this milieu of contemporary city space the combination of processes and consequences of gentrification through city branding becomes an

³According to Raj Bahadur Gupta, “chawls are honey combed structures with single room units placed back to back. The access gallery or the corridor was located either externally or between the two rows of tenements and was in turn connected to a common staircase and common set of latrines and bathrooms.” (Adarkar, 2011: 16).



Fig. 13.2 Textile mill as palimpsest. *Source* Author

interesting aspect of study, which in a way redefines urbanism in the inner city neighbourhood (Fig. 13.2).

Against larger theoretical constructs like ‘politics of the poor’ and ‘politics of the politicians’ (Appadurai, 2004) and subaltern aspirations for change in a collective way (Bunnell & Goh, 2012), the chapter maps and scrutinizes present day urbanism across gentrifying mill lands in an inner city neighbourhood and its surroundings in Mumbai.

13.2 The Inner City Neighbourhood

The small neighbourhood along the Sitaram Yadav Marg located in the G/S ward⁴ of Mumbai bears the historical imagination of the past. There was an agglomeration of large and small mills in the area from the period of industrialization in the

⁴Before 1950, the city of Bombay was only incorporated within the Bombay Municipal Corporation and the suburban area remained outside the limit of BMC. In 1950, the suburban areas were merged together and were incorporated within the jurisdiction of BMC. The extended suburbs were also merged together and came within the jurisdiction of Greater Bombay Municipal Corporation in 1957. The district of Mumbai is divided into wards and each ward is divided into sections for the purpose of administration. The city was divided into 15 wards in 1971 that successively increased to 21 in 1981, 23 in 1991 and 24 in 2001. In 1991 census the greater Bombay was divided into Island City, Eastern Suburb and Western Suburb. After 1991, the administrative level was transferred to district level but not in the hands of Municipal Corporation. Presently Mumbai district has nine municipal wards and the suburban districts of Mumbai covers 15 wards. The city is divided into six administrative zones. The city has wards from A to G/S and the Mumbai suburban has ward from H/W to T. The area of G/S ward has four sections starting from section number of 0835–0838 named as Prabhadevi, Worli, Chinchpokli and Lovegrove. The

nineteenth century. Large cotton textile mills in this area included Apollo Mills, Bharat Mills, Jupiter Mills, Madhusudan Mills, Mumbai Mills, Podar Processors (Edward), Podar Mills, Sitaram Mills, Bombay Dyeing Mfg Co. Ltd. (Lower Parel–Worli Unit), Century Spg & Wvg Mills, Dawn Mills, Gokuldas Morarji Mills No. 2, Hindustan Spg & Wvg Mills 3 & Process House, Mafatlal Mills Unit Nos. 3, Matulya Mills, Phoenix mill, Piramal Spg & Wvg Mills, Raghuvanshi Mills, Shreeram Mills, Srinivas Mills, Standard Mills No. 1 (Prabhadevi) and Victoria Mills. Among these mills the first eight were under the ownership of National Textile Corporation and the rest were under Mill Owners Association (Status as of September 2006) (Compiled by Ghag, 2006: 74–75). Other than these mills there were some other textile mills as well such as Mathuradas Mill, Sun Mill and Dhanraj Mill which are stated to be much older. The neighbourhood along the Sitaram Yadav Marg with old dilapidated half wooden clinging chawls, small shops on the ground floor on both the sides of the road, criss crossing by lanes portray the story of the bygone days. The darkness of the 10/12 square feet room and hundred-year-old structure at Sitaram Yadav Marg narrates the history of the textile mill workers who are the old inhabitants of this area. From the early morning till late evening the busy and the idle pedestrians bring life to this place. The informal daily market at one end of the road merges with the Lower Parel Station and N.M. Joshi Road. The other end meets the Senapati Bapat Marg. Simultaneously the presence of high rise buildings locally known as ‘towers’ on both the sides of the roads in between some of the chawls indicates towards transformation of space.

While mapping the neighbourhood in and around Sitaram Yadav Marg, it is noticed that if one enters from the Senapati Bapat Marg the first chawl to the left is Bara Chawl which is a cluster of twelve chawls. Then comes Manaji Rajuji Chawl (a cluster of six buildings), Galan Dyeing Mill Compound where a huge *tower* (residential high rise) is being constructed. Another *tower* named Siddhivinayak Niwara is located there and behind it is the Ashray building or locally known as tower where the chawl people are presently residing. Then comes the building of MHADA named as Swami Sadan Building, then Nagin Nagar Rahiwasi, Abdul Kadir Chawl which is now demolished for redevelopment, Motiram Dayaram Chawl (under redevelopment), Sarang Building (MHADA), Parsi building No. 1, 2 and 3, and the Durga Niwas building. The street meets the Lower Parel Railway Station. If one looks to the right-hand side of the road from the Senapati Bapat Marg to the entrance is the Indu Baug Chawl, Haribaug Building, then the road enters to the right to the Sun mill compound known as Sun Mill Compound road and another went to the Shah and Nahar Company which was formerly the Dhanraj Mill. Other buildings in this row are Chotani Building, Pardiwala Chawl, Manik Cooperative Housing Society, Amoledina Chawl, Chinoy Building and railway quarters. It meets the Lower Parel Station. A number of small shops comprise the

(Footnote 4 continued)

total area of the ward according to 1991 census is 8.56 km². The total population of the ward in 1981 is 537,039 and in 1991 is 444,848 (District Census Handbook, Greater Mumbai 1981, 1991).

ground floor of the area. All the shops are in rows on both the sides of the road. Just beside the station, there is a temple where a number of informal vegetable sellers sit daily in the morning and in the evening. The other chawls in this area are Hasan Building, Konkan Baibhav chawl, Patel Building, Garthwaite House and the subsequent two chawls that went for redevelopment. Other notable buildings are Mathuradas Mill compound and God's Gift Building I, II and III. The building number II is a big tower. There is a big fish market on the opposite side of these chawls which remains heavily crowded on Sunday, Wednesday and Friday. This road merges to N.M. Joshi Marg. On Senapati Bapat Marg just opposite to the entrance of this neighbourhood there is the huge high end shopping mall named High Street Phoenix and two residential high rises which are on the land of the Phoenix mill. There are a number of mill lands on this road which have been transformed into corporate offices and entertainment cum recreation spaces.

The different snapshot of the contemporary mill land areas through the walk in the neighbourhood portrays heterogeneous landscape of multiple elements. It shows different classes of people, working class residential buildings, high rises, admixture of different economy, defunct mills and mill compounds, agglomeration of small-scale economies and mixing of spaces which indicates transformation from its past. It is the transformation of space and everyday life of the people associated with it with the advent of new capitalism, new economy and new mode of production. Presently it is the new phase of capitalism that has captured the area and had hegemonies its role making the neighbourhood, old working class chawls and indigenous social and urban practices vulnerable. The next section would like to give a brief history of the formation of the working class neighbourhood in order to bring out the transition from the past.

13.2.1 Formation of the Working Class Neighbourhood

The working class neighbourhood started getting shaped in the later part of the nineteenth century with the formation of the city during the industrial period and with the shaping of Girangoan. By the early twentieth century, the city claimed to be an industrial centre and the city was entirely dependent on the cotton mills. Gradually with the growth of the city towards further north the mills started moving beyond and it was with the migration of the working class from the hinterlands to the city, working class neighbourhood started forming surrounding the mills. It was also due to the cheaper land values, improved communication systems encouraged the businessmen to locate their cotton mills and factories beyond the towns. Thus it was when the southern part of the city was gaining a new architecture with the formation of a new CBD, market place and growing of middle class white collar areas in the colonial times, there was the formation of the working class ghettos in the city centre which was the northern part during that time (Dossal, 2010). The Girangoan stretched over a thousand acres from Byculla to Dadar and from Mahalakshmi to Elphinstone Road. The development of chawls came with the rise



Fig. 13.3 *Chawl* in the neighbourhood. *Source* Author

of the urban economy, colonial planning policies and urban housing policies in the city (Adarkar, 2011). The migrant labourers occupied the reclaimed marshy lands, and mudflats in order to settle near their place of work where they started living in thatched huts, barracks and in chawls at a very nominal rent or almost without any rent (Adarkar, 2011) (Fig. 13.3).

During the early days of the mill frequent shifting of rooms by workers from one *chawl* to another alludes to the availability of space. But during the later phase, twenty people would stay together in a single room and would work in shifts. The city constantly suffered from scarcity of housing for the migrant workers (Adarkar, 2011). Often they began to purchase rooms in the surrounding slums at a much cheaper rate in the then period (Interview of a mill worker, 2012). It has been mentioned by Chandavarkar (1994) that mill workers' life has been connected to the streets due to overcrowding, shortage of houses and high rent. This led to the erosion of the distinction between street and the home. A large sizable population would sleep on the road, in the verandah of *chawls* and courtyard of *wadis* and in the adjoining gymnasiums. The extent of overcrowding made the residents 'spill out' of the *chawls* into the streets. Some of the *chawls* were directly attached to the mills and some were privately built. It is the nature of work and the duty hours that made them reside near their place of work. The mechanism of the labour market also became a deciding factor for the choice of neighbourhood. People would rely on friends and relatives for work. Therefore the migrant worker tended to

reside along with *his* co-villagers, relatives and people of the same caste. Sometimes it was strongly regional based (Chandavarkar, 1994). People from the same village would often open a shop in the neighbourhood where they reside.

With the passage of time, rent control laws brought in stagnation of rent in the chawls. Therefore apart from minor alteration and renovation work by MHADA, chawls have never been through major structural changes. With the process of deindustrialization, along with the mill structures, chawls also turned into old dilapidated structures leaving the neighbourhood in a deteriorated and blighted condition. This phase was further aggravated by the out migration of workers with large-scale retrenchment (D'Monte, 2002) due to the closure of the mills. According to Smith (1996) when an area undergoes deterioration the rent of the area lowers creating a wide gap between the current rent and the optimum rent when the land is in its best possible use. As the gap widens, the land becomes much dearer and turns into a matter of higher speculation and redevelopment approaches the neighbourhood. This process of gradual devalorization of the mill lands with the closure of the mills and the surrounding neighbourhood creates a suitable condition for further redevelopment.

13.2.2 Redevelopment of the Mill Land

The sudden generation of 600 acres of vacant land in the heart of the city with the closure of the mills became a matter of speculation for the real estate builders, mill owners and government. With the DC Regulation Act⁵ of 2001 the mill owners were allowed to demolish the mill structure for redevelopment without any submission of land to the state for public purposes. Therefore with this modified DC Regulation, the owners' share of the property increased (D'Monte, 2002). Immediately the entire area of the Kamla mill has been transformed into corporate offices without leaving any land for open spaces and low cost housing. The Phoenix Mill has been developed into High Street Phoenix Mall with two high rises and discotheque leaving no space for low cost housing and open space. For Piramal Mill

⁵The Maharashtra Government amended its Development Control Rules specifically for the development and redevelopment of cotton textile mill lands. Rule 58(1) allowed the selling of land provided a plan was submitted demarcating open space and built up areas, as part of the measures recommended by the BIFR, financial institution and commissionerate of industries for the rehabilitation of the mill. It has two clauses. Under clause (a) the existing or newly built up areas were to be used for the same cotton textile mill or related use, subject to the permissible FSI. This could be used for diversified industrial purposes in accordance with the industrial location policy, with office space only ancillary to and required for such user subject to an FSI of 1.00. Prior to 1991 there was a freezing of land. But it has been stated in the DC Rule 58 that (b) the surplus vacant land other than the non vacant land, if it is greater than 15 percent of the total mill land, then it can be sold on the basis of 1/3 provision. The land can be used for commercial purpose. Rule 58(2) mentions that if the vacant land is less than the 15 percent of the total mill land then the mill owners will not have to give land on the basis of 1/3 formula (D' Monte, 2002: 124).

after the new DC rules the area for the owner increased from 14,200 to 32,712 m² and the area of recreation ground decreased from 11,715 to 1533 m². The area for public housing also decreased from 9,585 to 1,255 m² (The Times of India, 19 Dec 2004 as cited in Chatterjee & Parthasarathy, 2016). Casa Grande “two ultra-luxury 23 storey buildings” has been constructed on Matulya Mill compound. In Morarjee Mill Unit 1 the luxurious Ashoka Tower came up—the Peninsula Tower—by demolishing the mill structure. Morarjee Unit 2 has been transformed into an office complex on 400 acres of land which is about the size of six Nariman Points (Choudhury & Mehta, 2005, Indian Express).

13.2.3 Redevelopment of the Chawls

With the redevelopment policy and making of Mumbai into a global city, there are a number of chawls which are also in the process of redevelopment or ready to go for redevelopment. Because of their nominal rent of Rs. 50–Rs.150 due to rent control act, the fate of chawls was sealed. The decision of redevelopment depends on the society after taking the consent of others. The real estate builders wait till the appropriate time approaches. Whether it is minor ‘decorative alterations’ (Whitehand, 1978: 79) or large-scale replacement of structures, the term redevelopment attached to it has always had larger significance. However, as real estate builders, private investors and the land mafia started speculating a high amount of profit from these areas by the process of redevelopment of *chawls* and slums, the area suddenly turned very lucrative for them. Gradually it has started losing its characteristic as an industrial area and begun to transform itself into a post-industrial area. Thus actual ground rent and the ‘potential ground rent’ (Smith, 1996) became almost same and prices became very high. Amidst the politics of the State and real estate builders, dwellers of the chawl moved away to other places in search of affordable housing and more space for living. Some of the owners started selling their chawls to real estate builders in order to earn huge amount of money from the builders. Moreover the illegal tenancy, the *pagdi* system, the owner or the legal tenants of the chawl started earning black money from newcomers who are much more affluent. The transition is not only reflected among the newcomers of that area but is also noticed in the residents of the older building who tried to bring a balance between the space they lived in for generations and the globalized world. Soon the chawl space turned into a place of conflict and antagonism.

The current land value is so high that builders are ready to render 50 to 60 lakh rupees to the owners in order to vacate a single room. Acquiring the land from the owner, the builder constructs a building for the tenants of the chawl providing all the provisions as per the demands of the resettled tenants but the main portion of the land is used for constructing tall residential high rises which are sold at much higher prices. Likewise the builders make a huge amount of profit. In the first phase after the demolition of the chawl the tenants are temporarily shifted to transit accommodation. Sometimes the builders give a lump sum amount as per the current rent. Many of the

tenants try to invest a portion of that money and live in a place of lower rent and shifts to the suburbs. One of the respondents who was a chawl dweller mentions that when the chawl went for redevelopment residents were not provided any rent by the builders; instead they were shifted to a transit camp. After the redevelopment, initially for the first 10 years the builders do not charge any maintenance cost from the tenants. The builders kept some amount of money in the bank as a corpus. Gradually they deduct the maintenance charge of the building, water supply, electricity bill from the corpus fund. But after 10 years the tenants have to pay all the charges, taxes, maintenance charges, water supply bill, electricity bill, and lift are the current rate. But there are many discrepancies in this arrangement. Tenants of the building sell their room at a very high rate before the completion of 10 years and shift to a house in suburban areas of Mumbai. A respondent Domru Harke (name changed) during his interview in his chawl mentioned that:

This is a 100 year old chawl. Earlier the rent was Rs 20. Now it has increased to Rs 100. Often the builder comes to see the chawl. It's a big chawl with fifty rooms. But the builders are not willing to take because they will not get enough space to make the profit by building *towers* as they have to leave a space of 20 feet for the road in front. The chawl has a committee who takes all the decisions. Presently the value of the single room is 35 lakhs (5, 16,148 US Dollars) but the property will not be in your name. If you want to transfer the property in your name you have to pay 2 lakhs (2949 US Dollars) to the original owner. This is only to transfer the property in your name. Suppose I have a room here and if I sell I would be getting 35 lakhs (5, 16,148 US Dollars). The owner will take 2 lakhs (2949 US Dollars) only to transfer the name. Often we don't disclose the original value of the room to the owner so that there can be a scope for bargaining.

The prime intention of the builders is to evict the dwellers to facilitate the process of redevelopment as they would always prefer to make higher storeyed building as a sale component than redevelopment towers (Chatterjee & Parthasarathy, 2016). In order to procure the chawl, the builders make an estimate of its value and offer cash to the residents. Those who have less bargaining power either negotiate with the builders or are forced to leave the chawls. Further this process of shifting to the suburbs from the inner city neighbourhood does not lead towards complete displacement of the working class people but with the enormous growth of the land value and increased bargaining capacity it further complicates the process of negotiation. If the room or '*kholi*' is on the main road in a prime location, the builders are ready to pay ten million rupees for a small room. The very small room of 10/10 square feet facing the road side opposite to a huge residential high rise constructed in the mill compound of Morarjee Mill No. 2 receives a value of ten million rupees. The builders pressurize the chawl owners to undergo redevelopment by offering hefty amounts. With the construction of residential towers, the high land value eventually became very lucrative for many chawl dwellers. Even in their utter despair, many look forward to the rising land values in order to gain profit but at the same time they think of avoiding the maintenance charges. This dilemma and dualistic behaviour of the inhabitants makes the situation much graver and eventual entrapment for many. A woman (respondent) who spent her life struggling to meet both ends aspires for redevelopment of her chawl to live a better

life. On the contrary Sunanda and her daughter Geeta are apprehensive about their eviction from the neighbourhood. If the chawl goes for redevelopment, the charges for maintenance of the building would be unaffordable for them.

According to Trade Union Leader (GKSS),⁶ Datta Ishwalkar, the changing skyline of Mumbai makes it evident that the city is no more for the mill workers. Eviction of population from their neighbourhood and replacement by people of affluent class seems to be an ongoing process. Because of the locational advantage, the neighbourhood and its surrounding commercial space have been taken over by transnational elites. The coming of international brands, international food chains and international stores in the area across the main road, within the old mill compounds fortifies the global look. The local inhabitants who are either forcefully evicted or willingly displaced are mainly moving to the suburban region. According to Datta Ishwalkar the eviction of the working class, lower middle-class or middle-class population from the city core area is not always forceful. In one of his interviews he mentioned,

If we look into the city of Bombay, the city is no more for the mill workers. They have to leave the city by any means. Mill mazdoors have become a marginalised section. The mill workers want to stay in this city but how will they stay? The 225 square feet room in the slum costs Rupees 25 lakhs to 30 lakhs (36867 US Dollars to 44241 US dollars). People are selling their room and going to the suburbs. This is not a forceful eviction but it happens according to their own will. The employment opportunity is also less here. *Bambai* has become a city of housing. It is true that some people are of the opinion that development is making them profitable, but that is in a different way. (Interview of Datta Ishwalkar, 2013 as mentioned in Chatterjee & Parthasarathy, 2016)

13.2.4 Redevelopment of the Slums

With every gated community and high rise that comes up on the mill land areas replacing the slums and chawls there is a redevelopment building for the dwellers. Along with the chawls the slums of the surrounding areas are also undergoing redevelopment. Sometimes the slums go for in situ redevelopment through SRA Schemes where slum dwellers are temporarily shifted to transit accommodation. This kind of redevelopment is slightly different from the conventional in situ redevelopment of slums and differs largely from the ex situ redevelopment. Over the last two decades, the new housing schemes of SRA projects are giving 225 square feet apartments to the slum dwellers in middle to high rise buildings. The buildings are constructed on that portion of the land where the slums were previously located. Developers in return gain a huge amount of profit by providing free houses to slum dwellers and building luxury housing as a sale component on the same land. All settlers are not eligible for these in situ rehabilitation projects. Only those who can

⁶Girni Kamgar Sangharsh Samity.

prove continuous occupation since 1995 qualify for redevelopment. The dwellers also have to hold photo identity cards in order to prove their eligibility. With much negotiation between state and NGO's and other development authorities, the cut-off date is increased after every 5 years. The slum dwellers on the other hand instead of mobilizing themselves for development oriented displacement seek for better terms and conditions from the developers. Again if the portion of the slum land goes into developmental projects the slums are demolished and the dwellers are pushed towards the suburbs. Anand and Rademacher (2011) terms this as 'peripheralisation of the poor'. Roy (2009) explains the resettlement of slum dwellers through a process of negotiation with builders and the state that result in the production of urban space. She termed it as 'politics of inclusion' and 'politics of compensation'. But in this production of space the terrain becomes a 'terrain of differentiation'. Those who move away to the periphery or the edges face many disadvantages. The distances from the city centre to the suburbs and vice versa become a matter of inconvenience for many. A similar phenomenon can be observed in the chawls too. There are a number of families who moved to the suburbs keeping their rooms in chawls or renting out the rooms at much higher rent to others. Although they get a larger space to live but the daily commuting to the city centre for work become a matter of financial difficulty for many. When Chatterjee during her field work met Vijaya, wife of an ex-mill worker in the slum she mentioned that her husband had purchased a house in Virar. But she prefers staying here as all her work and tasks are nearby. There are a number of similar cases where instead of shifting to the suburbs they have rented out their house in the suburb and prefer staying in the city core. The centrality of this location is one of the reasons for increased bargaining capacity and rising urban aspirations for all. It has an important aspect in the everyday life of the people because of its connectivity and its geographical proximity to the place of work, children's educational institute, downtown and other places of interest all over the city. Bhanu (name changed), a resident of the gated community built on Apollo mill compound who had spent her childhood in South Africa and part of her adulthood in New York and is presently a mother of two kids mentioned that for both of them location is very important. Similarly Rama (name changed), another respondent from the same gated community, used to live in a rented apartment in Napeansea Road (South Mumbai), shifted to Lower Parel (Central Mumbai). For all such respondents along with world-class facilities and amenities all under one roof, the centrality of a place is an important factor.

It has also been noted that the residents of gated community are not enamoured by the locality per se as the 'crowd' here is not 'happening'. Although some of them are uncertain about residing in a working class area, the transformation signifies certain positivity. They have selected this area based on certain aspirations and future predictions. To Priya (name changed), a resident of gated community mentions,

It is a positive change. So when I came here to live and saw that there is so much positivity, so much advantage to the situation... So living in a mill area where there are labourers... it's not a very happening crowd as you may put it... I am okay with it because it is a small price to put in a positive environment.

Being surrounded by chawls and slums the residents of gated community have to negotiate their everyday life because these are the people who provide labour, staff and services to the gated community. Therefore Swapna (name changed) argues:

Yeah I am surrounded by chawls...but there are two ways to negotiate with it. On one side they are surrounding us...so crib about it...the other side is that they are the same people who provide labour, staff and services....they feed off us and we feed off them...they need us and for our living, we need them...so it is mutually symbiotic.

The incoming of the affluent class in the mill land areas of Mumbai further widens the spatial and social disparity and segregates city space. The thick walls built around the gated community provide a sense of security to some and exclusion to others. This further reinforces the notion of self and others among the people. With the rising urban aspirations there is an eventual widening of disparities that leads to class polarization and social relationships based on differences. The redevelopment of the inner city neighbourhood has entrapped many inhabitants like Sunanda and her daughter and also changed the perception of one class of people towards others. If there is polarization and entrapment on the one hand, there is also creation of new jobs in the gated communities in the form of domestic workers and security guards. Although this has caused degeneration of the working class from textile mill workers to domestic workers, it has created hope and aspirations in indirect ways. Aspirations are also formed with globalization from below (Appadurai, 2001) where workers seek to demand their rights through mobilization which Appadurai and others term 'deep democracy' (2001). With the mobilization of workers there is a direct contest and confrontation with the state.

Presently mill workers are demanding their right to the city⁷ under the guidance of trade union leaders. According to Lefebvre in his seminal essay *Right to the City* as cited by Harvey (2012: viii), "that right he asserted, was both a cry and a demand. The cry was a response to the existential pain of a withering crisis of everyday life in the city. The demand was really a command to look that crisis clearly in the eye and to create an alternative urban life that is less alienated, more meaningful and playful..." It is "more than a right of individual access to the resources that the city embodies, it is a right to change the city more according to our heart's desire. It is also the exercise of collective power over the process of urbanisation (Harvey, 2010: 18)." In this chapter we discuss the demands of housing within the city space by the ex-mill workers and to make the city space more inclusive. The trade union leaders and mill workers raised their voice for housing on the mill lands and employment in the city. A law was sanctioned that 50% of the land given to MHADA will be set aside for housing of the mill workers.

⁷The mill lands were leased out by the British Government to the mill owners to start the mills. Therefore these lands are all government lands. So if the mill owners fail to run the mills the land is suppose to return back to the government. But the mill owners in order to make profit sold their lands to the real estate builders based on the policy made by the Government. In the DC Rules it was decided that 1/3rd of the land will go to the owner, 1/3rd rd of the land to BMC for parks, open spaces schools etc. and the last 1/3rd is for MHADA to make cheap houses for common people.(D'Monte, 2002).

The demand is articulated through protest marches, hunger strikes and frequent morchas. The state plays an important role here. The constant morchas and speeches of trade union leaders builds a platform of hopes trust and aspirations among the mill workers. Appadurai (2004: 78) states that, “I would suggest that they are productive forms of political negotiation, in which poor communities are able to draw politicians into public commitments to expand the resources and negotiations available to the poor.” Even if all the promises are not fulfilled, it gives an opportunity to bring the ‘politics of the poor’ and ‘politics of the politicians’ on a



Fig. 13.4 Morcha of gini kamgar demanding the right to housing. *Source* Author



Fig. 13.5 Gathering and protest of the ex-mill workers. *Source* Author

common space. This initiates further the collective aspirations of the workers not merely as a 'cultural capacity but as a 'public and political capacity' (Appadurai, 2004: 78) (Figs. 13.4 and 13.5).

In 2001, the DC Regulation act was amended which states that only the surplus land excluding the mill structure would be taken into account for the 1/3rd division of the mill land (D'Monte, 2002). Therefore instead of 200 acres of land for housing that was generated according to the previous law, only 25 acres of land for housing purpose is considered. As the land decreased the number of houses also became less. The trade unions tried negotiating with the government. The High Court's decision was in favour of the mill workers but in the Supreme Court the mill workers lost the case. In the process of negotiation the state only agreed to increase the FSI (Floor Space Index) in order to increase the number of houses. When the FSI was increased to 4, instead of 10,000–15,000 houses, the number of houses went up to 35,000. The protests movement of the workers continued. The then Chief Minister Mr. Vilas Rao Deshmukh promised to provide 55,000 houses from MHADA (Maharashtra Housing Area Development Authority). Chief Minister Ashok Chavan promised to give SRA land by increasing the FSI (Interview of a Trade Union Leader Rajen Dalvi, 2013). When Prithvi Raj Chavan became chief minister he promised to give houses from the MMRDA Scheme. MMRDA constructed five lakhs affordable houses for the public. But these 160 square feet small spaces remained unsold. When the scheme of affordable housing failed, the Chief Minister offered 50% of MMRDA houses to the mill workers. When the workers refused those small houses the CM promised to give 320 square feet by joining two flats. Dalvi in his interview stated:

When we started dreaming of those houses the Chief Minister became silent. We have demanded houses in the city but whatever they were showing are all in the suburban areas Panvel, Pune, Kolhapur, Satara and Sangli. We demanded houses within Bombay or in the suburban of Bombay like Virar, Chembur, Vashi, Thane.

Following the DC Regulations the closed mills started submitting their lands for development. Eighteen mills gave their lands to MHADA for construction of houses for the workers. A total of 6,948 houses have been constructed for the mill workers. A cut-off date 18 January 1982 has been fixed by the government for the mill workers and their nominees to claim their houses. The 225 square feet flats in the heart of the city are being given only at the construction cost of 7 and ½ lakhs. Norms are put in place which ensure that apartment residents do not sell the flats for 10 years until they return the loan to the bank. After 10 years they can sell or rent out their flats (Interview of trade union leaders, 2013). According to a member of RMMS (Rashtriya Mill Mazdoor Sangh), many of the workers are also getting an opportunity to earn lump sum amount of money by selling the houses which are given to them at a concessional rate. According to Datta Ishwalkar, "*different people have different tactics. A man sold his room in the chawl for 40 lakhs paid here 7 and ½ lakhs for this flat and moved outside and purchased a house in suburbs in 15 lakhs. There is nothing wrong in it. He is in profit. He will get this house too.*"

13.3 Discussion and Conclusion

The city space through a complex process of gentrification related transformation has reshaped itself not only in terms of the composition of its population but also in terms of its economy and other activities. The contemporary city space is a space of multiple fragmentation where there is an assemblage of small-scale manufacturing industries, juxtaposed with creative industries, high rise buildings or towers, media houses, entertainment sector, high end shopping malls, old residential neighbourhoods (*chawls*), small local *kirana* stores, and a number of road side informal food stalls. Urban transformation through gentrification has resulted in fragmented parcels of spaces, each conditioned by specific practices of place-making, giving birth to an unsettled city with unstable livelihood for the older inhabitants, dependent on a huge informal sector. A large section of the population who were once the working class has been marginalized. *Chawls* of the working class people are in a process of redevelopment. The rising aspirations of the state along driven by a neoliberal public-private partnership channels real estate profits and space into specific directions. Alongside, the ex-mill workers are also looking for certain privileges as they seek to claim their rights to the city. Their demand for a right to the city includes right to proper livelihood, equal distribution of resources within the city space, and right to determine the nature of gentrification. For instance, one of their demands is for subsidized public housing. They are in continuous negotiation and bargaining with the local state. It has been noted that the twentieth century urbanization and city space transformation or restructuring produces differentiation and contradiction (Banerjee-Guha, 2010). Sometimes this kind of ‘extraordinary urbanization’ as Holston (2009) notes in his study of Brazil, creates ‘devastating poverties’ and ‘inequalities’ between the city centre and urban peripheries and makes the space and people ‘unsettled’, with a sense of strange citizenship. Exclusion and dispossession of the marginalized from the central areas are a significant consequence of the process of gentrification. Holston’s (2009) idea of ‘insurgent citizenship’ becomes ‘peripheralization of the poor’ Anand and Rademacher (2011). In Mumbai such inequalities and poverty prevailing within the city centre creates a ‘volatile’ and unsettled citizenship at present. The slum redevelopment and chawl redevelopment process together with gentrification of the erstwhile mill lands peripheralizes the working class through enhanced costs of living and of real estate, and by creating new kinds of space crunch. However, there is no complete displacement of one class by another, which has caused an uneven gentrified landscape. Under such circumstances Banerjee-Guha (2010) contends that the neoliberal ideology, not only causes spaces of restructuring but also spaces of differentiation and contradiction. These spaces of contradiction lead towards further polarization rather than a revised homogenisation that substitutes the working class population with middle-class and elite population. It is this unsettled situation in the city space of Mumbai which is at the core of the demand for rights. This chapter studied the rising aspirations of the working class from two points of view. One is from the point of view of profit making through negotiation

and the other is rising aspirations in demanding working class rights beyond everyday demands of work. By focusing on their rising aspirations, this chapter brings out some unique aspects in the process of gentrification and argues that in order to understand gentrification in the textile mill lands of Mumbai we need to understand the city in a holistic way uncovering the multiple layers of the city space, and the ongoing processes within and across these layers. This paper argues that gentrification in Mumbai does not follow the classical trajectories as proposed by gentrification theorists, where one class is replaced by another through the process of competition, invasion, succession and replacement (Betancur, 2011). It does not only pertain to emergence of condominiums with preservation of architecture and heritage in the formation of middle-class housing or conversion of lofts for studio apartments for the artist group (Zukin, 1987; Smith, 1996: 37). It is not similar to the process of 'revanchism' that Smith (1996) argued about where the white middle-class population influx into the city centre displaces the poor. Neither is it about 'bourgeoisie revanchism' (Banerjee-Guha, 2010) in the city core where corporate capitalism plays a significant role. It is the interplay of multiple trends, processes and trajectories with one another and the interdependence of one layer or stratum with the other that is evident. The paper also argues that the rising aspirations among the poor, the upwardly mobile middle class, and the state to move towards redevelopment are the causes and consequences of gentrification of textile mill lands of Mumbai.

In a city like Mumbai, urbanism takes a somewhat different form (Banerjee-Guha, 2010: xi), compared to cities of the global north. Unlike the process described by the Chicago school where one space of homogeneity transforms into another space of homogeneity, the transformation of the city space of Mumbai brings greater heterogeneity and further complexity. The movement of population across the city space marks a complicated pattern where people belonging to different classes aspire to live in the core of the city. But as Bhowmik (2010) argues urban plans are formulated as per the needs of the better off excluding the poor. Hence, with rising aspirations of and for the city and its diverse populations, an inclusive planning strategy catering to the need for housing and livelihoods for all is required in order to address processes of marginalization unleashed by the specific nature of gentrification in Mumbai.

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Chapter 14

Communities in a ‘Protected’ Urban Space and Conservation Politics in Mumbai’s Sanjay Gandhi National Park

Amrita Sen and Sarmistha Pattanaik

14.1 Introduction

There have been innumerable scholarly works on the consequences of PA conservation on the local community livelihood (Gadgil & Guha, 1995; Kothari, 1996; Shahaubuddin & Prasad, 2004; Robbins, 2012). Since most of the biologically diverse and ecologically sensitive areas in the world are located prone to the places of human habitation, the discourses on conservation and scientific management of PAs has given rise to conflict, in terms of questions on subsistence, livelihood and basic rights. Social movements in India are not only engaged in a struggle against the state and international institutions for the protection of the rights of the indigenous people and other local communities over common property resources, but are proactive in formulating new norms weaving together traditional collective rights, national laws and international standards (Randeria, 2003). Recent scholarships have provided conflict management strategies based on the economic costs and benefits of conflict resolution as well as the social institutions and administrative mechanisms required to oversee such strategies failing which, the indigenous communities are doomed to live the life of an ‘ecological refugee’ (Guha, 1997; Madhusudan & Mishra, 2003). Several examples from all over the world have pointed out specific cases of human displacement from the PAs, denial of customary collective rights and lack of any collaborative efforts to deploy indigenous environmental knowledge of the communities within the scientific management policies of PA management. The debates centring these conflicts are usually organized around issues of insufficient and haphazard rehabilitation programmes,

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exclusion of traditional knowledge from the ambit of forest policies, forced displacement, fines, exploitation and physical abuse while venturing into the forests, industrial developments leading to massive resource crisis in areas around habitations. According to Johari (2007: 48), the politics of conservation underpinning these debates have centred on a dichotomous production and negotiation of two distinct varieties of eco knowledge, usually referred to as 'traditional' and 'scientific'. This has now been a long drawn political process, within which 'nature' and 'culture' are treated as distinct and incompatible, local populations have been ascribed to the status of 'environmental degraders' and 'poachers' (ibid: 50).

India had witnessed a rigorous environmental movement, long divided over the complicated issue of empowerment of the local communities for effective conservation and sustainable development of scarce natural resources as well as the role of ecosystem people in control of their resources (Gadgil, 1991; Saberwal & Rangarajan, 2003; Shahabuddin, Kumar, & Srivastava, 2007). However, scholars of environmental issues have primarily studied struggles over nature in the countryside, in rural India, focusing attention on the loss of land and livelihoods due to dams, forestry, mining and other development projects. This rural bias has led to the neglect of the urban context where clashing claims to the environment are becoming sharper edged and environmentalism is gaining diverse implications (Baviskar, 2002). Most of the conservation related conflicts in India have been acted out in a rural village based context where indigenous communities like the *Adivasis* have claimed particular cultural resonance and traditional land rights to the forest which they have inhabited for generations. However, in order to provide a coalition of human rights issues along with the needs of environmental conservation in an overcrowded city, recent scholarship has exhibited a shift in the concerns to the urban environmentalism, in an attempt to address ecological distribution conflicts in urban PAs (Roo, 2000). The kinds of problems associated with the cities like unemployment, poverty, crime, physical deterioration, economic uncertainty, lack of hygiene and natural spaces and ethnic as well as minority issues have now come to occupy newer dimensions in the very recent scholarly works on conservation politics in the urban PAs (Baviskar, 2002; Madhusudan & Misra, 2003; Zerah, 2007; Sen & Pattanaik, 2015, 2016). Following this, academicians, media and the government have shown a growing interest in studying the inner fringe areas of the larger cities. Since national parks serve to be the 'green lungs' of these cities, similar environmentalist paradigms like that of the village forests are now increasingly found in the national parks of the cities also, giving rise to the issues of conservation related conflicts in urban areas. The present study, in the context of Sanjay Gandhi National Park (SGNP), Mumbai, evaluates the consequences of PA management in a city, upon the local community livelihood settled inside the park. It is interesting to note how the PA management policies marginalizes these communities culturally, economically and socially and is acted out in an urban context as well. The study however provides a radical departure from the standard notions of environmental conflicts by the local communities as pitted against the state. Through the local narratives, displacement and rehabilitation process and the constantly evolving discourses of 'elitist environmentalism', the study unfolds process by which the park inmates constitute themselves as a

'community' in itself to negotiate with the entrenched power structure at the local level and to claim recourse to the cultural and social space in the city. It reveals the kind of conservation politics that evolves from local resource distribution conflicts in a city and how this politics affects the material conditions of those on whom the stringent conservation policies come down heavily. The objective of the study is to understand the dynamics of conflict from a social, cultural and politico-economic perspective that investigates how the political legitimacy of communities living inside an urban national park is defined as well as the local community interventions in public spaces through representations of diverse claims in resource distribution.

14.2 Politics of Conserving Protected Areas and the Contesting Realities in Cities: A Review

The term 'Protected Areas' was developed by the International Union for the Conservation of Nature (IUCN) as the overarching term to encompass national parks, reserves and sanctuaries (Randeria, 2007). According to the IUCN, a PA is a "clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long term conservation of nature with associated ecosystem services and cultural values". The three groups for conservation management have been divided into Group A, Group B and Group C. Within Group A, we find scientific reserves, national parks, national monuments, nature conservation reserves and protected landscapes. Within Group B, we find Resource Reserves, Anthropological Reserves and Multiple Use Management Areas. Within Group C, there are Biosphere Reserves, World Heritage Sites. Within these categories, the existing network of PAs includes the National Parks and Wildlife Sanctuaries as well as the Multiple Use Management Areas.¹ This definition of the PAs is intended to be applied to PAs across biomes, ownership and governance types, motivations, management objectives and jurisdictional levels (Lausche, 2011:14). Since the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro in 1992, the numbers of PAs have grown considerably. At present, there are 657 PAs consisting of 99 National Parks, 513 Wildlife Sanctuaries, 41 Conservation Reserves and 4 Community Reserves (Pathak & Kothari, 1998).

However, our engagement in the present work is different from the usual concerns of the PA based conservation conflicts. Most of these conflicts, as pointed out in academic literatures, are usually acted out in the context of particular indigenous cultural resonance and bonafide livelihood rights which symbolically represent a class of people denied basic survival requisites and age old associations with

¹See "Conserving Asia's Natural Heritage: The Planning and Management of Protected Areas in the Indomalayam Realm". Proceedings of the 25th Working Session of IUCN's Commission on National Parks and Protected Areas.

community forestry by the state, due to wide spread decimation of forests. These are the spaces that are categorized as ‘villages’, ‘forests’, ‘commons’, etc., which are located around the forests; either inside the reserved forests and national parks, or at their fringes, in areas having no urbane texture at their vicinity. Thus we find that the *adivasi* resonance towards forests is always in the form of cultural attachments to those forest lands, social movements, indigenous knowledge and local management of forests. But, if we look into the urban context as well, these issues have also thrown up significantly challenging complex concerns for a section of traditional city dwellers, who have been displaced from the national parks within the city core to render the city ‘encroachment free’ and made to re-establish their habitations in the city fringes or at the periphery through unplanned and haphazard resettlement schemes. These national parks are idealized as ‘natural spaces’ and ‘green belts’ within the city, where the middle class lives their visions of a pollution free aesthetic green zone, free from the flurries of urban environment. According to Alier (2002: 14), the ecological conflicts over green belts are also an economic conflict of the appropriation of the potential differential rent from the preserved green spaces as they are consumed by urban sprawl and soil sealing. National parks within the cities are not only overseen by the state forest department and environmentalists as a national priority to be preserved for aesthetics of the city, but the judiciary has equally played a predominant role in safeguarding the national interests of conservation in the cities at the cost of displacement and relocation as the most viable tool. While on the proceedings on a developmental project like that of a dam or a power plant construction in the name of a ‘greater good’, the court has held that the conflicts need to be resolved by the executive and not the judiciary, in the case of conservation versus local livelihood debates, the court has actively intervened and held that the meaning of ‘forest’ is to be as per dictionary definition irrespective of ownership and its orders are to apply to all lands entered in any government records as forests (Sahu, 2008: 16). According to Kothari (2002), is this right a justifiable and enforceable human right which citizens can demand from the state if not fulfilled? Or it is necessary to depend on the whims and fancies of the esteemed judges to interpret these rights sensitively?

Baviskar (2011) has asserted in her exposition on *Cows, Cars and Cycle Rickshaws*, that “for the *bourgeois environmentalist*, the ugliness of production must be removed from the city”. This concept of *bourgeoisie environmentalism* (2011: 392) has been interpreted by her using three significant edifices in the streets of Delhi: cows, cars and cycle rickshaws, three contrasting yet magnificent elements on the city streets which explain the discourses of environmentalism in the cities and have diverse implications in the name of ‘public interest’. She has explained that in the aftermath of economic liberalization, the dream of inhabiting world class cities has created within the middle class, the demand for distinct social spaces, which should be free from ‘nuisance’, ‘pollution’ and ‘filth’ and should epitomize preserves for ‘nature’. Smokestack industries, effluent-producing manufacturing units and other aesthetically unpleasant sites that make the city a place of work for millions, should be discreetly tucked away out of sight, polluting some remote rural wasteland. Even people whose services are indispensable for the affluent to live

comfortable lives—domestic workers, vendors and sundry service providers, should live where their homes do not offend the eyes, ears and noses of the well-to-do. For the middle class in the city, environmentalism is thus realized not solely by propagating ecological sustainability, forest regeneration and wildlife conservation, but “as a mode of expressing anxieties about themselves in relation to their habitat whereby concerns over health, hazard, beauty and order have got precedence over issues of life and livelihood that are central to the environmentalism of the poor” (Baviskar, 2011: 402). Thus urban environmentalism marks a radical departure from the usual concerns of PA conservation, whereby wildlife, protected forests and natural resource preservation efforts become replaced by ‘aesthetics of the city’, that essentially promotes the development of natural green places without wildlife and forests without wastelands, being refined as ‘parks’ or ‘gardens’. Although it is undeniable that the urban PAs are worst affected by urban sprawl and problems like littering and human wildlife conflict, these effects are perhaps the most detrimental for its inside inhabitants, who eke out a livelihood of these national parks. In spite of several legal provisions which have been undertaken to address the basic housing needs of the urban poor, the detrimental condition of the slum dwellers shows a clear lack of concern on the part of the authorities and the forest officials towards proper housing and resettlement programmes of the urban poor. Not only at the national level, but also at the state level we find that the laws which were framed to cater the housing needs of the poor have failed miserably in catering to the needs of the urban poor within the different slums of the metropolitan city (Adhikary, 2009). According to Brand and Thomas (2005), sustainability is based on a flawed set of propositions whose inner consistency is of little concern to the power interests of those who control that discourse through the politics of ecological modernization. However, these projects of ecological modernization keep the margins of the city out of its purview, by labelling them as ‘squatters’, ‘encroachers’, ‘shanties’ and ‘pollutants’.

Considering displacement activities carried out in the city owing to conservation of national parks therein, a host of different factors can be taken into consideration. According to several conservationists, inroads made by the local population into the park which degrades and disturbs wildlife are major obstacles in implementing the management plans in those areas. Having learnt to anticipate this sequence of conflict and compromise, the poor and their political patrons willingly collaborate in the enterprise of encroachment, negotiating the risk of displacement in the hope of securing future recognition and permanent tenure (Baviskar, 2004). This is an interesting part of the politics of governmentality whereby communities at the local level are formed to negotiate with this governmentality, by forming a volatile and transitory collectivity which should make visible the concerns of a class of people affected by the organization of the space in the city. The concerns of these communities are yet sweeping, claiming spaces in urban political societies through interactions with influential and politically powerful groups (Chatterjee, 1998: 281). Chatterjee (2004) gives examples in this context from the squatters along the railway colony in West Bengal, commonly known as the *Gobindapur Rail Colony Gate Number One*, most of whom are migrants of East Bengal. He describes the

ways in which these population categories have attained the moral attribute of a *community*, in their daily contestations against the states attempts for eviction, whereby communities are described in the more compelling forms of a shared kinship. According to Chatterjee (2004: 59, 60),

Refugees, landless people day labourers, homestead, below the poverty line- are all demographic categories of governmentality. The success of their claims depends entirely on the ability of particular population groups to mobilize support to influence the implementation of governmental policy in their favour.

With a large number of people presently residing in and around the fringes of national parks in cities, the confluence of human rights abuses and the issues of environmental integrity intensify concurrently. The communities constituted in the process of demanding recognition from the state to survive inside the park premises of an urban area thus are heterogeneous and their claims are mediated through a complex web of political interests. Their motivation to use the resources sustainably also depends upon how firmly they are in control of the resource base and on whether they can exclude outsiders and regulate the behaviour of group members (Gadgil, 1991). Park management cannot proceed without a high level of cooperation from the local people. Therefore, it is really important to look into the socio-economic needs of the local people to ensure the success of future park planning from a purely management perspective. The issue of cooperation is however contentious, rendered in part by the inequity and the pecking order imposed by the state in granting paybacks towards the communities, when displacements and rehabilitation are carried out. In the process of constituting and conserving national parks in the cities, the state has actually intended to regularize displacements through resettlement processes, which has not only extinguished local rights and reiterated conflicts through violence and land appropriation, but has also made resettlement issues contentious as well as political, being haphazard and insufficient.

14.3 Background and Methods of Study

In the pre-independence period, SGNP was known as *Krishnagiri National Park* with an area of only 20.26 km². It is situated in the northern part of Mumbai city in Maharashtra, India. In 1974, the park was renamed *Borivali National Park* by acquiring several adjacent reserved forest properties and in 1981, it was again renamed as Sanjay Gandhi National Park (SGNP) in the memory of Sanjay Gandhi. Today, SGNP covers an area of 103.09 km² within which 28.28 km² is designated as the core area and 66.25 km² is designated as the buffer area. The transition zone/ tourism zone measures 8.66 km². The park falls between 72° 53"E to 72° 58"E longitude and 19° 8.8"N to 19° 21"N latitude. It spreads over the areas of *Malad, Kandivilli, Goregaon, Mulund* and *Thane*, in Mumbai. The national park holds more than 1000 species of plants, 40 species of mammals, 251 species of birds, 9

species of amphibians and a large variety of fishes (Maharashtra Forest Department). It houses the Kanheri Caves (built between first century BC and ninth century AD) and the two lakes, *Vihar* and *Tulsi*, which provide water supply to the entire metropolis. The management of the park encompasses three territorial ranges, *Yeur*, *Tulsi* and *Krishnagiri Upvan Range* and is divided into nine rounds and 25 beats (Map 14.1).

The population segment within SGNP comprises of two categories of population. A tribal population, commonly known as the *Warlis*, *Konkanis* and *Mahadev Kohlis* and *Dhodis*, who are living in the forests for more than eight generations, constitutes the first category of population. The second category constitutes the migrant slum dwellers settled in the squatters within the forest areas. We have conducted our study mainly on this category of population. These communities have come and settled within the SGNP area from several parts of the country including Karnataka, Maharashtra, Jharkhand, Uttar Pradesh, Gujarat, Bihar, etc., and been living here since 1975 or even before. Being migrants, they necessarily have no claims to the land because of the fact that it falls within the national park area. Most of these shanties at that time developed inside the national park premises out of the promiscuous joint efforts of the land mafias and corrupt forest officials who then encouraged settlements inside the park to build up a vote bank through these poor migrants. However, over the last two decades, the situation has been transformed and has been converted to a worsened and coveted battle against these *illegal encroachments inside the park premises*, by the conservationists like Bombay Environmental Action Group (BEAG), forest department (FD) of Maharashtra and the judiciary following ensuing episodes of struggle, bloodshed, confrontations and eviction drives to remove or relocate these migrant slum dwellers outside the park premises. Using the tool of Public Interest Litigation (PIL), BEAG in 1995 filed a writ petition before Bombay High Court demanding immediate removal of the encroachments from inside the park premises, following which the High Court in 1997 ordered the resettlement of those whose names were present in the electoral rolls 1st January 1995 and consequent demolition of their housing structure. Against this background, the present study examines the nature and implementation of displacement and rehabilitation schemes in an urban PA area by focusing on the vulnerability of the slum dwellers, effects of displacement and their problems in claiming city space, preserving whose aesthetics is a growing aspiration of the middle class of this city. We also examine how in the absence of any prior rights to the inhabited lands due to lack of any particular generational roots of cultural identity, the population structure within the PA constitute and establish themselves as a 'community' in itself, to prevent them from getting confined or incarcerated within discourses of indigenous novelty and cultural belongingness.

Content and secondary analysis of books, articles, journals, legal reports, court orders, etc., were vastly used to understand the background of the problem in the area, followed by a qualitative survey in the months of February and March, 2013. In the survey, some informal interview sessions have been conducted with the conservator of forest and director of SGNP, Mr. Sunil Limaye, as well as the

assistant conservator Mr Santosh Saste, and the forest range officer, deputy conservator of forest, round forest officer, etc. Survey was conducted using personal and focused group interviews to interact with the slum dwellers residing in the encroachment areas of SGNP. Personal case studies were also conducted since we found people to be answering more spontaneously when they were asked to narrate their experiences rather than asking them structured questions. Snowball sampling was used to identify people sharing the same economic backgrounds and the effects of displacement. Discussions with NGOs and FD Range Offices were conducted and official archival records were collected. The data for the study involved both primary as well as secondary information and the survey data have been analysed using MS Excel. The size of the sample population has been 50 and has been selected on the basis of the criterion required to respond to the objectives of the study. The research design adopted is descriptive. The study is ethnographic and we have discussed the findings through a qualitative analysis of data.

14.4 Findings and Analysis

Interviews with the slum dwellers and some forest officials in SGNP revealed that the problem centring 'encroachment' of forest lands in SGNP started as early as in 1970s, when several people from Jharkhand, Karnataka, Uttar Pradesh, Bihar, etc., started to migrate and settle in Mumbai, being the most favourable site as an urban agglomerate. These people started residing in and around the boundaries of the national park, covering areas in Malad, Dahisar, Mulund, Kandivali, Goregaon as well as Yeoor near Thane in Mumbai. The land which they inhabit now was acquired primarily through enticements with the land mafias, who were involved with the corrupt FD officials, and persuaded the poor migrants in the city for land acquisition, primarily to build up vote banks in the area that would support their constituency. In the absence of affordable and sustainable settlements in the city for this indigent class of migrants, squatters turned out to be the only space to negotiate a living and share the physical space in return of associating with the global capital. Thus, very few of these habitations had legitimate documents supporting their settlements, one of the reasons which have made them vulnerable to the deportations, evictions and forceful resettlements by the state. Some instances of such unorganized settlements and inherent political initiatives can still be read through the narratives collected from them in the conversations. The proximity with an urban hub and the financial capital of India, the largest repository of wealth and organized job sector in the country, raised hopes of finding some living and the squatters acted out as legitimate devises to establish an economic base as well as a political affiliation with the dominant power structures to set up a secure land-holding. The settlements agglomerate into small colonies inside the park, commonly known as 'padas'. The slum dwellers are predominantly Hindus followed by Muslims and Christians. Nuclear families make up most of the households with an average size of 4.5–5 and the people mostly belong to Scheduled Castes (SCs) and

Other Backward Classes (OBCs). Women primarily work as shopkeepers, papad sellers for 'Lijjat Papad',² social workers in NGOs and maidservants in the adjacent high-rises, while males work as labourers at construction sites, taxi drivers, poultry owners, cleaner, sari printers, diamond cutters, rag pickers, carpenters, plumbers, dhobis, milkman, tailors, peons, vegetable vendors, cobblers, etc. Considering the fact that all of them constitute abysmally low income groups within the city, the economic condition within the population is quite diverse, depending upon the range of occupations listed here. Women workers carry head loads and work as helpers to male construction workers at building sites, although they are denied equal payment as well as denied access to training for higher qualified jobs. There are also women who are seen working in different NGOs and are quite active in organizing mass mobilization campaigns centring issues of displacements and resettlement of the park inmates.

Our focused group discussions revealed the fact that several people have come and settled in the national park from the above-mentioned areas following earthquakes, floods and other natural hazards, rendering them environmental refugees. People have established small tea shops as well as other petty business like poultry, grocery, stationeries and masonry factories to sustain a big family. Although the job variants make one sense of an entrepreneurial spirit among the male and female migrants, since they appear to earn their incomes from a fairly wide range of services and manufacturing sector sources, many of these jobs, particularly construction jobs are contractual and part time. This is followed by irregular or casual employment, low pay, lack of productive assets, unsanitary living conditions, proneness to violence and intimidation and lack of access to justice (Risbud, 2003). The average monthly income of the park inmates settled within the national park areas of Mulund is Rs. 6600, that of Dahisar is Rs. 5900, Malad and Kandivali are Rs. 7600 and that of Goregaon is Rs. 5800 respectively, according to the survey. Most of the houses are temporary makeshift structures, made with straw, mud and bamboo poles, plastic and tin sheets and rags. Such structures explain the event of having provisions for shifting rapidly in case if there is an upheaval and settlements have to be shifted. Only the housing structures in Ketkipada, which is located in Dahisar, have *pucca* houses, since these hutments here were never demolished. The areas where the migrants live are squalid and devoid of basic hygiene with garbage dumps and stinking vicinities and no proper metalled roads except interlocking bricks and holes throughout the area. The drainage and sanitation system is extremely poor and the people use open areas for defecation. Electricity has to be taken on rent as government has withdrawn supply since the eviction notice was issued. The atmosphere is extremely disconsolate and gloomy. Such an environment has provided the ideals nurtured depressingly by the *bourgeoisie environmentalists* of the vicinity, since the urban elite neighbourhoods surrounding the

²*Shri Mahila Griha Udyog Lijjat Papad* is a unique organization for the women, recognized by the Khadi and Village Industries Commission. They make a wide range of papad, masala, atta, chapatti, appalam and detergent.



Fig. 14.1 Shanties and the temporary makeshift structures at Pimpripada. *Source* Authors

park strongly detested to the ideas of encroachment and filth in their environs, an area which is spelling out contagions regularly, contrary to the soporific and green recreation zones, that is expected from a park in the city. Thus the urgency of the basic human rights of these migrants is subjected to and connected with the overall priority of conservation of green spaces in the cities, which is necessary to understand if we observe the *alternatives* that the state offered to these marginal populations in the name of resettlement (Figs. 14.1 and 14.2).

Before the notification in 1974 as *Borivali National Park*, SGNP acquired some forests from the adjoining areas. Also in the year 1989, SGNP acquired 848 ha of land from *A.P. Dinshaw Trust* which was included later on within the Reserved Forest areas. With such expansion of forest land, people started moving in the forest grounds, being backed by the local land sharks and political party cadres, who had encouraged these people to settle down on the grounds that forest is an open land and is not a private property. The entire slum settlement was also confirmed by the satellite survey report of the Space Centre in Ahmadabad, which showed encroachments on 200 ha of built up settlements has a value of more than



Fig. 14.2 Shanties and the temporary makeshift structures at Lauhugad. *Source* Authors



Map 14.1 SGNP. *Source* Google pictures (<https://www.google.co.in/search?q=map+of+Sanjay+gandhi+national+park&biw=1366&bih=667&tbn=isch&tbo=u&source=univ&sa=X&ved=0ahUKewidrNrQ4sTKAhVFCo4KHW6OBBEQsAQIGg#imgrc=iO3Kovzlybp2EM%3A>)

Rs. 10,000 millions.³ As a response to the PIL filed by BEAG in 1995, there was an equivocal demand from the *bourgeoisie environmentalists* as well as the FD to preserve SGNP and make it ‘human encroachment free’. Subsequently, in its 1997 ruling, the High Court summoned the removal of slum encroachments from the national park followed by a petition in 1999 (No. 305/195) to resettle the encroachers (those who are settled within the park prior to 1995). According to the court orders, the FD was ordained to remove all the settlements from inside the national park and resettle those who names are there in the electoral rolls of 1 January 1995, within 18 months of passing the court order. A Status Report on SGNP which we collected during our fieldwork from the conservator of the park, Mr Sunil Limaye, suggests the stages of resettlement to be provided to the slum dwellers settled within SGNP Mumbai in two different phases and revealed the number of pending rehabilitations to be made, in addition to the park conservation measures taken therein. This report is a glimpse on the park management measures which has been seen to be highly derisory and insufficient on several grounds. The following two tables summarize the present status, as declared by the chief conservator of the forest, dated 24.06.2011.⁴ Followed by the table, we present an analysis of the stages of displacement and resettlements offered to the displaced (Tables 14.1 and 14.2).

In the Notice of Motion No. 599 of 2009 in Writ Petition No. 2025 of 2004, the directions of the honourable High Court, Mumbai, dated June 6, 2011, had stated that in the year 1995, about 61,000 encroachers were occupying the forest land of SGNP, of which the total area was 103 km². After conducting the initial survey, it was recorded that out of the total 61,000 encroachers, 33,000 were occupying land since 01/01/1995 and/or prior thereto and as per State Policy, were eligible for rehabilitation but that too outside the forest area. Of these, only 25,972 encroachers submitted the relevant documents in support of their eligibility to the competent authority, i.e. the FD. Rest of the encroachers were therefore declared ineligible. Out of these 25,972 encroachers, 12,849, paid a sum of Rs. 7000/- in accordance with the directions of the FD to pay the defray costs for the rehabilitation sites. After further scrutiny, it was found that 11,658 encroachers were found to be eligible for rehabilitation and arrangements were made at Chandivali, an affluent neighbourhood in Mumbai through Slum Rehabilitation Authority (SRA) for building resettlement housing sites for the park dwellers. Accordingly, 8711 encroachers were provided with permanent accommodation at *Chandivali* till May 2010, under the scheme of SRA. 2947 encroachers were still awaiting their rehabilitation. Out of these 2947 encroachers, 955 eligible encroachers were to be given accommodation by 31 July, 2011 and due process of rechecking their documents and taking their photographs and fingerprints were said to be completed by 20th

³For details see, Mahapatra (2007). People, park and wildlife in an urban environment: a case study of Sanjay Gandhi National Park, Mumbai. M. Phil Dissertation, Department of Humanities and Social Sciences, Indian Institute of Technology Bombay.

⁴Collected from the “Present Status Report as per directions of the Honourable High Court, dated 6th June, 2011”, during the course of the field work.

Table 14.1 Status on June 2012, PHASE-I

A	B	C	D	E	F	G	H	I
Total encroachments prior to 1995; before scrutiny	Total encroachments prior to 1995; after scrutiny	Document submitted by the encroachers for eligibility	Rs. 7000 paid by the encroachers	Total eligible encroachers after payment	Rehabilitation done up to June 2012	Pending for rehabilitation	Tenements ready for rehabilitation	Now as the time limit for document verification is over, Phase I rehabilitation will be complete once this 1700 flats will be given by July end
61,000	33,000	25,972	12,849	11,658	9346	2312	1700	

Source Present status report as per directions of the Honourable High Court, Mumbai (dated 24/06/2011)

Table 14.2 After order dated 10th January, 2008, phase II

J	K	L	M	N	O
Rs. 7000 deposited	Eligible encroachers (approximately)	E + K Total eligible encroachers (approximately)	No. of encroachments removed (approximately)	No. of existing eligible encroachments (G + K)	No. of ineligible encroachments
16,651	13,486	25,144	58,649	15,798	8000

Source Present status report as per directions of the Honourable High Court, Mumbai (dated 24/06/2011)

July and allotment were to be made before 31st July 2011. Although with some delay in the procedural measures, they have been shifted to Chandivali as per records by the FD in 2015. But after the joint inspection on 26th May 2011 by FD, Bombay Municipal Corporation (BMC) and SRA, it was revealed that 1338 flats did not have proper water facilities, and thus they are considered to be non habitable. According to the FD, as soon as these flats are given water connection, the remaining slum dwellers, apart from the 955 already allotted, would be shifted here. Construction work for remaining 654 flats $\{2947 - (1338 + 955)\}$ for eligible encroachers was yet to be started by SRA at that time. According to the FD, these 654 eligible encroachers from 11,658 of Phase I would not get accommodation till the construction of these flats are constructed by the SRA and proper water connection is given by the BMC. After the joint inspection, the above situation was brought into notice of SRA by the Director, SGNP, by his letter dated 31/05/2011 and SRA was again reminded on 9/6/2011. Again on 26/03/2011, one more reminder has been given to SRA to do the needful and complete the necessary work at the earliest. Thus in the first slot, 11,658 encroachers and in the second slot, 13,486 encroacher were eligible for rehabilitation, but for the want of tenements, barring 8711 encroachers, remaining eligible encroachers were awaiting their turn. Till 2015, only 9666 encroachers have been actually rehabilitated. The FD recorded that 12.76 ha has been made free by removing the 8711 eligible encroachers who have been given alternative housing arrangements at Chandivali. Before that, since 1997–1998 and 2003–2004, about an area of 121.11 ha was made encroachment free. Plantation has also been done over an area of about 71 ha over the last 3 years. At present, there are about 8000 structures which are unauthorized and require to be moved. But the problem is that some of such structures are intermingled with that of the structures of eligible encroachers. Hence the removal of the eligible ones is mingled with that of the ineligible encroachers and once the eligible ones are rehabilitated, the ineligible ones will be removed immediately. In this context, it is important to mention that during the last 3 months, 16 new encroachments have been located and removed by the forest staff in Malas round of Tulsi range of SGNP. In the year 2006, 50 posts were specially created for encroachment removal in which there was one post for the Assistant Conservator of Forests, two posts for Range Forest Officers and 42 forest guards for field work who are constantly patrolling the area to detect and remove any new encroachments found in the area. In addition to these, there are 35 permanent watchmen and 125 temporary watchmen to patrol the forest intensively and to take necessary action against any new encroachments if they are located somewhere within the periphery of the forest. The outer boundary of SGNP is 92.470 km, which needs to be protected intensively. Out of this 92.470 km boundary, it is proposed to build a wall on 70 km and for the 22.470 km; cement concrete pillars will be erected. Sanction has so far been given to construct 40 km of boundary wall, out of which 25 km has been completed. For the remaining 15 km wall, an amount of Rs. 161.7 millions has been sought by the authorities. Remaining 30 km wall will be constructed in due course of time. In addition to this construction of wall, the forest authorities are also ensuring that there is no further encroachment within the boundaries of the forest. Regarding the

rehabilitation of the remaining 13,486 eligible encroachers in phase II, SRA had conveyed that by December 2013, 10,096 flats at Chandivali and the remaining flats at Mankhurd would be constructed. The authorities were pledging for the construction of these homes to the earliest with all the required facilities given to these people at the earliest. The authorities in their report have also clearly stated that along within the rehabilitation of the eligible encroachers, the removal of the ineligible encroachers is a complex process. The departments like SRA, BMC, revenue and police are also involved in this along with the FD. So in cases, it becomes difficult for the forest authorities to comply with the orders of the Honourable High Court, within a given time frame. The interference of the different politico social agencies has also made the task a bit complex. The authority has requested the Court for appropriate directions keeping in view the time frame for the total compliance of orders.

This Status Report needs a critical comment in the light of the displacement and rehabilitation scheme that it had proposed. While conducting our fieldwork in 2013, it has been seen that in all the subsequent High Court rulings, it was ordered that those families which have already paid Rs. 7000 and are proven legal residents prior to the year 1995 are eligible for relocation and to be tolerated on the forest lands since new habitation for them is made. But in reality, many of them have been evicted without even giving them any suitable resettlement. In an area known as Pimpripada, hutments were ruthlessly demolished at night using bulldozers and cranes, even after the people provided FD with proves of their settlements in the electoral roll of 1995. Although the court ordered that no settlement that is established prior to 1995 should be demolished within 18 months, without providing an alternative resettlement site, this anomalous political violence continued in 1997 and household materials were confiscated. Our observations from the fieldwork in 2013 noted that more than 20,000 eligible families are still awaiting rehabilitation and are living in appalling conditions within the park. The requisite amount of money which was to be submitted, that is Rs. 7000, was collected in two phases, once in 2000 and then in 2008. Still, problems exist regarding the allocation of houses to these people. These problems are manifold. Jaykunesha Sheikh, one of the residents of Lauhugad in Kandivali, who stays with her mother and brother since 1989, has admitted that the flat which was assigned to them in Chandivali complex is being presently occupied by someone else, due to some confusions regarding the allotment list, presently in the hands of the SRA. These are usually happening with active involvement of the political parties whose interests are satiated through the locally powerful elites within the parks. This is the reason for which many eligible residents of the park are still not able to move to Chandivali, although they have paid the requisite money long before. In Dahisar, the area surveyed known as Ketkipada, has nearly 6000 settlements, out of which 3280 houses have remitted the money within 2000–2008. But only 176 families residing there have been given relocation in Chandivali till now. Besides, many of the encroachers who have been rehabilitated are retreating back to the park owing to improper living conditions therein like irregular water and power supply and lack of proper bathrooms in the resettlement sites. These problems have become increasingly political since local parties are

intervening at large to make living conditions deplorable for the inmates. Instances such as leakage, stone dust by crushers, acquisition of lands demarcated for playgrounds, market and school demonstrate how 'public interests' of removal of squatters in the national parks of cities are realized in process. The local politicians have always seeped into processes of land grabbing, with the backing of few inmates, in return of inducements like granting legal sanctions to rent out the flats at high prices and return back to the forests. The resettlement sites at Chandivali involve a higher maintenance cost, and the people who have been rehabilitated are finding it increasingly difficult to commute to their earlier workplaces, resulting in loss of jobs and higher transport costs. Such a situation demands a very complex understanding of the entire rehabilitation process, since a host of factors is being involved herein. The Division Bench appointed to supervise the entire procedure on 2nd March, 2000 noted that although since 1997, several orders have been passed, very little has been done regarding the implementation of the orders. It has also been observed that the Court from time to time has changed and extended the deadline of the removal of encroachments, of which the last deadline was in December 2008. No new telephone lines are been granted inside the forest area and several telephone connections have been disconnected. All public transport was being stopped from entering the forest area without providing any alternative arrangements for the people. In all, about 31,430 slum dwellers were been found to be eligible for relocation, as already stated in the present status report. However, in course of the study it was found that more than half of them had paid Rs. 7000/- under the rehabilitation scheme and yet were not provided alternative accommodation as per the rehabilitation policy of the State Government.

Proposing Chandivali as the resettlement site had inherent contradictions built into it. For some resettled families, income has even improved since the relocation sites are located more centrally. But economic inequality and an overall decline in purchasing power for 95% of the resettled families have been noted (Vaquier, 2010). Though better physical infrastructure is provided, it comes with higher costs borne by households, since they have to pay for basic utilities as well as common maintenance of the building. Costs of transport and education have also increased. Basic amenities like transport, social infrastructure, schools and healthcare centres are very limited. Similarly, health dispensaries, primary schools, extension of bus routes have not been included in the resettlement plan and need further discussions with the municipal bodies for improvement. This leads to worsened access of children to schools as well as longer time to reach workplace from home. Resettlement has involved structural changes in the family also leading to nuclearization of family and changes in the family structure (Vaquier, 2010). Their social network got weakened due to lack of public space in the buildings. Regarding the structure of resettlement within the households, those who are a little better off are seen residing at the ground floor apartments which they can use for making shops to derive additional income and those who are still struggling for employment inhabit the higher storeys.

While population pressure constituting one of the major threats to the national park, we need to understand the backdrop under which these migrants acquired land within the forest premises. The narratives of the respondents which revealed the

unplanned resettlement process demonstrate the vulnerabilities as well as the ways in which people share their stories of collective sufferings, apprehensiveness about government interventions in resettling them as well as the vagaries of urban environmentalism which compounds them. However moving against the state as a homogenous administrative unit of governance imposing stringent conservation rules upon the communities, we find visible shades of partisan interests coalescing with the entrenched arms of the political power structures at the local level. Recognition of social and physical space in an urban national park is quite contrary to that in the countryside, where it is easier to prove belongingness to land in terms of age old indigenous environmental knowledge and cultural identity than in a city, where forests and its associated distinctiveness are difficult to establish. People squatting an urban national park are usually labelled as ‘encroachers’ rather than ‘indigenous’, since they have no established roots of ancestral lineage or cultural belongingness as migrants and are treated as itinerant and degraders. Thus it is interesting to note how in the absence of indigenous identity, the slum dwellers in SGNP organize themselves collectively as a community, whose vested interests in acquiring land rights in the city are shaped by their active mobilizations and associations in the diverse power struggles. The people retaining close ties with the power structure, like the political parties are benefitting through easier access to resources, better entitlements, jobs in the FD (peons, tourist guides and forest guards). These are the instances where eviction threats do not come down so heavily, housing infrastructures are secured through amenities like refrigerators and electricity, thus rendering the idea of indigeneity as the basis of collective identity, fleeting.

The initial resistance — with people squatting in front of the bulldozers and throwing stones — was brutally crushed by huge contingents of police, resorting to lath-charges, tear-gas and massive arrests. After the demolitions, the forest officials had set up gangs of casual workers who had been assigned the task to drive people out and to burn and destroy their belongings. Following each day of demolitions, the residents said the sky would be filled with a haze of smoke, as building material and belongings of the people would be thrown into the pyres dotting the National Park hillsides. In their enthusiasm to ensure that people did not return to the old sites, the gangs were ordered to hound and beat people after the demolition was over—even looting their belongings.⁵

14.5 Discussion and Conclusion

Reiterating some significant findings of the study, we conclude that the elitist group has successfully consolidated their claims in the urban space while the marginal population, residing within the national park, has been treated as defiling the natural spaces in the city. Thus conservation of the PAs in cities is premised on the voracious needs of shaping the city in terms of an environmentalism, which

⁵Retrieved January 5, 2015 from <http://www.bannedthought.net/India/PeoplesMarch/PM1999-2006/archives/2001/jan2k1/environmental.htm>.

advocates for natural green zones in the city as a contrast to the usual concerns of environmentalism promoting wilderness and forests. An attempt has been made to reflect on the ways in which the 'clean and green environment' campaigns in major cities focus on cleaning up the slums have severe implications for those lacking basic rights and who have no choice but to live in these spaces. As far as SGNP is concerned, our study represents two conflicting interests between the park-centric or exclusionary perspective of conservation, on the one hand, and people-centric or inclusionary perspective of conservation, on the other. Such a conflict represents a clash between two kinds of ideologists, where the proponents of human rights are fighting for the inclusion of people, whereas the proponents of environmentalism are fighting for the environment excluding people.

What remains a dismal part of analysis at the conclusion are not only the ways in which eviction and demolitions were accompanied by haphazard and insufficient has been carried out in the context of SGNP, but also the ways in which the people have resisted in everyday forms against these eviction drives as well as the resettlement schemes. The notion of *bourgeoisie environmentalism*, as discussed earlier, is thus apt to analyse the conditions under which conservation politics unfolds in the study. This kind of environmentalism does not describe the simple banalities of the state–society conflict and the politics in implementing conservation in the urban PAs. Rather, it captures the complexities within the different shades of environmentalism practiced in India and explains the politics of constituting the public sphere in cities through diverse pursuits of citizenship, excluding the underprivileged in the cities. The agent of conservation however is thus not the state autonomously but parallel institutions of governance with varied access to legitimate tools which have material empowerment of rendering the city pollution free through the instruments of secured citizenship. The idea of an aesthetic environment as propagated through such environmentalism is therefore not only realized through the state but also by the middle class and the peripheral habitations aspiring the idea of citizenship. However the discrete ways of articulating such aspirations are usually shaped by political participation. Quite imaginably, the vested political and economic capitals of the city and the ideas of citizenship provide the context under which different groups attempt to mobilize resources through transactions with the state. Environmentalism in urban India is thus pursued under particular political interests, which combines subjective understandings of a privileged citizenship and refined environment, essential for achieving the pursuit of an elite public space. In such a physical space, people aim to achieve citizenship through the available political negotiations, irrespective of ideas that are central to the understanding of their collectivity. The respondents have noted that the government officials come and take bribes from those who still have their houses intact within the national park. The bulldozer operator which came for demolitions here threatened many of the people that they will be shot dead if they do not vacate the land within the deadline given to them. Thus, while initially confronting the FD in its legitimacy to conduct evictions of encroachers on forest land, the role of the civil society groups gradually became less confronting and more constructive in fighting for favourable conditions of resettlement for slum dwellers. The uniformity of resistance in the

face of the eviction threats from the national park constitutes one of the major features of the concept of 'community' therein. Having no specific ancestral or indigenous claims to urban space, the communities invoke definitions of kinship and shared interests to negotiate with the nation state. As noted by Sen (1992), the settlements grow intensely its sense of community around the question of a secure habitat. These are the people who are inconsistently denied legitimacy and claims to natural resources, even staying inside a national park area. However, these are again the same set of people who eke out livelihoods through hunting, gathering and foraging these semi wilderness areas owned largely by public and private entities (Parthasarathy, 2011: 58). The forests, wetlands, mangroves and marshes are an important source of food, work and income for thousands of Mumbai's original inhabitants and migrants (ibid: 58). As interpreted by Baviskar in term of 'bourgeoisie environmentalism', the insufficient and haphazard displacement and rehabilitation scheme, threats to cultural identities and the ecological alienation has created 'subjectified' spaces within the urban forests (Sen & Pattanaik, 2016). In a physical space determined by the riches of an urban agglomerate, the material conditions under which the marginal section of the population mobilize themselves to claim legitimacy through the existing resource distribution is often political. As the study observes, the basis of community identity in the national park is not 'indigenous', neither it is homogenous and monolithic. The practices of a community in a space where options of livelihood are scarce and limited, are shaped through an identity which gives way to vested transactions between the state and the people to negotiate existence through the political exigencies of the state. The study, through the rehabilitation policies and the conflicts and negotiations around them, reflects the contested ecological understandings of the state. Such an understanding is always unsettled and throws up potential contradictions in the way in which conservation is understood and implemented in India.

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Chapter 15

Urban at the Edges: Mumbai's Coastline Urbanisms

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15.1 Introduction

This paper is an attempt to study the uneven growth and urban development in Mumbai Metropolitan Region (MMR). The growth of the city leads to violations of environmental rules such as CRZ, damaging the coastal ecology and thereby adversely affecting fishing related activities and spaces. Mumbai's coastline urbanism is markedly different from the dominant urbanisms in the city centre.

The effects of CRZ rules and violations in the MMR have reconstituted the urban in the seashores, with huge impacts on traditional fishing communities. It is the marginal people at the marginal spaces who are at the receiving end of Mumbai's quest to become a global city. The resultant intensified urbanization leads to the destruction of mangroves, loss of coastal ecology and urban biodiversity; high population density and uneven growth have exacerbated environmental and socio-economic consequences. The Koli (fishing community) in this region face problems of survival and sustenance in small-scale fishing, due to the rampant commercial fishing by big trawlers and large-scale dumping of waste materials by industries in the vicinity into the sea. This research focuses on the transformation of spaces and activities related to the lives of fishing community such as jetties, parking of boats, access to sea, weaving and drying of nets, landing grounds, drying and cleaning of fish. These spaces are worst affected by the encroachments in sea

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shore area and rampant CRZ rules violations. The paper also discusses the reclassification of CRZ zones and amendments to CRZ rules in order to bring in many 'developmental' projects like SEZs. The broader issues related to the contradictions and complementarities involved in Integrated Coastal Zone Management (ICZM) plans vis-à-vis management of biodiversity are also scrutinized in the study, within the larger context of evolving urbanisms in the coastal areas of Mumbai. Mumbai's coastline urbanism is not only characterized by a high degree of environmental destruction, and willful violation of environmental norms, but is also characterized by its impacts on livelihoods of fishers which are akin to the larger developmental impacts on 'ecosystem people' that are observed in rural areas of the country. In conceptual terms, Mumbai's coastline urbanism raises larger issues relating to the 'urban question', the notion of the peri-urban, and rural-urban distinctions.

The high population density and uneven growth rate in the Mumbai region has resulted in environmental as well as socio-economic problems due to unplanned and non-integrated coastal developmental activities over the years. These problems need to be addressed in developing a coastal management plan for the MMR region (Murthy, Rao, Inamdar, & Arun, 2010). Studies show that there are about 3.52 million fishers occupying the 3202 fishing villages spread across the Indian coastline (Vivekanandan, 2007). According to the Fisheries Census of 2005 (CMFRI, 2006), there are around 50,000, fish workers in Greater Mumbai but activists working with the fishing community estimate the population to be more than 1,00,000 in the Mumbai Metropolitan Region¹ (MMR) as a whole. There are other dependent people on fishing-related activities, and if we count them together with fisher community population, then their population may increase (Parthasarathy, 2011).

On the basis of primary field research in Cuffe Parade, Colaba, Thane-Mulund Creek, Bhandup, Chimbai Koliwada and Sewri Creek in the Mumbai region, this study attempts to assess CRZ implementation and violations in coastal areas causing damage to coastal ecosystems. The research specifically focuses on particular fishing related spaces namely jetties, parking areas for boats, landing grounds, access to the sea and related fishing activities. In the larger context of rapid urbanization and real estate demands, it evaluates the action taken by the Maharashtra Coastal Zone Management Authority (MCZMA) and Bombay Municipal Corporation (BMC) who are tasked with implementing the rules and making Integrated Coastal Zone Management Plan (ICZMP) for management of marine environment.

¹Mumbai has been used variously to refer to the city limits of the Greater Mumbai Municipal Corporation, the Mumbai Urban Agglomeration as used by the Census of India, and the Mumbai Metropolitan Region as it has been administratively defined by the Mumbai Metropolitan Region Development Authority. So it includes a number of cities, towns and villages outside the island city and outside the limits of the Greater Mumbai Municipal Corporation. It has been made clear where the name of the city refers to larger areas outside the municipal limits.

15.2 Concise History of New CRZ 2011

The genesis of Coastal Regulations in India can be traced back to the United Nations Conference on the Human Environment, held in Stockholm in June 1972, and attended by the then Prime Minister Indira Gandhi. The Environment Protection Act (EPA) 1986 was enacted to implement decisions taken at this conference to which India was a signatory. The Coastal Regulation Zone (CRZ) Notification of 1991 was made under the provisions of the EPA with the purpose of preserving the coastal environment, and in particular, the ecologically fragile areas, by regulating use all along the coastal areas (MoEF, 2009). The CRZ Notification 2011 was officially notified on 6 January 2011. While it uses the 1991 notification as its base, it also codifies the 25 amendments to the notification. Its stated objectives are to ensure livelihood security to the fishing communities and other local communities living in coastal areas. The notification defines the CRZ to include the land area from the high tide line (HTL) to 500 m on the landward side, as well as the land area between HTL to 100 m or width of the creek, whichever is less, on the landward side along tidal influenced water bodies connected to the sea (Sharma, 2011). The CRZ also includes, for the first time, the water and bed area between the low tide line (LTL) to the territorial water limit (12 nautical miles) in case of the sea, as well as the water and the bed area of tidal influenced water bodies, such as creeks, rivers and estuaries. This new Notification reconciles three objectives:

1. Protection of livelihoods of traditional fisher communities
2. Preservation of coastal ecology
3. Promotion of economic activity that have necessarily to be located in coastal regions.

The notification defines four categories of CRZ.

Category-I (CRZ-I)²

Areas that are ecologically sensitive and important, such as national parks/marine parks, sanctuaries, reserve forests, wildlife habitats, mangroves, corals/coral reefs areas, close to breeding and spawning grounds of fish and other marine life. This is a 'No Development Zone'.

Category-II (CRZ-II)

This category includes areas that are already developed, up to or close to the shore line.

Category-III (CRZ-III)

These areas are relatively undisturbed and do not belong to either category-I or -II. These include coastal zones in the rural areas (developed and undeveloped).

²MoEF 6 Jan 2011, Times of India 8th January 2011.

Category-IV (CRZ-IV)

Coastal stretches in the Andaman and Nicobar Islands, Lakshadweep and Small Island except those designated as CRZ-I, CRZ-II, CRZ-III.³

The new coastal regulation zone 2011 norms, released by the Union ministry of environment and forests (MoEF), have attracted much criticism. The then Environment Minister Jairam Ramesh had identified the “protection of livelihoods of traditional fisher folk and promotion of economic activity for this coastal community” as one of the prime objectives behind the new norms. Not everyone however is concerned about the new regulation. Builders and land developers are viewing it as a positive step. But for the fishing communities, the notification gives with one hand and takes away with the other (DNA, 2011). Environmentalists fear that unchecked development of coastal lands will destroy precious natural buffers and biodiversity of coastal areas.

15.3 Urban at the Edges: Mumbai’s Coastline Urbanisms

The tourism industry and infrastructural projects in coastal areas have continued to violate CRZ norms throughout the nine coastal states and five union territories, including the two island groups. Serious and conspicuous attempts to violate the notification have been recorded by vigilant groups all over the state (Equations, 2008). In Mumbai, a survey conducted under the auspices of the Indian National Trust for Art & Cultural Heritage (INTACH) and a number of other associations revealed that only one-third of the 34 km water front from Colaba to Versova is available for public use. In Navi Mumbai, 18 villages will be affected by the proposed airport at Navi Mumbai; the government acquired the land for urban development in this area almost 40 years ago, but until the airport project was planned for the site, villagers did not fear losing their lands. According to CIDCO, 160 ha of mangroves would be razed to the ground to make room for the new airport.⁴

In the name of development and beautification plans, all kinds of projects are coming up in the coastal areas of Maharashtra, including power plants amusement parks, a sea link bridge, an airport, a harbour, ports and a chemical industries zone. These activities are polluting the water, and displacing fisher people almost every 10 km of the coastal belt of Maharashtra. Existing and proposed projects include:

- The Esselworld Amusement Park at Gorai in Mumbai: The Essel Company has destroyed 700 acres of mangrove fields by spraying chemicals in Gorai village in Mumbai. It is trying to reclaim the mangrove fields in Coastal Regulation Zone 1, to which fisher people have enjoyed traditional and customary access. The company is not allowing fisher people to fish in this area. The Maharashtra MachhimarKritiSamiti and the National Fishworkers Forum are agitating

³Sridhar UNDP, 2005.

⁴Jamwal Nidhi, Down to Earth, Backdoor Democracy, May 31, 2010.

against this company through blockades and strikes, and have asked the government to vacate the 700 acres of mangrove fields, and to allow fishermen to fish. 'Esselworld' is a holiday resort with water sports and amusement parks. Five hundred Koli families have lost their means of livelihood due to this project; residents note the disparity between the world of glamour and fantasy, where there is electricity and water to waste in 'Esselworld', and the Koli village where there is no lift on the jetty, no electricity on the roads, no public transport and no piped water. Water supply is assured for 'Water Kingdom' attraction—a sister company of Esselworld. As Singh (2004) states, 'Esselworld' and Gorai might serve as a metaphor for Mumbai's modernity.

- Thermal Power Plant at Dahanu: This project has reclaimed vast wetland of more than 1000 acres for construction of the plant and dumping of ashes. Around 1000 fisher folk, who fish in the wet lands at high and low tides, are affected by this project. Ash dumping is polluting the sea, and several species of fishes have disappeared as a result.
- Worli–Bandra sea link bridge in Mumbai: For this project, 70 acres in the estuary area of the Mithi river at Mahim have been reclaimed. Fishermen of the area who were picking clams, oysters, crabs and creek fish during high and low tides have been displaced, and the coastal ecosystem has been greatly damaged. This is a clear violation of the traditional and customary rights of the fisher people. In addition, the sea link has disturbed the currents affecting fish catch and navigation of small boats.
- The Tarapur–Mahad–Parashram–Lote chemical industrial zone: This is polluting the river, creek and sea. Drinking water wells are also getting polluted in nearby areas.
- Bombay High oil wells in the deep sea: The digging of wells for oil by the Government of India in the deep sea has also encroached on fishing grounds, and further pollutes coastal waters.
- Industrial fishing vessels in the deep sea, the Enron power project and the mega-airport at Rewas Mandava are other examples of potentially destructive projects.
- The Nagothana Vadhavan mega-harbour in North Maharashtra and tourism and aquaculture projects are also affecting the coastal ecosystem, marine environment and fish resources, thus depriving fisher people of their sources of livelihood.
- New Mumbai Airport: Around 2000 ha of land, including 1150 ha of CIDCO land, 443 ha government owned land and 457 ha private land would be required for the project. As per CRZ guidelines, in CRZ-I area construction and airfield activities are not permitted. Nearly 40 of the 1785 ha of land fall under eco-sensitive CRZ-I Zone. Without environmental clearance the current central government gave the green signal to start work for the New Airport. CIDCO (City and Industrial Development Corporation) has started the pre-development work from January 2015, including relocation of power transmission lines and reclamation of land sites. Several illegal clearances of mangroves have been allowed to happen, and barricades that constrain natural hydrological flows have been erected.

- New Mumbai Special Economic Zone (NMSEZ): Various NGO's such as Bombay Environmental Action Group (BEAG), Conservation Action Trust (CAG) and Vanashakti have complained to the government about the rampant destruction of mangroves and wetlands for the construction of NMSEZ. This deforestation and land reclamation has led to large-scale destruction of bird habitats.⁵ According to SunjoyMonga (Naturalist and Bird watcher) "It is an eco-tragedy; the wetland in Uran that was frequented by various species of birds over the decades, has been completely flattened and filled up with debris to set up the special economic zone in Navi Mumbai. That is why flamingos, which would nest in those areas, are now migrating to other coastal areas like Vashi and Airoli in Thane".⁶

Leaders of the fishing community argue that: "this model of development does not benefit the fishermen in any way, but creates uncertainties for their survival and livelihood. For the protection of the coastal ecosystem, and the management of fish resources, community rights over the water bodies should be entrusted with the local fisher folk" (Patil, 2001).

In Bandra and Mahim, the creek has low oxygen level sand is too polluted to support marine life. This has prevented monsoon fishing, an important income supplement in the traditionally lean months for fisher people. At Versova, dead fish are being washed ashore because of untreated effluents polluting the water. Outside the city, fisher people have gone to battle over projects ranging from five star hotels (Velaghar Beach), commercial complexes (Andheri), huge port facilities for foreign vessels and trawlers (Vadhavan) and a thermal power station (Kelve). In Alibag, or 'Little Goa' as the Bombay elite call their popular weekend getaway, fourteen Koli villages are threatened with displacement so that a heliport can be built to save travel time.

At present, there are more than 27 Koliwadadas and more than 88 Gaothans in Greater Mumbai. Among them, more than 16 Koliwadadas and 23 Gaothans are CRZ affected.⁷ Most are located on the seashore or nearby. Although each Koliwada is unique, they share common characteristics and problems. Pollution, lack of basic amenities, declining catch, increasing costs, inadequate housing and place for doing trade related activities are issues affecting most Koli families (Warhaft, 2001). On the other hand, there is land encroachment by migrants and CRZ violations. Parts of the coastal zone of MMR have also become increasingly susceptible to human induced environmental stresses and economic damage by natural geophysical factors such as erosion, siltation and coastal flooding. The waste generation and disposal pressures due to domestic and industrial activities have further contributed

⁵See: <http://timesofindia.indiatimes.com/city/mumbai/MPs-inspect-environmental-damage-at-Uran/articleshow/6203453.cms>.

⁶<http://timesofindia.indiatimes.com/city/mumbai/Flamingos-find-new-home-in-Vashi/articleshow/6145230.cms>.

⁷Information obtained from BMC Record 2013, provided by Assistant Engineer, in the month of May 2013.

to the deterioration of coastal marine water quality and coastal fisheries. It is necessary to assess the status of various sectors that are associated with these problems before deciding upon appropriate strategies to address them through integrated coastal management (ICM) measures.

15.4 Mangrove Zone Preservation and Violations in Mumbai

The western site of the Thane Creek is the single largest mangrove zone in Mumbai. But this mangrove zone has destroyed by developers, with 137 acres of land taken away for the SEZ project. There is confusion as well as collusion between Thane Municipal Corporation (TMC) and Bombay Municipal Corporation (BMC), wherein according to TMC records this area falls under CRZ-I (Ecologically sensitive area), but according to BMC records mangrove zones fall under CRZ-III (where development can take place). Instead of classifying this area CRZ-III to CRZ-I, TMC reclassified the mangrove dense area as CRZ-III in order to allow SEZ on the same site.

The Soonabai Pirojsha Godrej Foundation has been maintaining the large area of quality mangroves in the city, consisting almost 1750 acres of dense mangrove area. This is a home and shelter for various species of birds, fishes and corals.

The Sewri Mangrove Park: After independence state government reclaimed fish catch site of fishing community for the Bombay Port Trust (BPT). The mangrove swamp of Sewri was declared a protected ecosystem as the Mangrove Park by the BPT on January 1996. However, more than a decade later, in 2007 this wetland habitat is in danger of being wiped out by the planned Mumbai-Nhava Sheva road link. In recent years, a lot of construction activity has been taking place in this area due to opening up of mill lands. The area was supposed to be developed to showcase mangroves and flamingo habitat, but this remained on paper.⁸ Sewri Park consists of 15 acres of mangroves and mudflats but in actuality 30 ha of mangroves are completely wiped out and the entire belt is in danger of getting destroyed. This is due to improper and illegal storage of coking coal in the immediate locality of the sea shore. It is affecting fish catch, and fisher people are forced to leave fishing activity and adopt alternative livelihoods.

15.5 CRZ Violations and the Role of the State

The State level Maharashtra Coastal Zone Management Authority (MCZMA) was constituted by the Ministry of Environment and Forest under EPA, 1986. The authority has full power to take necessary steps and measures for protecting and

⁸Data collected in the field during May, 2012.

improving the quality of the coastal environment and preventing environmental pollution in coastal areas. As per the website of MCZMA,⁹ in 2009, there were 24 complaints registered against CRZ violations in Maharashtra, but the authority had only issued letters to district level or municipal level authorities to take action. There was no action taken against a single violator. In 2010 there were 42 complaints registered, among them only 10 violations were under a directive process, while the rest of the complaints were only dealt with in terms of issuing letters. Similarly in the year 2011, there were 99 complains registered against CRZ violations, of which in three sites the MCZMA had stopped activities in violation of the CRZ; the rest of the violators were only issued show cause letters.

MCZMA has issued a letter to the Municipal Commissioner on the matter of identifying *Koliwad*s and *Gaothan* in Mumbai and prepare an Integrated Coastal Zone Management Plan (ICZMP) in the month of April, 2011. The Bombay Municipal Corporation (BMC) allotted the work to district level authorities. However as of November 2014, no maps were prepared for *Koliwad*s and *Gaothan* and the ICZM Plan is yet to be prepared. For an island city like Mumbai, implementation of CRZ rules is crucial. However, in the present scenario both the city and the slum dwellers, in whose name most of the construction is done, are the losers due to the delay in the preparation of ICZMP, allowing the state and real estate to take over coastal zones.

15.6 Why ICZM Plan?

Coastal areas in India are increasingly attracting the attention of researchers and socio-environmental activists due to their increasing human population and density, urbanization and accelerated developmental activities. All these are imposing immense pressure on the fragile coastal environment, through complex multidimensional interactions including physical, chemical, biological, ecological, socio-economic and administrative aspects. In India, there is in addition the pressure of economic development which is inevitably unsustainable as the environment is unable to sustain and support the flow of goods and services (e.g. resources for human use and natural defense system). Any coastal management approach requires sectoral level integration of knowledge, skills and information that are distributed across different levels and institutions; there is lack of coordination among administration and different stakeholders (Devraj, Arumugam, Paul, & Sandhu, 2012) which limits such interactions and coordination with adverse consequences for the quality of coastal management. For managing coastal areas, the inability to set clear goals for planning and decision-making, and the absence of a structure and processes which can coordinate across various institutions constitute inherent limitations. (Stephen & Olsen, 2002). Hence planners and researchers have

⁹Visit the site of MCZMA—https://mczma.maharashtra.gov.in/html/e_1stComplaints.html.

come up with the notion of an Integrated Coastal Management (ICM) approach that is conceived as a holistic management tool working across sectoral, disciplinary and institutional boundaries. It has emerged as a central organizing concept in sustainable coastal development (Hoel, 2003).

The marine productive ecosystem is important to maintain the balance of coastal ecology. However, due to extensive anthropogenic activities along the coast such as fishing, ship building, rampant commercial fishing by trawler, the use of purse seine nets, and industrialization, the coastal zones and the existing ecosystems have degraded considerably. Mangroves and healthy coral reefs have now declined or degraded, which puts marine biodiversity in great peril. All these impacts also directly impact the livelihood of the traditional fishing community which is totally dependent on fish catch. As a whole, human activity along the coastal areas degrades the systems by appropriating unsustainable quantities of resources. The effects are further exacerbated with the input of pollutant wastes. Hence the need for better coastal management is imperative. Due to the complex nature of human activity along the coast, a holistic all-encompassing approach is needed for coastal zone management.

There is an urgent need to have a Coastal Zone Management committee, which will represent the local fishing community. Coastal Problems cannot be managed successfully as separate issues, such as pollution, or wetland loss, or fisheries depletion, these issues are interrelated and can only be managed in a cooperative and collaborative manner (Murthy et al., 2010). Risk management decisions should be made the consideration of priority problems in the light of available management options, human needs and financial scenarios. There are several institutions and agencies operating in the city and its region such as the Mumbai Metropolitan Region Development Authority (MMRDA), Greater Mumbai Municipal Corporation and other municipal corporations, State and Central pollution boards, Mumbai city transport, Mumbai Police, Port trusts, etc. All these agencies function separately and without coordination, and are thus responsible for deficiencies in enforcement of laws in the MMR coastal region. There appears to be a minimum of direct interaction between these federal, provincial and municipal agencies. A centralized establishment specializing in coastal and marine affairs, whose function would be to oversee the ongoing coastal activities and to coordinate between these agencies, is hence necessary (Chouhan, 2012). In addition there has to be better coordination between CRZ affected people, the state, environmentalists and lawyers in order to sustain resistance and opposition to those violate CRZ norms.

15.7 Builder-Bureaucrat-Politician Nexus

The common thread that runs through all these various CRZ violations is the lack of government will and apathy in enforcing eco-friendly rules in return for windfall gains. Through reclamation, land for industrial projects is first created from

wetlands near the sea. Then it is given the status of a no development zone. However, since this 'no development zone' is contiguous to development areas, small construction is allowed. Initially, smaller Floor Space Index (FSI) is offered ultimately leading to unlimited FSI through government legislation which paves the way for unlimited construction. Thus, more and more land is created from the sea, destroying all buffer zones of the city and leaving no room for the movement of seawater. As per the international standards of land use, the minimum amount of open space that is required is 4 acres per thousand persons; for Mumbai it is only 0.03 acres per thousand people (Kale, 2012).

15.8 Brief History of Mumbai's Coastal Area

MMR is considered as the economic and Industrial capital of India with approximately 9000 industries ranging from chemicals, fertilizers, iron and steel, oil refineries and thermal power plants. Most of the industries are situated at the coastal belt of MMR region. Industrial pollution in the MMR has not been fully assessed, but the main sources are gaseous emissions, solid and liquid wastes, toxic and hazardous wastes (Murthy et al., 2010).

The Kolis of Mumbai are confronted with a seemingly inexorable onslaught of neo-liberal development projects, programs and policies stemming from transnational, national, regional and local capital accumulation imperatives. Small-scale fishing activities are hijacked by modern trawler fishing to satisfy the global demand for seafood and export earnings. As the central government promotes a plethora of destructive projects and policies that are deeply rooted in the ideology of technology-led modernization, these developments support a transformation of fisheries and coastal economic activities by actors who have no idea or concern about the crucial import of coastal ecologies and environments. Simultaneously the coastal fishing community is rapidly becoming more vulnerable and facing a livelihoods crisis due to the impact of these projects (Warhaft, 2001).

Marine pollution comprising industrial and domestic loads as well as hydrocarbons and tar deposits led to degradation of most of the beaches and beach waters around Mumbai. The sea water is not fit for bathing purposes due to heavy suspended load. Mangroves are a most important component of coastal ecosystem that is known to keep the shoreline intact against tidal currents by preventing soil erosion. They also provide habitat for several wildlife marine species, including birds, shrimps and fishes (Murthy et al., 2010). Parthasarathy notes that during the 2005 floods, mangroves and salt pans in the eastern suburbs mitigated the scale of the disaster. Destruction of mangroves was a key element of flooding in the western suburbs. Dense area of mangroves is important for ecological and environmental

benefits, but it is destroyed to make way for 'development'¹⁰ (Parthasarathy, 2011). Unplanned development and high population density imposes severe restrictions on resources and conflicts among stakeholders (Warhaft, 2001). The main Integrated Coastal Management (ICM) challenges before MMR are: (1) to maintain aesthetic and recreational water quality of the coastal waters surrounding the region, (2) to maintain viable artisanal, commercial and recreational fishing in the face of increased urban, industrial and municipal pollution, and land reclamation, (3) disposal of solid, waste water and dredged materials in an environmentally safe way. However what is observed are severe environmental problems such as: (a) the use of wetlands and mangroves for land development, and loss of property due to coastal erosion and fishery resources, (b) waste disposal activities affect the coastal water quality, fisheries, recreation and tourism, (c) unplanned land reclamation procedures lead to the loss of tidal flushing resulting in polluted beaches. Coastal problems cannot be managed successfully as separate issues, such as pollution or wetland loss or fisheries depletion. These issues are interrelated (Murthy et al., 2010).

15.9 CRZ Violations in MMR Region

There are various sites in urban MMR region, which are affected by CRZ violation and thus cause damaging to the coastal ecology. Noticeable areas including Badwar Park, Cuffe Parade, Colaba, the present day Nariman Point, Oberoi Hotel and other posh residential areas have been supplanting and encroaching on fishing grounds since 1973. There is also pressure from migrants in GaribJanta Nagar, Mahatma Phule Nagar and Dhobi Ghat, which are the immediate neighbours of Cuffe Parade fishing communities. Before 1973, this was an important site for the fishing community, but after reclamation by the government for private residences and some hotels, fishers shifted their residence to put an end to further reclamation. Currently, the sea has also become a dump yard for urban waste which is leading to pollution of sea water and thereby affecting breeding of fish in the area. The Navy Colony lies to the south of the fishing community. Ambedkar Nagar and Geeta Nagar near the Navy Colony are another migrant residential area, a site of another encroachment where people are cutting mangroves for the construction of their houses. This constitutes an encroachment of the ecologically sensitive CRZ-I zone. Another affected urban site is ChimbaiKoliwada, a beach km between Joggers Park and Bandra Bandstand. The prime location of the Chimbai beach and its water possibilities is attracting many builders to the area. The builder lobby has not spared these sandy shores as in evident from the 15 buildings that have come up. A number of illegal constructions—two and/or three storey bungalows right on the beach, have come up in the last 7 years. As per the respondent (local fisherman), Suresh

¹⁰The term 'development' is widely used by urban planners and builders as an abbreviation for real estate development, in other words, for developing a built environment.

Chimbaikar of Chimbai village¹¹ these builders and their construction process violate the CRZ norms. Fishing community has been fighting against rampant illegal constructions since several years. As per the government record, BMC and the District Collector pass on the blame to each other in failing to stop or restrict these illegal constructions. In addition to the construction, the debris from the sites are dumped near the rock borders of the sea/beach. Encroachments have increased over the years. The residents of the Chimbai fishing community are fighting to save the beach for long, and instead of stopping these constructions, the Bombay Municipal Corporation (BMC) has come up with a Rs. 40 millions beautification plan for the area with the ostensible aim to improve its environmental condition.

In the Thane–Mulund creek which falls under CRZ-I area, there are CRZ violations in 134 acres of land. There is dispute as to whether it belongs to CRZ-I or CRZ-III. The dispute arose around 2005 as a Special Economic Zone (SEZ) was earmarked on a 134 acre mangrove belt between Mulund and Thane. According to CRZ 1991 and 2011, a SEZ is not allowed on a CRZ-I area. The proposed land for the SEZ project is barely 200 m off the Thane Creek. It was surrounded by a thick cover of mangroves on three sides, some of which have been cleared for making space for the SEZ. Intertidal waters can be seen in and around the plot. Thane and Mahim creeks are probably the most polluted locations. Mahim bay and Thane creek were once bestowed with good fisheries, flourishing Oyster beds and lush fringing mangroves. Due to recent industrial and domestic activities and high pollution concentrations, fisheries are now nonexistent. A massive increase in benthic productivity and depletion of fish species and other flora and fauna shows the damage done by severe pollution to the coastal environments of Mumbai (Murthy et al., 2010). Thane creek exhibited low values of dissolved oxygen that has further destroyed marine flora and fauna (Chouhan & Parthasarathy, 2015).

15.10 Conclusion

Modernization and capitalist development in the Indian fishing sector has marginalized, impoverished or simply wiped out many artisanal fishing communities. The resultant process of marginalization and the loss of livelihood among the artisanal fishing communities transferred them to the category of ‘ecological refugees’¹². However, it is striking to note the total absence of any effectual policy measures over the years despite rapid destruction and degradation of coastal ecosystems.

¹¹Researcher has taken interview of residence (Fishing Community) of Chimbai village, on May 9, 2012.

¹²The term coined by Guha and Gadgil (1995).

India's artisanal fishers have been displaced and their livelihoods destroyed by capital led development, which has served to further impoverish them (Warhaft, 2001). The main focus of environmentalists has been to save or preserve biodiversity of coastal areas rather than livelihoods of resource dependent people in the coastal areas. It is important to have concern for the environment as well as livelihoods of the fishing community, as the fishers are totally dependent on the natural resources of the sea. They manage coastal zones in a sustainable manner because this is the only livelihood for them. Conservation of biological diversity is a common concern and is integral for the sociocultural and economic development of humanity. This lack of concern for dependent communities is leading to growing commercial exploitation, reduction in the loss of biodiversity, continued alienation of indigenous communities and the creation of administrative, policy and legal measures, which remain paper tigers (Wani & Taraporvala, 2012). It also has implications for local participation in biodiversity and mangrove sustainability issues, due to the absence of local champions for environmental causes, which remain an elite or middle class issue. The indigenous fishing community, which is totally dependent on fish catching activities are becoming marginalized through neo-liberal development process (Warhaft, 2001), which leads to the loss of the environment and livelihoods. Encroachment is leading to the scarcity of land (Parthasarathy, 2011) and is pushing out the indigenous Koli community from fishing activities (Ranade, 2008). There is a need to have an effective Coastal Zone Management committee, which will represent the local fisher community. The notification (on paper) focuses on environmental problems and livelihoods security of fishing community, but in reality there is little implementation.

Socio-economic development in the coastal areas of India is a multidimensional phenomenon. Against a situation of rampant coastal encroachments and degradation led by specific development trajectories, social and political institutions to arrest such degradation can have a decisive impact on economic, social-cultural sustainability in the coastal areas. In order to achieve such objectives however, laws and policies need to be effectively designed and implemented; legal rules need to be viewed as socio-technological devices that can support individuals and institutional to solve problems and conflicts that arise in an environment of scarce resources. This paper shows that laws remain as paper tigers; due to scarcity of urban space that can cater to multiple needs and demands, and lack of coordination among different institutional functionaries and stakeholders, these problems remain unresolved.

Coastal problems cannot be managed successfully as separate issues or single issues alone, such as pollution or wetland loss or fisheries depletion as these issues are inter-related. A centralized establishment specializing in coastal and marine affairs whose function would be to oversee the ongoing coastal activities and to coordinate between these agencies is a necessary step in order to ensure biodiversity protection, and further deterioration of Mumbai's sensitive coastal ecological system as well as marginalization of livelihoods of the fishing communities. The urban coastline is rapidly becoming an attractive space for residential as well as private and governmental projects. This is in addition to large-scale infrastructure

development along the coast in addition to recreational, commercial, industrial and aesthetic projects. All of these reshape, reclassify and create new coastlines, which involve substantial land reclamation and diver pollution through various channels affecting marine ecosystems; these changes have splintered urban growth and caused major impacts on the coastal biodiversity and resource based livelihoods. As this study shows, urbanism emerges as a characteristic way of interaction of inhabitants of towns and cities with the built environment, *and* ecologies, on which resource dependent communities subsist. Such communities also play a significant environment protection role. In the context of increasing climate uncertainty and the coastal impacts of climate change and global warming, a research focus on coastal urbanism is of some urgency. More attention to coastline urbanism in cities such as Mumbai, Chennai and Kolkata may help us with strategic planning to manage and mitigate urban disasters. Mumbai's disastrous coastline urbanism also makes us rethink conventional imaginaries and theorizations of the city that may serve to integrate perspectives from the global north and the global south.

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Chapter 16

Contested Urban Waterscape of Udaipur

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On the last day of my field work in May 2014, I suddenly realised that I could not get a chance to visit Lake Fatehsagar. So, I quickly picked up my camera and started my evening walk towards “Fatehsagar ki Pal” as it is referred locally. It was about twenty minutes from the place I was staying. The day was very hot with temperatures soaring as high as 43 °C but as the evening was approaching the breeze was soothing down the nerves. The sound of bells coming from innumerable small and big temples on the way to the lake was adding charm to the evening. As I was approaching the lake, my mind was racing: the story of the dry lake in the hot summers of Udaipur was making me worried about its current status. There were many voices in my mind—Is there water in the lake? Or is it dry as in earlier years? What if the water there is just a small puddle? Anticipation was mixed with anxiety and finally I got the first glimpse of glittering blue water and involuntarily my pace increased. I reached the gate beyond which vehicular movement is not permitted. A full view of the lake was beyond my imagination—the lake was full to its brim with the surrounding hills and the sun setting behind it; there was only one word that came to my mind—scenic beauty. Far on the hill top, Sajjangarh Palace, also known as Monsoon Palace, overlooking the lake was submerged in the evening hues. A huge mass of water lay in front of me, the rhythm of which was only disturbed either by the huge fountains (adorned with projection lights) or the racing speed boats (a tourist attraction) gliding on the lake. People of varied age groups were enjoying this panoramic view, many amongst them appeared to be regulars for their evening walks, while others were in groups—laughing, chatting—sitting on the pink coloured cemented benches, built by the Urban Improvement Trust (UIT) under the beautification project for the lakes. Most of the people were not tourists but were local residents, very much relaxed and at ease in their own space and in their own city. Looking at them I was reminded what one of my

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respondents had said ‘as Marine Drive is for Mumbai so are these lakes to Udaipur’ a symbol and identity of this city.

It was indeed very windy with ripples and small waves rising in the lake. I sat down on one of the benches to soak in all that was around and what I saw next took me with surprise. A neon coloured surfing boat emerged from the waters, a man was actually surfing in Fatehsagar Lake!

Many questions cluttered my thoughts: Is this the actual use of diversion and transfer schemes of Mansi Wakal and Dewas? The water which is transferred from the rural hinterland for drinking purpose is definitely enmeshed in a complex web of urban water governance and water use.

An excerpt from the field diary, 15th May 2014

16.1 Setting the Context

Urban space is a register to understand and explore the various dynamics unfolding in the governance circuits across the globe. In the case of southern cities, this becomes more crucial with the urban sprawl and growth marking the very canvas of urbanization, resulting in various environmental and governance challenges. In India, urban spaces are witnessing and undergoing a momentous process of growth and development leading to many new and competing claims on resources like water. However, the focus is limited to the metros and big cities which are perceived as the hubs of growth and development. It is crucial to examine the exponential growth of medium and small towns addressing resource appropriation practices which exacerbate the pressure on ecology and environment. While access to water remains a daunting question to millions across the globe, rising water shortages are engulfing various areas rapidly. With rising water demands, a stress on questions of availability and accessibility to this resource has become crucial. Programmes and policies are being operationalised to give access to drinking water to as many as possible (with targets such as providing access to particular number of houses or areas). But what does access mean and how does one ensure the *connections* (of networks, pipes and power) to come under such coverage targets? The processes and access practices around water flows, does question the ethos of sustainability and scarcity which are not neutral. In this race to acquire more and more water, urban centres are definitely at the forefront with their insatiable thirst but this does not result in water for all within the city space as this paper will delve on.

In this paper, we examine the case of urbanizing Udaipur, a town in South Rajasthan, India, and elucidate the contestations that have engulfed access and allocation of water within the city and region, raising concerns on issues of sustainability. The above description from the field notes sets the context of the study area where water shortages have led to water transfer as a solution, along with

appropriation and use of other sources within the city. Udaipur, popularly referred as *the city of lakes*, is a popular tourist destination with its sprawling lakes, beautiful palaces and *havelis*.¹ It has a complex and contested waterscape presenting a case where multiple tangents complicate the picture with various stakeholders pushing their own concerns and demands. The contemporary urban waterscape we encounter in Udaipur has evolved over a long period and is constituted of fractures along which water flows, mediating within various regimes which govern and give access to it. This urban waterscape is being made and remade through the circulation of water. And within this urban space the flows of water are embedded in the larger political economy where it is contested and governed.

16.2 Theoretical Underpinnings

Building on the political ecology scholarship particularly urban political ecology of water (Bakker, 2003a; Loftus, 2009; Swyngedouw, Kaika, & Castro, 2002) this paper aims to examine the contested and dynamic processes unfolding in Udaipur. Water as an object of inquiry has been examined through various lenses. However, in most cases it is circumscribed as a resource, necessary for growth and development apart from being necessary for survival. This habitual reduction of water as an economic resource has emerged as a result of paradigm shifts in the global arena leading to commodification and privatization. The resurgence of the environmental question has led to shifts in the water sector in past couple of decades. The Dublin Rio declaration stands as a milestone for the change brought in the water sector.² But political ecology framework punctures this line of thought and urges us to look at manifold processes embedded in water—processes of production, rights, access and negotiation. This approach picks on the idea that it is just not the physical aspects but rather power structures which determine water flows. Following the Marxian tradition, urban political ecology scholarship maps out “the power relations that shape unequal urban metabolism” (Ranganathan, 2015) which are reinforced by the distributional mechanisms. Studies by Swyngedouw (2004) and Kaika (2005) unearth historical developments to trace these water regulation trajectories to demonstrate social power operating in processes of water access and

¹Haveli means a mansion. These havelis stood as a symbol of power and prestige during eighteenth and nineteenth century and used to belong to rich and affluent class comprising noblemen, merchants and landowners. With the peculiar architectural features and a central courtyard these were common in Rajasthan and Gujarat.

²The Dublin–Rio principles include the Dublin declaration at the International Conference on Water and Environment held in Dublin which declared water as an economic good and it emphasized on decentralization as the major thrust required for water reforms.

exclusion. Inequality and marginalization becomes a part of such narratives and shows that policies and schemes are biased favouring certain sections of the society.³

Swyngedouw (2009) discusses the configuring of physical and social processes that are together involved in water thus extending the limits of current water debate. He emphasizes on “*hydro-social circulations*” of water and explains that hydraulic environments are social physical constructions that are actively and historically produced. In these environments, access to water is socially and politically determined. Indeed, it is determined by a set of both physical and social networks (Kaika, 2005); hence, it becomes daunting at various scales posing challenges to governance and also questioning the politics of a managerial demand supply lens. In fact, the conventional supply augmentation stemming as a technocratic solution is driven by the macro-agendas. But such macro-political claims overshadow the micro-realities which need to be explored to comprehend the everyday struggles and practices around water. The micro-negotiations as Anand (2011) demonstrates in his Mumbai study are crucial to access water and are reworked through everyday practices. The ‘pressures’—both political and physical—are responsible and required for drinking water provision and access in the city. Similarly, Truleove (2011) elaborates in her Delhi neighbourhood study that micro politics and everyday practices create differences in access and experiences around water. Conflicts surrounding water are manifested through various practices which are in turn part of the larger processes like distribution and allocation. These formal supply systems (following the prescriptive documents and policies) are regulated by the state apparatus in most of the global south cities, where they emerge as an important stakeholder in the entire process. In fact, practices and processes which are embedded in water lead to conflicts and contestations which germinate from within society, an assemblage of multiple identities, social structures and stakes.

16.3 Udaipur: Historical and Geographical Settings

Before turning to an analysis of the contestations, it is crucial to situate Udaipur in the broader processes by navigating through its geography, history and its water-scape along with the urban growth trends, and recent policy steps towards water provision in the city.

Udaipur city is situated at 24° 35'N and 73° 42' in the centre of a saucer-shaped (bowl-shaped) valley. It is surrounded by one of the oldest mountain ranges in the world—‘Aravallis’. Ahar River flowing in a dendritic pattern drains the area along with its tributaries. This river is seasonal in nature and frequently dries in the summer months. In fact, Kotra River, the biggest tributary of Ahar River has been

³The literature elucidates various struggles for the access rights by communities across the globe (Bryant, 1992; Peets & Watts, 2004). Mostly the interest of the powerful gets leverage over the other sections of the society (Bryant, 1992).

dammed to form the beautiful and famous Pichhola Lake. Geologically this area is dominated by Aravalli and Post-Aravalli geological systems. These systems consist of Limestone, Gneisses, Phyllite and Graywacke. These formations have provided a base for the evolution of the existing landforms in the region which have an impact on the drainage and storage of water resources in the area (Singh, 2002). Forming the well-known Monsoon macro-climatic region, Udaipur falls in 'Bshw' category under the Koppen scheme with warm semi-arid type weather with the average annual rainfall around 75 cm and mean annual temperature over 18 °C.

Availability of water, both for the city population as well as for irrigation, was one of the major guiding factors for the location of this city. To address the problem of water shortage and scarcity several artificial lakes were built by the early rulers since the fourteenth century to store water, primarily rain water. Since the city lies in a saucer-shaped valley, after flowing down the surrounding hills, water gets collected in these lakes. Over the centuries, all these lakes were interlinked forming the basis of sustenance in this dry area. Arising from River Ahar these lakes are a valuable asset of the city. Lake Pichhola, Fateh Sagar Lake, Udai Sagar and Swaroop Sagar are some of the biggest and most beautiful lakes of the lake system. The interlinkages between these lakes and the management techniques, which have provided surface water as well as recharged the groundwater sources of the region, are definitely a unique example of water management (Rathore, 2008).

The old city of Udaipur⁴ emerged 'When Udai Singh abandoned Chi'tor, he found refuge in the valley of the Girwoh in the Aravalli, close to the retreat of his great ancestor, Bappa, ere he conquered Chitor. At the entrance to this valley, several years previously, he had formed the lake still called after him, Udai Sagar, and he now raised a dyke between the hills which dammed up another stream. On the cluster of hills adjoining, he built the small palace called Nauchoki, around which edifices soon arose to which he gave his own name, Udaipur, henceforth the capital of Mewar' (p. 72) (Fig. 16.1).⁵

To protect the city, a 6-km long wall was constructed between 1620 and 1628. This wall had seven *pole(s)* (doors) which were huge in size. During that period, urban growth was concentrated within these walls. Moreover, the city's expansion was limited to construction of a number of palaces, *havellis*, temples and *ghats*⁶ within the walled city. In the year 1893, the railway line was laid connecting the city to the rest of mainland India. Subsequently, for the first time, important public infrastructure, such as hospitals, court, schools, etc. and other institutions were built outside these walls. However after the independence of the country, the city sprawl overflowed its walls and rapid urban growth (on going) mainly towards the southern and eastern parts has been witnessed.

⁴The city was founded in 1559 A.D.

⁵'Tod's Annals of Rajasthan: The Annals of Mewar', abridged and arranged by C.H. Payne, New York: E.P. Dutton and Company, 1920.

⁶A *ghat* refers to a series of steps leading down to a water body like riverfront, lake or pond.

Table 16.1 Population changes in Udaipur

Year	Population	Change in population	Increase (%)
1881	38,264	–	–
1891	48,530	10,266	+26.88
1901	45,976	–2604	–5.36
1911	33,229	–12,747	–27.73
1921	34,789	1560	+4.69
1931	44,035	9246	+26.53
1941	59,648	15,613	+35.46
1951	89,621	29,973	+50.25
1961	1,11,139	21,518	+24.01
1971	1,61,278	50,139	+45.11
1981	2,32,583	71,310	+44.22
1991	3,08,571	75,988	+32.67
2001	3,89,317	80,800	+26.18
2011	4,51,735	62,418	+16.0

Source Census of India (1881–2011)

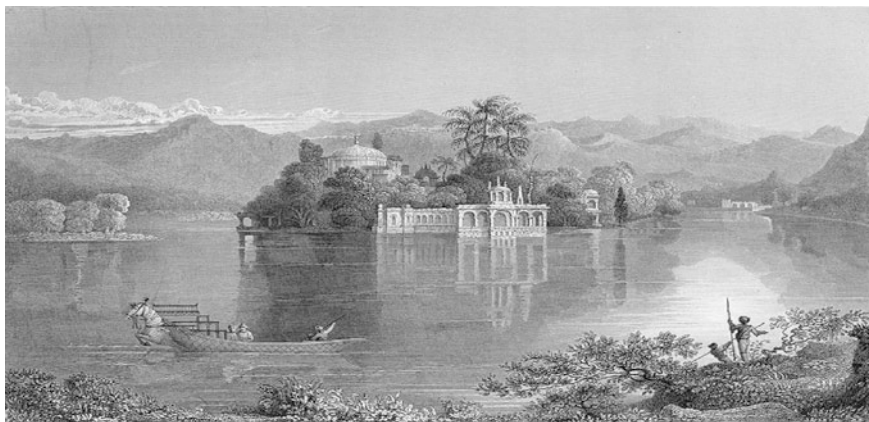


Fig. 16.1 Lake Pichola, Udaipur. Source Plate 8 of Tod's *Annals* (1829); cited in Payne (1920), <https://archive.org/stream/todsannalsofraja00todjrjch#page/120/mode/2up/search/LAKE>

It is evident from Table 16.1 that the population growth in the city of Udaipur has steadily grown in the last couple of decades. Presently the population of Udaipur city, according to Census 2011, is 451,735, while its urban/metropolitan population is 475,150 (Map 16.1).

Currently the density within the walled city is 445 persons per acres as compared to the average density of 35 persons per acre in the city. With population growth and higher density the number of wards in the city has increased to facilitate better administration of the city and presently stand at 55 (Table 16.2).

Map 16.1 Ward map of Udaipur, 2009. *Source* Ward Office, Udaipur

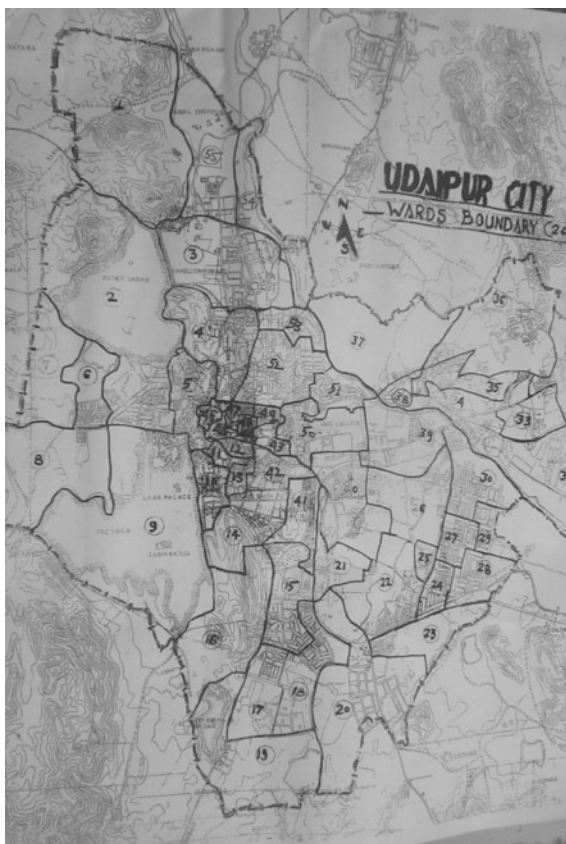


Table 16.2 Municipal wards in Udaipur

Year	Number of wards
1951	11
1971	34
1991	45
2001	50
2009	55

Source Municipal Corporation, Udaipur

Rising population and rapid urbanization has been adding pressure on available water resources and this has been further exacerbated with the recurring and prolonged droughts. Hence of late, the looming water crisis has grabbed the centre stage in the region. Water being one of the main resource over which there are

conflicts and contestations in this terrain.⁷ Transfer of water from rural areas has been suggested as a solution both by the state machinery and the media, which has been conceived as the best option by the city dwellers and policy makers in the last few years. Droughts in the past led to construction of a series of dams and water transfer schemes notably *Dewas* Scheme and the much controversial *Mansi Wakal* Scheme.

16.4 Evolution of Present Water Supply: Is It Sustainable?

Over the last centuries the lakes are providing water to the city and in last 100 years there had been several constructions to increase the capacity of the lakes to serve that purpose. On many occasions the level of the dams had been raised and construction of reservoirs had been carried out. A modern supply system was launched in 1931 (to serve a city with a population of 44,035) through gravity pipeline from Lake Swaroop Sagar. Though the Municipal Board was formed as early as 1922, it was reorganized later in 1946 when the boundary of the Municipal City of Udaipur was demarcated for the first time. Earlier 'raw water' was supplied from the lakes to the houses directly. However 1944 marked a new era in the history of water supply system when SAV Raman Consulting Engineers were commissioned to prepare water distribution system for Udaipur. With the discovery of potable water from a dug well, 20 taps were installed in the city as the foundation of the Public Water Supply System. The Public Health Engineering Department (PHED) of the state government was created as an institution to create and run public water distribution system, supplying water through pipes and taps to the urban population (the end users).

On 31st March 1954, the then Prime Minister Jawaharlal Nehru laid the foundation stone of water distribution system for the city, then with a population 89,621. The distribution system became operational in next 3 years, i.e. in 1957. PHED came into Udaipur due to the initiative of the then Chief Minister, Mr. M.L. Sukhadia to set up a water supply system. It was designed not only to meet the current water needs but also to plan for the future water requirements. The ambitious *Dewas* project was one such project which was launched to meet the future water needs. This project was conceived in 1969 and comprised of *Dewas* I, II, III and IV. The construction of *Dewas* I began in the same year. Jaisamand water transfer scheme was launched in 1987–88 during the severe drought period. Notably, Jaisamand Lake is one of the largest artificial lakes. PHED records state

⁷<http://www.dailymail.co.uk/news/article-1199799/Indias-Palace-Lake-Palace-Mud-drought-takes-toll-romantic-resort.html> accessed on 20th December, 2014.

http://www.democraticunderground.com/discuss/duboard.php?az=view_all&address=115x15913 accessed on 29th October, 2014.

that this lake supplies water in the lean periods and water is even drawn from the dead storage capacity. This scheme was launched as an emergency scheme with a projected cost of Rs. 50 millions. It involves pumping water up to the height of 300 m which is then transported over a distance of 60 km. The scheme, which was seen as an emergency measure for temporary relief, continues to supply water to the city to this date. During the same period, Water and Power Consultancy Services (WAPCOS) India Ltd report came out (in 1987) which highlighted insufficiency of Dewas Scheme yield and this led PHED to push for the construction of Mansi Wakal I (which was proposed in 1989). It was argued that since the total water available after the construction of Dewas II, III, and IV dam projects would not be sufficient to meet the projected demands of the city, another project was essential to augment water supply further (see Singh & Narayanan, 2014). It was in the year 1998 that the water supply was shifted to alternate days. Due to water scarcity in the city, these transfer schemes are operating to meet the ever increasing urban demands. These schemes have always been an important component of the state's water agenda's. The major water sources currently are Pichola, FatehSagar, Jaismand, Dewas I and II, Mansi Wakal I, Jhamar Kotra and Kanpur tube wells along with local underground sources.⁸

Currently there are 38 distribution zones within the city. According to PHED, the Master Plan 2022 of Udaipur aims to include 62 peripheral villages in the radius of 8–15 km and would be included in the proposed Urban Water Supply and Sanitation project. The future sources for water augmentation are *Dewas III, Dewas IV and Wakal III*. These sources are in the pipeline to meet the growing water demands of the city. However, there is a growing gap between the water supply and demand in the city, and as discussed earlier, Udaipur's water supply is hugely dependent on water transfer schemes which have been operating in the area. Under these schemes water is diverted from the hinterland and brought into the city through pipes and tankers. This brings us to the issue of water transfer which is used extensively in many cities across the globe.

With 'water crisis' becoming a reality, the allocation of water across sectors and within sector is becoming complex. A joint report by the World Bank and Government of India (1999) cautioned that the country faced severe challenge of meeting the water demands of various sectors. Contestations are becoming alarming with each sector pushing for its demands. Logic of priority thrives leading to apparent 'urbanization of water' occurring across waterscapes. '*Urbanization of water*' (Swyngedouw, 1997) implies exercise of power to transfer water from the hinterland to urban centres at a large scale and at a much larger magnitude. In fact, these transfers are accompanied by commodification of water as there are multiple claims on it. Further, the water resources transferred to urban centres are claimed by various sectors ranging from residential to commercial and result in clashes in terms of economic, institutional and political factors (Celio, Christopher, & Giordano, 2010). To add to this line of argument, Mehta, Veldwisch, and Franco (2012)

⁸Data provided by PHED, Udaipur.

suggest that such ‘water grabbing’ is a result of new players in the picture who are born out of the dynamic trail of neoliberalism.

The relationship between water, development and urbanization in Udaipur city is far more complex than a simplistic understanding of shortages and scarcity. There have been resistances witnessed from the rural hinterland as in the case of *Mansi Wakal I* (Singh & Narayanan, 2014) from where the water has been diverted to quench the ever-growing thirsty city of Udaipur. But are these transfer schemes really the sustainable solution? Or are there any other viable solutions for the city of Udaipur? These questions compel one to ponder on the logic of water transfer and also various challenges associated to water access and governance.

16.5 Terrains of Contestations: Contemporary Claims

Udaipur’s waterscape presents a contested terrain where sectoral conflicts between industrial use, irrigation and drinking are multiple. The urgencies and requirements of each of them complicate the issue further. The herculean task of allocation of available water lies in the hand of PHED and Irrigation Department to address the needs of these sectors. However, there is a constant negotiation to access water by different actors and sectors. Traversing this terrain of contestation and negotiation, multiple layers appear illustrating the dynamic waterscape of the city. The scarcity of water and limited water availability elucidates the contestations between the uses of water. In many occasions these contestations are not easy to spell out but they are manifested through the negotiations, practices, and struggles that inhabit the everyday water experiences in the city.

First the water transfer schemes operating in the city are drawing water from the hinterland also referred as ‘the area of origin’ leading to an apparent shift in water use. Primarily water is drawn out of the agricultural sector and diverted for drinking water purpose to the city. This can be possible as water for drinking gets the first priority while making decisions regarding available water resources. Such decisions are met with lot of opposition by the farmers and those dependent on the agricultural sector as they question a distorted logic of ‘productive use’. In the semi-arid terrain of Udaipur, since these water transfer schemes have started operating, they have met with resistances from the rural hinterland. The ramifications of these diversions are huge and long lasting. A prolonged struggle in the case of *Mansi Wakal I* was dealt with state coercion to complete the project. The politics of water transfer has led to livelihood threat and loss of resources, be it water or land, marring the lives of the rural population in this area.

In the pathways of water transfer, and the resulting contestation, the industrial sector emerges as an important stakeholder. Big players like Hindustan Zinc Limited (HZL), renowned Hotel Chains, and multiple medium and small-scale industries have their stakes heavily invested in the availability of water resources. The crucial role of HZL, a Vedanta Enterprise, in *Mansi Wakal I* is often cited as a successful model of water supply. Currently 30% of diverted water is used by HZL

for its industrial use in return to the cost sharing proportion of 30:70 in the *Mansi Wakal* I scheme, which developed as a drinking water project. As mentioned, this project saw a lot of resistance as it led to submergence of various villages and displaced many people (Singh & Narayanan, 2014). Apart from HZL, other mineral-based industries add a lot of pressure on water resources in the city and in the vicinity where such units are operating. The periphery of the city is rapidly being transformed into an industrial area referred to as ‘RIICO’ (Rajasthan State Industrial Development and Investment Corporation). Many of the units in this zone are primarily involved in the processing of minerals that are extracted from nearby areas. Not only do these mineral-based industries require huge volumes of water but they also degrade the quality of water adding pressure on the scare resource. As in the case of marble industry, rampant in the area is undoubtedly one of the most polluting industries. Tarikh Razdan,⁹ an activist working for the conservation of lakes, elaborates this:

These industries—soapstone, marble etc. get the raw materials from the other areas but have their processing units here in Udaipur. They use water and dump the waste here. Slurry is dumped without any care. This is destroying our water sources. (Interview conducted in April 2013)

Ahar River which flows through Udaipur is now a dead river due to the pollutants. This is majorly due to the various industries that dump their waste in the river. Many chemicals are found in the water which is much above permissible levels. Recently Udaipur Chamber of Commerce & Industry (UCCI) along with an NGO has cleaned a part of the river and revived it.

The other contour of contestation in the waterscape of Udaipur lies in the booming tourism industry in the city. The influx of tourists from foreign countries as well as from within the country has led to mushrooming of hotels and guest houses.

As one of the interviewees Shama Liyakat¹⁰ candidly remarked

...this increment (in the tourism sector) has been witnessed over the last 10-15 years, otherwise Rajasthan only meant desert. (Interview conducted in March, 2013).

Flourishing tourism results in additional pressure on the resource base. All the major hotel groups are present in the city and each year multiple hotels, guest houses are added to this ever-growing list. Fancy swimming pools, jacuzzis and similar facilities provided by them clearly indicate the high per capita water consumption by the hotel industry. This floating population is large and shows an exponential increase in recent years. The tourism industry is highly dependent on

⁹Names of the respondents have been changed.

¹⁰Names of the respondents have been changed.

the lakes. It has been observed that the years when the lakes have run dry, the number of tourists has dropped drastically.¹¹ However, lakes which are the site of tourism are also the main water sources of the city. These are rapidly getting polluted due to dumping of waste by industries and open drains flowing into them. Such unchecked actions are leading to the degradation and depletion of the lakes. The glaring problem of pollution in the lakes though has come up on the administrative platforms every now and then but nothing substantial has been done in this regard. As one of the Board Members of Udaipur Chamber of Commerce & Industry (UCCI) Kamal Kumar¹² says:

Yes...there is definitely a tendency of free ridership and as a result the water resources are being polluted. Nobody is taking any responsibility or proper action. (Interview conducted in March, 2012).

An NGO working for protection of the lakes has demanded for a Lake Authority that will be an autonomous body working exclusively for the maintenance of lakes. Other authorities like Urban Improvement Trust (UIT) are currently engaged in beautification of the lakes.

...these lakes have to be kept alive and all the efforts should be directed towards this.

People of Udaipur have a fascination about the lakes and want the lakes to be filled at any cost.

Pallav¹³ one of the experts commented. (Interview conducted in May, 2013).

A walk along the Pichola and Fatehsagar lakes reveals the real story, where one can easily see multiple drains flowing into these lakes and dumping the waste. A huge sum of money is spent on the beautification project which was sanctioned for improving the quality of water (Fig. 16.2).

Even after water transfer schemes began operating in the city there is still a gap between the supply and demand figures in Udaipur. This definitely questions the conventional supply side solutions such as water transfer schemes which are often employed by technocrats (Table 16.3).

From this table, it is clearly evident that there is a gap between water demand and supply in Udaipur. According to the study, it is indicated that in the coming years there will be an alarming shortfall in water supply, and demand which will increase progressively. Interestingly all these figures are projections based on the present supply system which supplies water on alternate days. But the future aim is to provide 24×7 water supply in the city; in such a scenario these figures fail to take into consideration the huge deficit that will emerge due to exponential rise in demand.

¹¹Tripadvisor blog See further http://www.tripadvisor.in/ShowTopic-g297672-i7934-k4255551-Lakes_dry-Udaipur_Rajasthan.html accessed on 27 December 2014.

¹²Names of the respondents have been changed.

¹³Names of the respondents have been changed.



Fig. 16.2 Polluted water of Lake Fatehsagar. *Source* Author

Table 16.3 Projected gap in water distribution

Year	Water demand (MLD)	Water supply (MLD)	Shortfall in water availability (MLD)
2011	115	89.32	25.68
2016	131	106.52	24.48
2021	146	106.52	39.48
2026	166	106.52	59.48
2031	213	106.52	106.48
2036	242	106.52	135.48
2041	278	106.52	171.48

Source Feasibility Report for Rehabilitation Augmentation and Operation of Water Supply and Sewerage System in Udaipur Town through Public Private Participation (2014), p.89

This section gave a macro-overview of water problem and contestations in the Udaipur city but a closer look is needed to understand the everyday water struggle of people. Hence, the next section examines the trajectories of water contestations, scarcity, and access through the study of the old city area where a part of the research was conducted.

16.6 Embodying Everyday Water Contestations: Insights from the Field

With its palaces, *havelis*, and innumerable bylanes recreating the charm of a bygone era, it is the *Old City* which is the centre of tourist attraction. Situated on the banks of Lake Pichola, in this congested and densely populated part of the city major tourist attractions are located. Due to heavy tourist flow this area has many hotels, restaurants and innumerable shops. Additionally, it is the hub of many old businesses like jewellery market, cloth whole sale market, and variety of other whole sale markets. For tourism, many residential houses now house shops and restaurants; in fact many of the *havelis* are now converted into heritage hotels by the owners. Mushrooming of many of these hotels and guesthouses is specially concentrated near the banks of Lake Pichhola. However, many of these also thrive on the other side of the lake which lies just outside the old-walled city. The old city is demarcated by many ‘*poles*’ (doors) like *Hathipole*, *Chandpole*, *Surajpole*, etc. adorning the entry and exit from this area (Fig. 16.3).

This area is the most densely populated in the city demonstrating the quintessential characteristic of a walled city (as witnessed in other walled cities like old Delhi) where the additional pressure of high floating population adds to the existing woes.

Living so close to the lake touches the everyday life of people in the area in various ways. In fact, the lake has become a part of their identity and culture. The idea of and the association with ‘water in the lake’ is very crucial to everyone around. Hotel owners, restaurant owners, and shop keepers have much larger stakes involved in the lake due to their livelihood dependence. The households are also



Fig. 16.3 The old city. *Source* Author

closely associated with the lake and its water for their daily needs. The area close to the lake lies on the either side of ‘*Chandpole*’ and ‘*Lal ghat*’.

Historically the old city was privileged with many step wells locally called as *bawadis*, and open wells used by the people as drinking water sources. This area is one of the oldest areas in the city to get water supply from PHED since the water supply system started in 1944. Currently water is supplied through various surface sources, like *Gulab Bagh and Doodh Talai* which draw water from Lake Pichola, as well as a number of ground water sources. Tube wells, bore wells and *bawadis* (ground water sources) are also utilized to supply water to the various *mohallas* (colonies) located in the *ghatti* (valley). One can also spot many hand pumps and also taps operational under the Panghat Yojana¹⁴ in the tiny lanes. The water supply in the entire city is once in two days or 48 h.¹⁵ Same is the case in the old city where supply is for a short period varying from 1 to 3 h. People have built storage tanks in their houses to collect and store water to meet their daily requirements and also for the days when there is no water supply (Fig. 16.4).

During the winter months the supply is more reliable as compared to summer months. There are scores of private bore wells/tube wells dug by households as well as hotels to meet the rising demand. Consequently, tanker economy is flourishing in this area as hotels are dependent on these tankers in case of water shortages. These tankers are just a call away and provide water to these hotels and restaurants as well as other customers to meet their demands. On many occasions (like weddings, family functions or other urgent water requirements), households also procure water from these water tankers. The water vendors operating these tankers tap the groundwater sources (borewells) usually located on fringes of the city to meet the requirements especially during the summer months.

Dependence on groundwater has been high leading to rapid depletion of water levels in the city. Individual borewells were much in vogue in this area in 1980s and 1990s during the drought periods. As one of the respondents elaborates

...having a ‘bore’ was seen as a status symbol...if you have the money invest it and get water...that was in fashion during those days. (Interview with Ramlal Joshi conducted in March 2014).

However, in recent times people have been shifting to the PHED water supply to meet their domestic needs as the ground water quality has gone down over the years. Joshi(ji)¹⁶ (a man in his early 50s) too has a bore (dug back in the 1990s) in his four storied house which is located just a few metres from the *Chandpole*

¹⁴A Panghat Yojana is operated by the PHED where an overhead tank is built with a tube well to draw ground water. Taps are installed through which people collect/fill water.

¹⁵The city is in fact divided into zones and these zones are then sub-divided further according to a water supply schedule.

¹⁶‘Ji’ is a suffix added to names (while addressing the person) in Rajasthan as an indicator of respect to the person.

Fig. 16.4 Panghat Yojana at Gangaur Ghat in old city, Udaipur. *Source* Author



darwaza. He took me to his terrace via the never ending shining marble steps¹⁷ to show how ground water is of ‘no use’ now. He pointed at marble steps on the terrace which have turned blackish in colour due to polluted water. Now he and many in his neighbourhood have reverted back to ‘state supply’ to meet their daily needs.

The water which is drawn from these bore wells is unfit for drinking as reported by many respondents. It is yellowish in colour and affects utensils, floors, clothes, etc. Many hand pumps in the area have a faded *lal nishan* (red mark) marked by

¹⁷Udaipur and its vicinity have huge extraction and production of marble which adds to the pressure on the water available.

PHED which indicates that the water from that particular hand pump is unfit for consumption, however in the absence of proper water supply many people (including several small tea shops and restaurants) still use water from these source. Hotels and bigger restaurants use ground water or tanker water and claim to use bottled or RO¹⁸ water for drinking as well as for cooking purposes.

In fact, most of these restaurant owners and hotel owners like Manoj are aware of the problems caused by using or drinking the ground water and even lake water. Manoj, a young man runs a unique restaurant where he serves healthy food made from various coarse grains like *raggi*, *bajra*, *jawar* among others. The effort is to blend the cuisines and come up with new recipes like bajra pizza, beetroot salad, etc. Hence, his restaurant is flocked by many foreign as well as domestic tourists who wish to experiment something new and unique. Sitting close to the lake in a bylane, this restaurant has a certificate of excellence by Lonely Planet hanging at its entrance. Manoj goes on to explain that his restaurant has a double connection as he has taken an additional water connection from the next household. This is a usual practice adopted by many hotels and restaurants that are dependent on the informal ways of accessing water to meet their demands. He goes on explaining that for cooking and drinking he gets *mineral water* from outside.

we get drinking water separately from somewhere...this is not normal water...it is mineral water because our entire food is cooked in it... not in this water (referring to the state water supply which draws water either from the lakes or nearby borewells)...this is only for washing...not for cooking...and for drinking we get it from a company. (Interview conducted in January 2014)

On inquiring what is the reason behind this, and why do they not install a purifier he elaborated further.

we have foreigner clientele so they have this water problem... so we have to use mineral water... I drink this water...same water at home also...but here because of the foreigner clients we have to be careful with the water...

Water purifier is a not a solution..That is not enough for us...we need like 100 litres...more than 100 litres per day...mineral water which the other machine cannot give and there will be other maintenance issues...

On probing about the cost of this mineral water he informed that he gets it for Rs. 2 per litre which is way less than the bottled water available in the market. The restaurant has a refill point where anybody can bring their bottles and fill at a cost of Rs. 8. He went on to state that though people around are dependent on the lake but the efforts are lacking.

Every hotel or restaurant owner is very 'individualistic'...nobody is bothered about the larger issues. The hotel association is just a namesake body.

¹⁸RO refers to reverse osmosis treatment; the purifiers with this technology are very popular in the city.

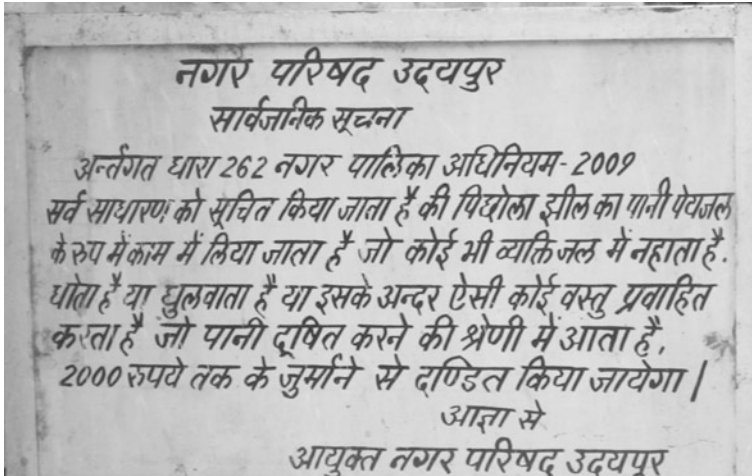


Fig. 16.5 Board informing rule about dumping/polluting Lake Pichola. *Source* Author

Lakes Pichhola which is part of the water supply system of the city has an acute pollution problem with quality of water deteriorating over the years. The old respondents recall the stories about the times when they could directly drink water from the lake without hesitation. But now the story has changed. One of the reasons for this is the dumping done by the hotels and households in the lake directly without any treatment. In the last couple of years there is a law which makes dumping punishable with a fine but that has had no impact as it is not implemented strictly (Fig. 16.5).

Also there are faulty sewerage lines in the area which start overflowing due to reverse pressure, and untreated waste water from many households directly flows in the lake, polluting it further. Surprisingly, the sewerage and waste water lines run through the Pichhola making the matter even worse. One of the activists *Tarun Shankerji*¹⁹ took me around the area a couple of times to show the points, leaks, overflows, and faulty pipelines which operate without any supervision and correction under 'pressure'. A report submitted to the PHED to assess the feasibility of PPP points out: 'Further after execution of sewerage scheme for lake protection, the sewerage pumping station at Chandpole and Ambamata are installed and commissioned. The raw sewerage pumped from the existing Chandpole is diluted due to the infiltration of lake water into pumping station. The effluent overflows from the manhole chamber near Hathipole when sewerage pumping stations are operated' (p. 96).²⁰

¹⁹Names of the respondents have been changed.

²⁰Feasibility Report For Rehabilitation Augmentation And Operation Of Water Supply And Sewerage System In Udaipur Town Through Public Private Participation (2014).



Fig. 16.6 Hotel in Lalghat (on the bank of Lake Pichola). *Source* Author

There are various sides to the story with many accessing this polluted water as their only way to meet their demands, while many—like the hotel owners—misuse the lakes to dump their waste (Fig. 16.6).

During one of my field visits once I was standing on a foot bridge connecting *Chandpole* and *Lalghat*, accompanied by a local photographer cum yoga teacher. I saw something unexpected: my informant pointed towards a hotel (back side of the hotel) next to the lake where we could spot two people lifting a huge green-coloured pipe which was then lowered down in the lake water. There was a pumping machine attached to it. He explained to me that this is a usual scene in the area where hotel owners either pump water in or out the lake without any problem. The hotel owners deny such allegations and say that they either rely on PHED water supply, alternatively on ground water or buy tanker water in acute cases of water shortages. The previous chairman of the hotel association assured that all the hotels have proper treatment plants to recycle water.

...we are blamed as people are jealous of people who earn money... there are around hundred hotels around the lake...may be even less but more than these...there are thousands of houses... *hain na* (isn't it?)...these (hotels) are nothing...in hotels there is thirty to forty percent occupancy...if there are hundred hotels even with thousand, twelve hundred or two thousand rooms...if the rooms are full...then also only two thousand rooms are full...but usually there is only thirty to forty percent occupancy...and even if it is full that is not the issue...but that is not the case...the polluted water is coming from the households...it is not dumped by the hotels...as there are strict rules over the hotels...Municipal Corporation keeps a check...water department also checks...so to save itself *sarkar* (the state) is blaming the hotels...they do not want to work...they just get their photos clicked for the newspapers...and it is over...the main issue is that state is not bothered...there is no role of the hotels. (Interview conducted in March, 2014).



Fig. 16.7 People bathing and washing at Lake Pichola. *Source* Author

He concluded that instead of blaming them (hotels) for everything the need of the hour is to enhance awareness among everyone living around the lakes, where the state should take more responsibility for water supply and lake conservation (Fig. 16.7).

Most of the hotel owners, restaurant owners are aware about the problems related to the lakes and water supply systems but put the entire burden on the state and local authorities. They operate under competitive conditions resulting in over use and abuse of this common resource. This demonstrates how a common resource used by everyone is on the verge of degradation and depletion questioning the stakes involved in managing and governing. Practices and mechanisms to access/use water by various stakeholders cum users (through formal and informal systems), demonstrates the capillary systems which are embedded in the everyday water negotiations across the waterscape.

In the old city, the problem of water scarcity is evident through the contested claims placed on it. Pollution of lake water and ground water becomes central to comprehend the terrains of degradation. Scarcity of water is not only confined to the quantity of water available but also dependent on the quality of water. In case of urban Udaipur, the deterioration of water quality poses a huge threat to the accessibility of water (both groundwater and lake water) which indeed are not separate but feed into each other, recharging each other and forming an integrated system. The trope of pollution and degradation unearths the contestations and highlights the pressures on the water available in the area where it becomes crucial to examine the sustainability in the urban space. But do all face this scarcity? The politics of accessibility does complicate the scenario where certain sectors and users are privileged through unequal *flows* and *pressures*. It is relevant to understand that questions of access to water are closely interwoven with issues of rights, control and

allocation. The state solution of water transfer to tackle the water crisis is falling short to meet the rising demands. New dimensions in planning and urban governance have to be thought through to bring in avenues that lead to sustainability in terms of water.

16.7 Conclusion

This paper demonstrates how water is contested in a semi-arid region of Udaipur where various schemes operate but access to water is not determined by mere presence in the urban space, or in a particular sector; rather it is determined by intertwined social geographies. The nature of contestation in Udaipur's waterscape varies from being aggressive to passive with impacts becoming grim, e.g. the differential access within the city boundaries where the supply is very skewed. The multiplicity of departments in the water sector is a commonly cited problem—the lakes are owned by one department while the water in them is the property of another which poses innumerable governance problems. Policy implementation and proper action is hindered by the multiplicity of the departments and their divergent claims on the resource. As is evident, 'lakes' emerge as one of the main sites of this process. The differential stakes involved lead to much more complexity on the ground. The sectoral conflicts, between lakes, drinking water, industrial use illustrate the contestations embedded in this waterscape. The simplistic understanding of water management paradigms—which are mostly discussed in terms of demand and supply—fall short to do proper justice in the wake of existing layers of resource appropriation and access. Power and struggle are at the core of urban water appropriation (Meinzen-Dick & Ringler, 2008). The scholarship on water (Gandy, 2004; Kaika, 2005; Loftus, 2009; Linton & Budds, 2014; O'Reilly, 2006; Swyngedouw, 1999, 2004) argues that water should be examined beyond the notion of biophysical entity and also stresses on the fact that water flows are shaped by power and social relations (and goes on to shape them as well). To unpack this bundle the need is to understand processes and practices that occur around water which affect it and also get affected simultaneously. In the case of Udaipur, as demonstrated through the paper, the trajectories and uses of water are caught in a complex terrain of contestations. What is very interesting here is to observe how 'flows' are interwoven with the kind of water (indicating the quality) one can access. This access is not limited to a particular type of water as people/users use various sources to quench their needs. Hence, access to what *kind of water* becomes very relevant in this narrative of Udaipur's dynamic waterscape. All these practices around water in Udaipur which result in contestations and negotiations to access water are evading the question of sustainability. Drawing on Bakker's (2003b) articulation of archipelagos, this paper illustrates that not all residents can access water through these networks of pipes and connections. These archipelagos created within the supply systems control the flows of water producing sections in the urban fabric which are included or excluded through myriad processes as observed in the

old city of Udaipur. Riding on the scarcity discourse which thrives on the idea of absolute physical scarcity of a resource (which in most of the cases is debatable) water transfer schemes have been sanctioned in the area as well. This paper illustrates how such water schemes are not the most efficient and viable solution, and argues for more sustainable solutions to address water shortage within the city. Instead of scarcity, used extensively by the planners and technocrats, is it not the imperative of sustainability a right approach to meet the agendas and demands regarding water in urban spaces? The need of the hour is to harness sustainable local resources and use them diligently to overcome the problem of scarcity. In this case the lakes of Udaipur are the resource base for the city and they need to be conserved, protected, and nurtured. The untamed degradation of its environment is detrimental to the entire ecosystem and water supply system. In 2015 the Rajasthan High Court passed an order restricting bathing, washing and idol immersion in the Lakes of Udaipur.²¹ The impact of this order on the degrading quality of water is yet to be seen. By looking at the practices of access and contestations embedded in this waterscape we can better understand the multiplicity of interlinkages and capillary systems that constitute the dynamic urban waterscape of Udaipur. The city of Udaipur needs to incorporate the ethos of sustainable urbanization to meet its growing demands to be a real Smart City,²² including the concerns of environment in the larger agenda of growth.

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²¹<http://timesofindia.indiatimes.com/city/jaipur/HC-bans-immersion-of-idols-bathing-in-Udaipur-lakes/articleshow/46375499.cms> accessed on 20th February, 2016.

²²<http://www.thehindu.com/news/national/list-of-first-20-smart-cities-under-smart-cities-mission/article8162775.ece> accessed on 5th February, 2016.

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