

Documentation of Best Practices – Volume 1

2017-18

(Draft Final Report)



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Abbreviations

14 th FC	14th Finance Commission
74 th CAA	74 th Constitutional Amendment
ACF	Activated Carbon Filter
AE-BAS	Aadhaar Enabled Biometric Attendance System
AEPL	Amdavad Enviro Pvt. Ltd.
AFCS	Automatic Fare Collection Systems
AMRUT	Atal Mission for Rejuvenation and Urban Transformation
AMC	Ahmedabad Municipal Corporation
ARV	Annual Rateable Value
BBPS	Bharat Bill Payment System
BHEL	Bharat Heavy Electricals Limited
BMC	Bhopal Municipal Corporation
BOT	Build Operate Transfer
BPMC	Bombay Provincial Municipal Act
BRTS	Bus Rapid Transit System
BSE	Bombay Stock Exchange
BSUP	Basic Services to the Urban Poor
C&D	Construction & Demolition
CAGR	Compound Annual Growth Rate
CCE	Contractual Collection Efficiency
CCM	Coordination Committee Meeting
CCMS	Comprehensive Complaint Management System
CCRS	Comprehensive Complaint Redressal System
CCSI	Credit Card Standing Instructions
CFC	Central Finance Commission
CMC	Chennai Municipal Corporation
CMHO	Chief Medical and Health Officer
CNC	City of Nagpur Corporation Act
CPCB	Central Pollution Control Board
CPHEEO	Central Public Health and Environmental Engineering Organisation
CSR	Corporate Social Responsibility
CT/PT	Community Toilet/Public Toilet
CTE	Contractual Technical Efficiency
CWSSB	Chennai Metropolitan Water Supply and Sewerage Board
D2D	Door-to-Door
DoE	Department of Expenditure
DGPS	Differential Global Positioning System
E&S	Establishment and Salaries
EBPP	Electronic Bill Presentations and Payment services

EEC	Energy Efficiency Cell
EoI	Expression of Interest
EPC	Engineering, Procurement and Construction
ERDA	Electrical Research and Development Association
EV	Electric Vehicle
EWS	Economically Weaker Section
FAR	Floor Area Ratio
FY	Financial Year
GEDA	Gujarat Energy Development Agency
GIS	Geographic Information System
GoI	Government of India
GoM	Government of Maharashtra
GST	Goods and Services Tax
GW	Gigawatt
HRSI	High Resolution Satellite Images
ICCC	Integrated Command and Control Centre
ICT	Information and Communications Technology
IDA	Indore Development Authority
IEC	Information Education and Communication
IGR	Inspector General of Registration and Stamps Department
IMC	Indore Municipal Corporation
IMPS	Immediate Payment Service
ITCS	Intelligent Traffic Control Systems
ITMS	Intelligent Transit Management System
JNNURM	Jawaharlal Nehru National Urban Renewal Mission
KPI	Key Performance Indicators
MAS	Municipal Administration System
MIHAN	Multimodal International Hub Airport at Nagpur
MIS	Management Information System
MLD	Millions of Liters Per Day
MoF	Ministry of Finance
MoHUA	Ministry of Housing and Urban Affairs
MoUD	Ministry of Urban Development
MRF	Material Recovery Facility
MSW	Municipal Solid Waste
MT	Metric Tonnes
MW	Megawatt
NE States	North Eastern States
NIUA	National Institute of Urban Affairs
NMAM	National Municipal Accounting Training Manual
NMC	Nagpur Municipal Corporation
NRW	Non-Revenue Water
O&M	Operation & Maintenance

O&W	Orange Water Works Pvt. Ltd.
OCW	Orange City Water Pvt. Ltd.
ODF	Open Defecation Free
OFCs	Optical Fiber Communication
OSR	Own Source Revenue
OTA	Office of Technical Assistance
PBP	Parking Base Price
PHED	Public Health Engineering Department
PG	Performance Grant
PMC	Pune Municipal Corporation
PMU	Project Management Unit
PPP	Public-Private Partnership
PWSSB	Punjab Water Supply and Sewerage Board
QCI	Quality Council of India
RFP	Request For Proposal
RO	Reverse Osmosis
RTO	Regional Transport Office
RWA	Resident Welfare Association
SBM	Swachh Bharat Mission
SCADA	Supervisory Control And Data Acquisition
SCM	Smart Cities Mission
SEBI	Securities and Exchange Board of India
SEZ	Special Economic Zone
SFC	State Finance Commission
SI	Standing Instructions
SLB	Service Level Benchmarks
SMAC	Smart City Centre
SMC	Surat Municipal Corporation
SPV	Special Purpose Vehicles
SSSM	Samagra Samajik Suraksha Mission
STP	Sewage Treatment Plant
SUDA	State Urban Development Authority
SWM	Solid Waste Management
TCA	Tax Collection Agency
TDS	Total Dissolved Solids
TPD	Tonnes Per Day
TTP	Tertiary Treatment Plant
UC	Utilization Certificate
UD	Urban Development
UF	Ultra-Filtration
UD & UHD (Gujarat)	Urban Development & Urban Housing Development

UNESCO	United Nations Educational, Scientific and Cultural Organization
ULBs	Urban Local Bodies
UPI	Unified Payments Interface
VBD	Vector Borne Disease
WDS	Water Distribution Stations
WHO	World Health Organization
W2E	Waste to Energy
WTP	Water Treatment Plant

1. Introduction

1.1 Background

In the past two decades, India's transformation has been highlighted by its two striking characteristics: rapid urbanization and an accelerating rural-urban flow of migration, putting an unprecedented stress on infrastructure and civic services. As the structure of the economy shifts towards non-farm activities as its primary source of growth, the need for Urban Local Bodies (ULBs) has never been higher. A spill over of the widespread growth of non-farm jobs has been the reclassification of peripheral rural towns into larger urban agglomerations with their own governing ULBs. To realize the full economic potential of urbanization, it is imperative to invest in infrastructure and its associated service delivery such as electricity, water and waste management services, to ensure their sustained availability and their quality, in both established and emerging cities.

However, most ULBs struggle to meet the increasing demand for quality infrastructure and services due to limited resources, low fiscal autonomy and institutional inefficiencies. In light of the limitations of ULBs, it has been recognized that introducing innovative practices to improve coverage and efficiency of municipal services, as well as property tax assessment and collection could be a way forward to financial sustainability and autonomy for ULBs. Many cities have explored alternative methods to boost self-sourced revenues and spatial distribution of infrastructure services. In this study, we document the innovative practices that have worked best across the cities.

1.2 Objectives of Study

The present study highlights the performance of ULBs under the Fourteenth Finance Commission (14th FC) Performance Grant Scheme. The emphasis has been on capturing practices that have succeeded in increasing financial sustainability and helped achieve service level benchmarks. Towards this end, the objectives are:

- To analyse the process through which innovations were adopted and the impact of such reforms to the existing system.
- To provide the basis for a framework on ULB reforms for both own revenue generation and delivery of quality civic services.

1.3 Outline of the Report

This report is divided into two main sections. The first section explores the income and expenditure structure of the top five best-performing cities. The second section is divided into eight chapters, six of them are cities and the seventh is the state of Jharkhand. This section of the report details with the best practices regarding coverage of water supply, solid waste management and other initiatives unique to each city to enhance civic infrastructure and quality of municipal service delivery. The final chapter provides an overview of the best practices and existing issues with its assessment.

SECTION I – INCOME AND EXPENDITURE STRUCTURE OF TOP FIVE-LARGE CITIES IN SELECTED STATES

The financial well-being of ULBs can be measured in terms of the aggregated and disaggregated fiscal indicators. However, the fiscal indicators at the aggregate level distort the ability to understand why certain ULBs are better off and the factors that drive the overall revenue base of the ULBs. The disaggregated indicators, own revenue receipts of ULBs, in particular, serve as a principle criterion for understanding the fiscal structure, level of fiscal autonomy and sectors' capacity utilization of ULBs. Fiscal autonomy increases the efficacy of execution and increased decentralisation allows the ULB to levy additional taxes with appropriate fiscal instruments, helping reduce leakages in revenue receipts and increase the tax base while simultaneously increasing revenue capacity. These structural changes within taxation of ULBs will augment internal sources of revenue with a low level of dependency on external sources of revenue such as intergovernmental transfers from upper-tier governments, in terms of loans and grants. On the contrary, a poor fiscal base for sourcing tax and non-tax revenue would drastically affect the size of own revenue and instead of aiding sustainable revenue growth, it would become a hindrance, thus, shrinking per capita own revenue further. In this context, taking into consideration these relevant issues, we studied the fiscal performance of ULBs in sample cities from selected States for the year 2015-16 (refer to box).

Additionally, public spending generates both positive and negative spill over effects on growth and standards of living. Basic services delivery at normative levels and access to basic amenities viz., water, sanitation, roads, street lights, health, education, transport and communication, solid waste management, recreation, etc. stimulate production-related activities and total factor productivity. Contrarily, poor spending on basic amenities widens the disparity in access to basic services, potentially hampering growth. Increasing expenditure to fund investment in strengthening service delivery and increased capital works is strongly correlated with enhancing economic activity and human capital. Spill-over effects include decline in mortality rates, morbidity, poverty ratio, unemployment, etc. Therefore, this section makes an attempt to study the income-expenditure dynamic and estimate the deficit between them.

The data for the sections below pertains to 2015-16 in selected States (23), and these States have been selected based on a constructive methodology that was developed for the disbursement of the 14th Finance Commission Performance Grant (PG) to duly constituted ULBs. The data set comprises of all ULBs that were found to be eligible for the Performance Grant with 40 marks as qualifying score. Among 23 States, 2,460 ULBs claimed the grant, out of which 1,968 ULBs were found eligible. Hence, the data set pertains to financial information and service level indicators for 1,968 ULBs (the list of eligible States and ULBs is attached in Annexure 2). This information was estimated at the National-level using per capita values and the total national municipal population to analyse the income and expenditure scenario at the National-level. Further, as per the State policy of Maharashtra, the bigger municipal corporations are not entitled to claim Performance Grant during the 14th FC in order to facilitate the smaller and weaker municipalities to receive an additional share of the grant to further improve their financial position. As per the Performance Grant scheme document submitted by the State in 2016, the Performance Grant scheme is only applicable to all 'D' class Municipal Corporations, Municipal Councils and Nagar Panchayats in the State of Maharashtra, while all 'A', 'B' and 'C' class Municipal Corporations have been exempt from claiming the Performance Grant. Hence, our data set does not contain financial or service level indicators for certain large-sized municipal corporations such as Mumbai, Pune, Nagpur, Thane, Pimpri-Chinchwad, Nashik, Kalyan-Dombivli, Vasai-Virar, Aurangabad and Navi Mumbai. It includes information for capital cities and other large-sized Municipal Corporations for a majority of eligible States. In addition to the above limitations, financial data for the State of Kerala is not included in the report due to lack of a timely response from the State. Although the State submitted claims from its ULBs for Performance Grant 2017-18, they did not get cleared till the time of the drafting of this report (February 2019). Finally, financial data for the year 2016-17 included in this report consists of unaudited figures for many ULBs; hence, it may not depict the actual picture. In the sections where we have delved into income and expenditure scenario of municipalities in detail – sections III and IV – we have focused our discussion on data provided for the years 2014-15 and 2015-16, and the growth rate between them to remain as close to audited figures as possible.

Own Revenue Receipts & Revenue Expenditure in Large Cities

Table-1 illustrates the trend of per capita own source revenue and its relative share as a percentage of revenue expenditure in large ULBs for the year of 2015-16. As mentioned earlier, per capita own source revenue growth is derived from the performance of tax and non-tax revenue receipts and ideally, it should increase at a faster rate than the urban population of the State. The tax revenue receipts of ULBs are comprised of the property tax, professional tax, entertainment tax, advertisement tax, Octroi and entry taxes & other taxes such as motor vehicle tax and stamp duty, etc. Non-tax revenue is comprised of fees & fines, user charges and other non-tax revenue receipts. On the other hand, the composition of ULBs expenditure consists of both revenue and capital expenditure. Revenue expenditure is a proxy for services consisting of non-discretionary spending such as administrative expenses, establishment and salaries and discretionary expenditure of Operation and Maintenance (O&M), and other revenue expenditure. Comparatively, capital expenditure of ULBs comprises of all developmental work, which generates economic activities in the long run, over current or daily expenditure.

Table 1: Top Five Large Cities in Per Capita Own Revenue and Ratio of Own Revenue as a percentage of Revenue Expenditure, 2015-16

S.N o.	State	Top-5 Cities	Name of the City	Civic Status	2011 Census Population	Per Capita Own Revenue Receipts	Own Income as a % of Rev Expenditure (15-16)
1	Andhra Pradesh (100 ULBs)	1	Vijayawada	M Corp	10,34,358	2,039	93.55
		2	Kakinada	M Corp	3,12,538	1,365	150.20
		3	Rajamahendravaram	M Corp	3,41,831	1,351	37.89
		4	Chittoor	M Corp	1,53,756	1,342	147.40
		5	Bhimavaram	M Council	1,42,184	1,246	177.39
			State Average	_____	92,95,493	934	85.45
2	Assam (12 ULBs)	1	Barpeta Road	M Corp	35,571	494	97.25
		2	Hojai	M Council	36,638	440	85.54
		3	Bongaigaon	M Council	67,322	346	71.14
		4	Bihpuria	NP	12,016	220	38.48
		5	Palashbari	M Board	4,925	210	22.18
			State Average	_____	3,14,569	251	69.79
3	Bihar (11 ULBs)	1	Siwan	M Council	1,35,066	380	105.84
		2	Danapur	M Council	1,82,429	229	47.55
		3	Bihar Sharif	M Corp	2,97,268	216	42.84
		4	Patna	M Corp	16,84,222	211	26.64
		5	Purnea	M Corp	2,82,248	191	74.78
			State Average	_____	29,46,663	220	36.03
4	Chhattisgarh (108 ULBs)	1	Korba	M Corp	3,63,390	2,554.06	141.66
		2	Raigarh	M Corp	1,37,126	1,233	73.18
		3	Bilaspur	M Corp	3,31,030	1,099	43.78
		4	Bhilai	M Corp	6,25,700	1,098	68.83
		5	Durg	M Corp	2,68,806	881	68.86
			State Average	_____	46,92,853	933.66	56.50
5	Goa (8 ULBs)	1	Mapusa	M Council	39,989	1,940	34.81
		2	Ponda	M Council	22,664	1,583	63.97
		3	Bicholim	M Council	16,986	1,413	68.40
		4	Canacona	M Council	12,434	1,354	80.25
		5	Valpoi	M Council	8,532	1,094	81.30
			State Average	_____	2,16,237	1,226	51.84
6	Gujarat (116 ULBs)	1	Ahmedabad	M Corp	55,77,940	2,788	77.02
		2	Vadodara	M Corp	16,70,806	2,475	60.98
		3	Surat	M Corp	44,67,797	1,955	66.74
		4	Bhavnagar	M Corp	5,93,368	1,678	48.73
		5	Jamnagar	M Corp	4,79,920	1,651	55.48
			State Average	_____	2,05,74,307	1,764	66.33
7	Haryana (40 ULBs)	1	Gurugram	M Corp	15,14,432	2,401	130.11
		2	Karnal	M Corp	2,86,827	1,981	140.63
		3	Kaithal	M Council	1,44,915	926	109.19

		4	Palwal	M Council	1,28,730	921	92.96
		5	Rohtak	M Corp	3,74,292	860	77.75
		<i>State Average</i>		_____	66,24,723	1,063	72.99
8	Jharkhand (32 ULBs)	1	Chas	M Corp	1,41,640	337	171.98
		2	Giridih	M Council	1,14,533	276	68.07
		3	Ranchi	M Corp	10,73,427	271	57.34
		4	Deoghar	M Corp	2,03,123	270	68.03
		5	Hazaribagh	M Corp	1,42,489	202	58.23
		<i>State Average</i>		_____	26,28,663	221	63.54
9	Karnataka (204 ULBs)	1	Bruhath Bangalore	M Corp	84,43,675	2,342	168.54
		2	Mangaluru	M Corp	4,88,968	2,043	81.54
		3	Mysuru	Corporation	8,93,062	1,843	63.75
		4	Udupi	M Council	1,25,306	1,402	78.38
		5	Shivamogga	M Corp	3,22,650	976	59.98
		<i>State Average</i>		_____	2,16,52,599	1,338	93.67
10	Madhya Pradesh (195 ULBs)	1	Indore	M Corp	19,64,086	1,805	74.29
		2	Singrauli	M Corp	2,20,257	1,354	89.66
		3	Bhopal	M Corp	17,98,218	1,215	55.65
		4	Jabalpur	M Corp	10,55,525	1,169	51.92
		5	Chhindwara	M Corp	1,38,291	1,064	45.80
		<i>State Average</i>		_____	1,49,83,070	758	42.08
11	Maharashtra (94 ULBs)	1	Kulgaon Badlapur		1,74,226	2,455	110.76
		2	Baramati	M Council	1,08,152	2,392	79.54
		3	Wardha	M Council	1,06,444	2,320	78.18
		4	Barshi	M Council	1,18,722	1,949	77.14
		5	Ambarnath	M Council	2,53,475	1,863	81.91
		<i>State Average</i>		_____	41,35,336	1,730	48.62
12	Manipur (12 ULBs)	1	Bishnupur	M Council	12,167	169	32.38
		2	Nambol	M Council	22,512	89	27.74
		3	Wangjing Lamding	M Council	8,055	59	15.91
		4	Mayang Imphal	M Council	24,239	43	14.07
		5	Thoubal	M Council	45,947	42	10.09
		<i>State Average</i>		_____	1,78,883	45	13.35
13	Mizoram (1 ULBs)	1	Aizawl	M Corp	2,93,416	53	13.42
		<i>State Average</i>		_____	-	53	13.42
14	Odisha (9 ULBs)	1	Bhubaneswar	M Corp	8,40,834	615	40.43
		2	Joda	M Council	46,631	222	27.95
		3	Barbil	M Council	66,540	146	16.92
		4	Dhenkanal	M Council	67,414	116	7.28
		5	Jatni	M Council	55,925	98	12.96
		<i>State Average</i>		_____	12,09,013	490	35.78
15	Punjab (96 ULBs)	1	S.A.S Nagar	M Corp	1,46,213	1,970	52.79
		2	Bathinda	M Corp	2,85,788	897	27.77

		3	Patiala	M Corp	4,06,192	822	48.45
		4	Khanna	M Council	1,28,137	462	27.31
		5	Ferozepur	M Council	1,10,313	256	32.73
		<i>State Average</i>		—	33,61,329	584	34.77
16	Rajasthan (67 ULBs)	1	Pali	M Council	2,30,075	594	38.61
		2	Udaipur	M Corp	4,51,100	510	33.27
		3	Jodhpur	M Corp	10,33,756	479	37.79
		4	Jaipur	M Corp	30,46,163	468	34.74
		5	Ajmer	M Corp	5,42,321	415	35.74
		<i>State Average</i>		—	83,28,233	485	35.66
17	Sikkim (4 ULBs)	1	Singtam	NP	5,868	455	87.90
		2	Mangan	NP	4,644	354	63.97
		3	Nayabazar Jorethang	M Council	9,009	333	66.09
		4	Gangtok	M Corp	1,00,286	254	79.05
		<i>State Average</i>		—	1,19,807	274	77.38
18	Tamil Nadu (588 ULBs)	1	Coimbatore	M Corp	10,50,721	2,845	77.64
		2	Erode	M Council	1,57,101	2,278	55.58
		3	Tambaram	M Council	1,74,787	1,649	105.25
		4	Vellore	M Corp	1,85,803	1,645	34.45
		5	Hosur	M Council	1,16,821	1,624	64.81
		<i>State Average</i>		—	1,59,78,280	878	45.81
19	Telangana (61 ULBs)	1	Hyderabad	Corp	67,31,790	2,517	89.31
		2	Khammam	M Corp	1,84,210	2,348	157.20
		3	Mahabubnagar	M Council	1,57,733	1,882	143.98
		4	Warangal	M Corp	6,15,998	1,527	149.09
		5	Karimnagar	M Corp	2,61,185	1,122	120.57
		<i>State Average</i>		—	1,15,57,354	1,952	93.91
20	Tripura (18 ULBs)	1	Udaipur	M Council	11,921	824	15.80
		2	Sonamura	NP	11,285	737	60.02
		3	Belonia	M Council	19,996	460	41.28
		4	Kumarghat	M Council	13,054	457	53.41
		5	Sabroom	NP	7,142	292	10.87
		<i>State Average</i>		—	3,17,561	193	14.87
21	Uttar Pradesh (87 ULBs)	1	Lucknow	M Corp	28,17,105	887	48.73
		2	Firozabad	M Corp	1,33,305	831	9.97
		3	Kanpur	M Corp	27,65,348	480	26.20
		4	Allahabad	Nagar Nigam	11,12,544	453	68.00
		5	Meerut	M Corp	13,05,429	438	46.96
		<i>State Average</i>		—	1,45,48,562	417	30.76
22	Uttarakhand	1	Nainital	M Council	41,377	1,429	36.50

	(22 ULBs)	2	Munikireti-Dhalwala	NPP	28,636	854	83.47
		3	Kashipur	NN	1,21,623	234	24.72
		4	Haldwani-Kathgodam	NN	1,56,078	172	17.60
		5	Roorkee	NN	1,18,200	166	11.32
		<i>State Average</i>		—	6,95,213	315	23.91
23	West Bengal (90 ULBs)	1	Kolkata	M Corp	44,96,694	2,600	85.20
		2	South Dum Dum	M Council	4,03,316	2,519	160.19
		3	Haldia	Municipality	2,00,827	1,549	94.94
		4	Bidhannagar	M Corp	2,15,514	1,401	44.91
		5	Serampore	M Council	1,81,842	876	78.22
		<i>State Average</i>		—	1,62,55,099	1,115	65.17
	<i>National Average</i> (1,968 ULBs)				16,09,07,263	1,075	61.61

Note: In parenthesis is the number of ULBs that qualified for PG 2017-18. Out of these ULBs, top five cities are chosen based on their per capita own revenue receipts and population size of the city. This will help to identify the fiscal health of the top five cities within the State and with respect to other top five cities in each State from 23 States in the country.

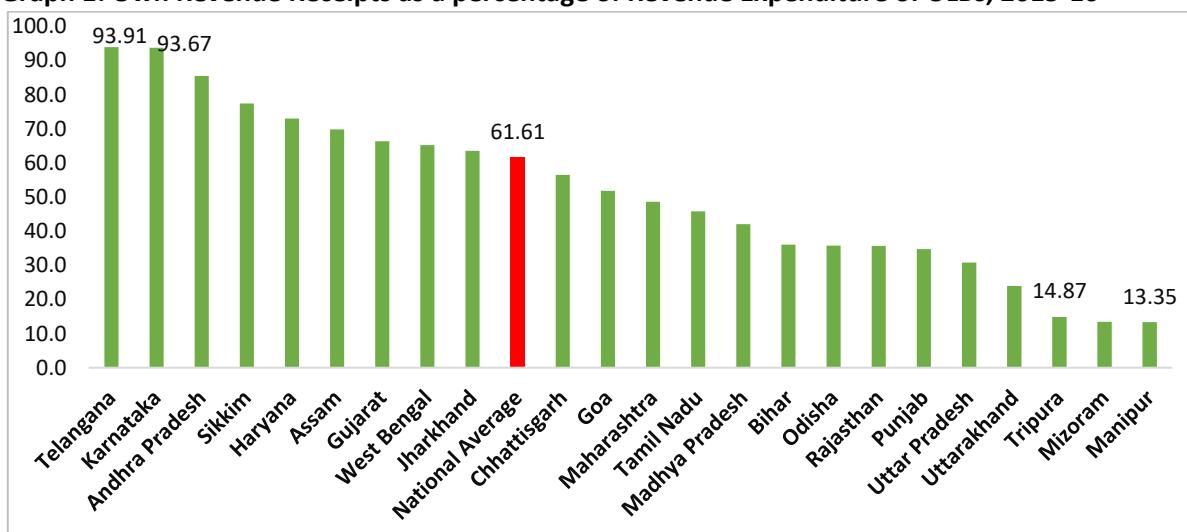
The proportion of revenue expenditure, in particular non-discretionary spending, is higher than discretionary spending, which would result in curtailed spending on O&M and decrease in service delivery with a low level of capital accumulation. On the other hand, if the relative share of own revenue receipts was low in relation to their revenue expenditure, it would lead to an increase in fiscal deficit due to higher dependency on intergovernmental transfers and loans. As a result, own revenue and its relative share in revenue expenditure is an important criterion to understand fiscal capacity with respect to spending on civic services. In this backdrop, using the data for 2015-16, this study attempts to assess the fiscal performance of ULBs and self-reliance in revenue and expenditure parameters.

Own Revenue as a Percentage of Revenue Expenditure and Per Capita Own Revenue

For the year 2015-16, the national average for own revenue as a percentage of revenue expenditure stood at 61.61% (Table 2). On comparing the national average estimate with the 23 States in the sample, it was found that nine States, i.e. Telangana, Karnataka, Andhra Pradesh, Sikkim, Haryana, Assam, Gujarat, West Bengal and Jharkhand, stood higher than the national average with percentages of 93.91%, 93.67%, 85.45%, 77.38%, 72.99%, 69.79%, 66.33%, 65.17% and 63.54% respectively. States like Chhattisgarh, Goa, Maharashtra, Tamil Nadu and Madhya Pradesh were closer to the national average with 56.50%, 51.84%, 48.62%, 45.81% and 42.08% respectively. The North East States of Manipur, Mizoram and Tripura reported significantly lower ratios (i.e. 13.35%, 13.42%, and 14.87% respectively) than the national average, possibly due to their low tax base and topographical challenges. The States of Uttarakhand, Uttar Pradesh, Punjab, Rajasthan, Odisha and Bihar reported revenue-revenue expenditure ratios of 23.91%, 30.76%, 34.77%, 35.66%, 35.78% and 36.03% respectively. States that reported below average own revenue-revenue expenditure ratios, also demonstrated low levels of fiscal autonomy.

In FY 2015-16, based on data collected from 1,968 ULBs across 23 States, national average estimate of per capita own revenue stood at Rs. 1,074.80. On this indicator, the six States of Telangana, Gujarat, Maharashtra, Karnataka, Goa and West Bengal at Rs. 1,951.98, Rs. 1,764.31, Rs. 1,730.31, Rs. 1,337.75, Rs. 1,226.02 and Rs. 1,115.18 per capita, were significantly higher than the national average. Meanwhile, Haryana, Chhattisgarh, Andhra Pradesh, Tamil Nadu and Madhya Pradesh were closer to national estimates with per capita own revenue figures of Rs. 1,062.78, Rs. 933.66, Rs. 933.57, Rs. 877.76, and Rs. 757.88 respectively. The States of Manipur, Mizoram, Tripura, Assam, Sikkim, Bihar, Jharkhand, Uttarakhand, Uttar Pradesh, Rajasthan, Odisha and Punjab reported figures of Rs. 45.24, Rs. 52.85, Rs. 193.06, Rs. 251.13, Rs. 273.76, Rs. 220.46, Rs. 221.24, Rs. 315.15, Rs. 416.84, Rs. 485.23, Rs. 489.95 and Rs. 583.90 respectively. There were significantly lower than the national estimate, possibly due to prevailing challenges of topography, weak institutions and limited priority given to strengthening civic services.

Graph 1: Own Revenue Receipts as a percentage of Revenue Expenditure of ULBs, 2015-16



Graph 2: Per Capita Own Revenue Receipts of ULBs, 2015-16 (in Rupees)

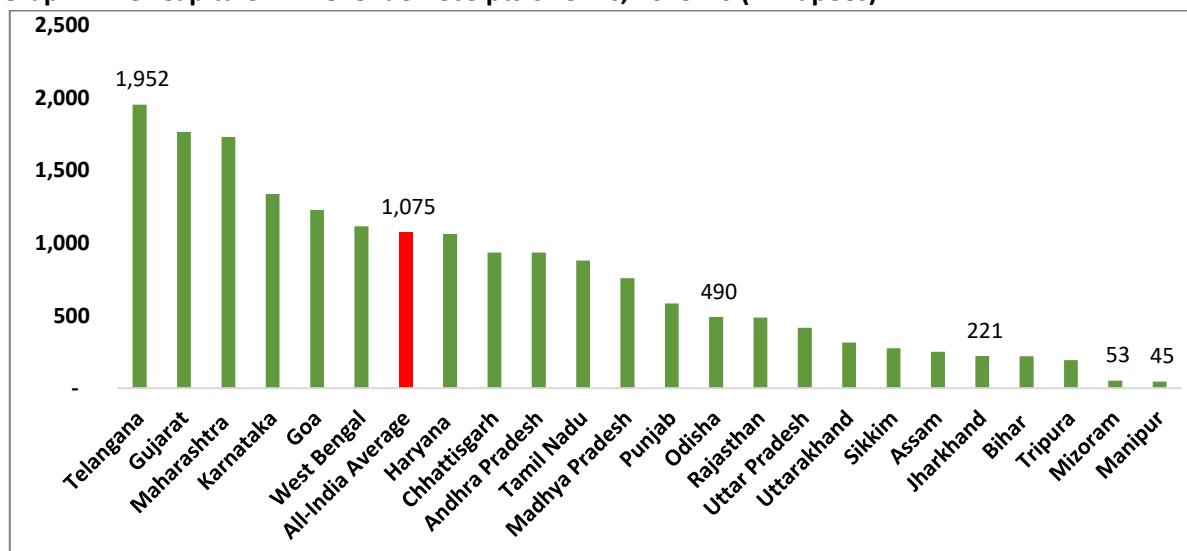


Table 2: Own Revenue as a percentage of Revenue Expenditure & Per Capita Own Revenue, 2015-16

S. No.	State	Own Revenue as a % of Rev Expenditure*	S. No.	State	2011 Census Population	Per Capita Own Revenue Receipts*
1	Telangana	93.91	1	Telangana	1,15,57,354	1,952.0
2	Karnataka	93.67	2	Gujarat	2,05,74,307	1,764.3
3	Andhra Pradesh	85.45	3	Maharashtra	41,35,336	1,730.3
4	Sikkim	77.38	4	Karnataka	2,16,52,599	1,337.8
5	Haryana	72.99	5	Goa	2,16,237	1,226.0
6	Assam	69.79	6	West Bengal	1,62,55,099	1,115.2
7	Gujarat	66.33		National Average	16,09,07,263	1,074.8
8	West Bengal	65.17	7	Haryana	66,24,723	1,062.8
9	Jharkhand	63.54	8	Chhattisgarh	46,92,853	933.7
	National Average	61.61	9	Andhra Pradesh	92,95,493	933.6
10	Chhattisgarh	56.50	10	Tamil Nadu	1,59,78,280	877.8
11	Goa	51.84	11	Madhya Pradesh	1,49,83,070	757.9
12	Maharashtra	48.62	12	Punjab	33,61,329	583.9
13	Tamil Nadu	45.81	13	Odisha	12,09,013	490.0
14	Madhya Pradesh	42.08	14	Rajasthan	83,28,233	485.2
15	Bihar	36.03	15	Uttar Pradesh	1,45,48,562	416.8
16	Odisha	35.78	16	Uttarakhand	6,95,213	315.2
17	Rajasthan	35.66	17	Sikkim	1,19,807	273.8
18	Punjab	34.77	18	Assam	3,14,569	251.1
19	Uttar Pradesh	30.76	19	Jharkhand	26,28,663	221.2
20	Uttarakhand	23.91	20	Bihar	29,46,663	220.5
21	Tripura	14.87	21	Tripura	3,17,561	193.1
22	Mizoram	13.42	22	Mizoram	2,93,416	52.9
23	Manipur	13.35	23	Manipur	1,78,883	45.2

Note: States are arranged in descending order in own revenue as a percentage of revenue expenditure & per capita own revenue respectively.

Table 2 highlights that Telangana, Gujarat, Karnataka and West Bengal are among the top States both in terms of per capita own revenue and own revenue as a percentage of revenue expenditure. Maharashtra and Goa have shown a low own revenue ratio with higher than average per capita own revenue receipts, i.e. 48.62% & Rs. 1,730.31 in Maharashtra and 51.84% & Rs. 1,226.02 in Goa respectively. Simultaneously, nine States have shown a low ratio in own revenue as a percentage of revenue expenditure with lower than average per capita own revenue, such as the North East States of Manipur, Mizoram, Tripura and the States of Bihar, Uttarakhand, Uttar Pradesh, Rajasthan, Odisha and Punjab. The States of Chhattisgarh, Tamil Nadu and Madhya Pradesh are closer to the national average in terms of own revenue as a percentage of revenue expenditure and per capita own revenue as well. However, the States of Sikkim, Assam and Jharkhand, which have shown a high ratio with low per capita own revenue. Both Andhra Pradesh and Haryana have higher ratios than the national average with 85.45% and 72.99% respectively, while per capita own revenue receipts are closer to the national average at Rs. 933.57 and Rs. 1,062.78 respectively, which suggests that there is potential for exploring existing or alternative sources of revenue generation to expand the total revenue base.

Graph 3: Per Capita Own Revenue and Own Revenue as a % of Revenue Expenditure

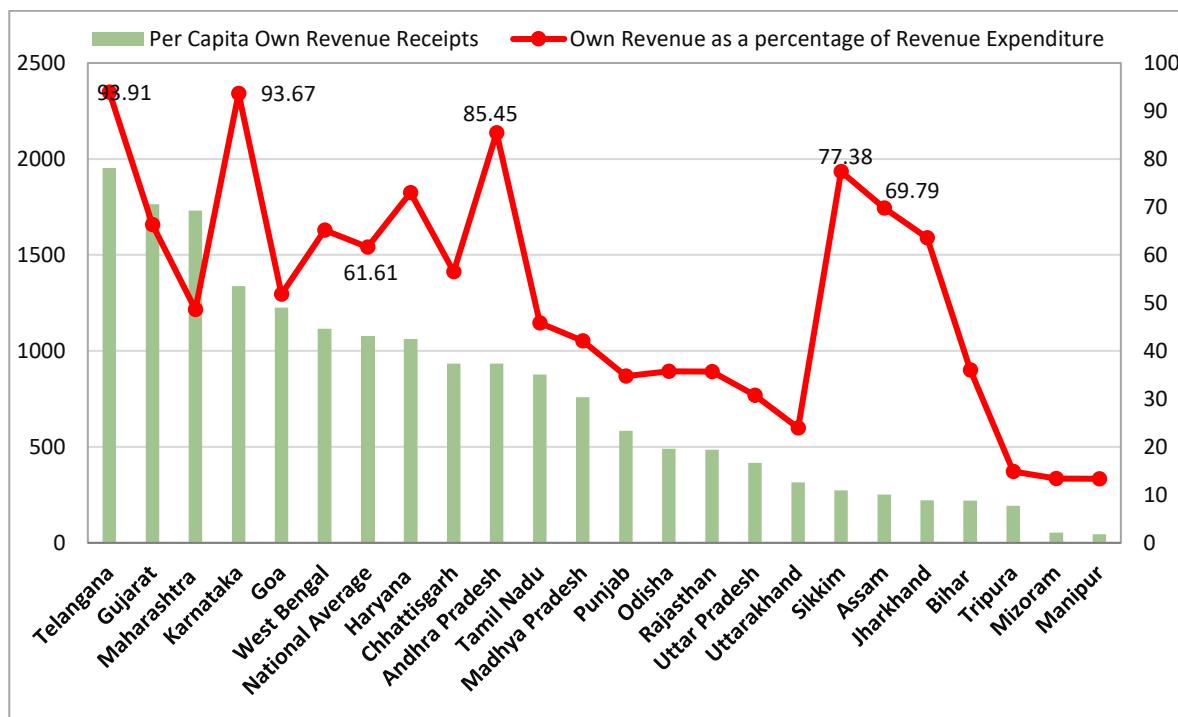


Table 3: Ratio is High and Per Capita Own Revenue is also High, 2015-16

S. No	State	Own Revenue as % of Revenue Expenditure	Per Capita Own Revenue, (in Rupees)
	National Average	61.61	1,074.8
1	Telangana	93.91	1,951.98
2	Gujarat	66.33	1,764.31
3	Karnataka	93.67	1,337.80
4	West Bengal	65.17	1,115.20
5	Maharashtra	48.62	1,730.31
6	Goa	51.84	1,226.02
7	Haryana	73.52	1,062.78

Table 4: Ratio and Per Capita Own Revenue are close to National average, 2015-16

S. No	State	Own Revenue as % of Revenue Expenditure	Per Capita Own Revenue (in Rupees)
	National Average	61.61	1,074.8
1	Andhra Pradesh	85.45	933.57
2	Chhattisgarh	56.50	933.70
3	Tamil Nadu	45.81	877.80
4	Madhya Pradesh	42.08	757.90

Table 5: Ratio is Low and Per Capita Own Revenue is also Low, 2015-16

S. No	State	Own Revenue as % of Revenue Expenditure	Per Capita Own Revenue (in Rupees)
	National Average	61.61	1,074.8
1	Manipur	13.35	45.24
2	Mizoram	13.42	52.85
3	Tripura	14.87	193.1
4	Bihar	36.03	220.46
5	Uttarakhand	23.91	315.15
6	Uttar Pradesh	30.76	416.84
7	Rajasthan	35.66	489.95
8	Odisha	35.78	485.23
9	Punjab	34.77	583.90

Table 6: High Ratio with a low Per Capita Own Revenue, 2015-16

S. No	State	Own Revenue as % of Revenue Expenditure	Per Capita Own Revenue (in Rupees)
	National Average	61.61	1,074.8
1	Sikkim	77.38	273.76
2	Assam	69.79	251.13
3	Jharkhand	63.54	221.24

For the year 2015-16, it was found that 56 ULBs out of 1,968 ULBs, had a much higher ratio of own revenue as a percentage of revenue expenditure than the national average of 61.61% (Table in 3 in Annexure 1 and Graph 4). In particular, Bhimavaram, Kakinada and Chittoor in Andhra Pradesh, Bruhath Bangalore from Karnataka, Khammam, Warangal, Mahabubnagar and Karimnagar from Telangana, Karnal, Gurugram and Kaithal in Haryana, South Dum Dum and Haldia from West Bengal, Chas in Jharkhand, Korba in Chhattisgarh, Kulgaon Badlapur in Maharashtra, Tambaram in Tamil Nadu and Siwan from Bihar reported ratios over 100.00% of own revenue as a percentage of revenue expenditure.

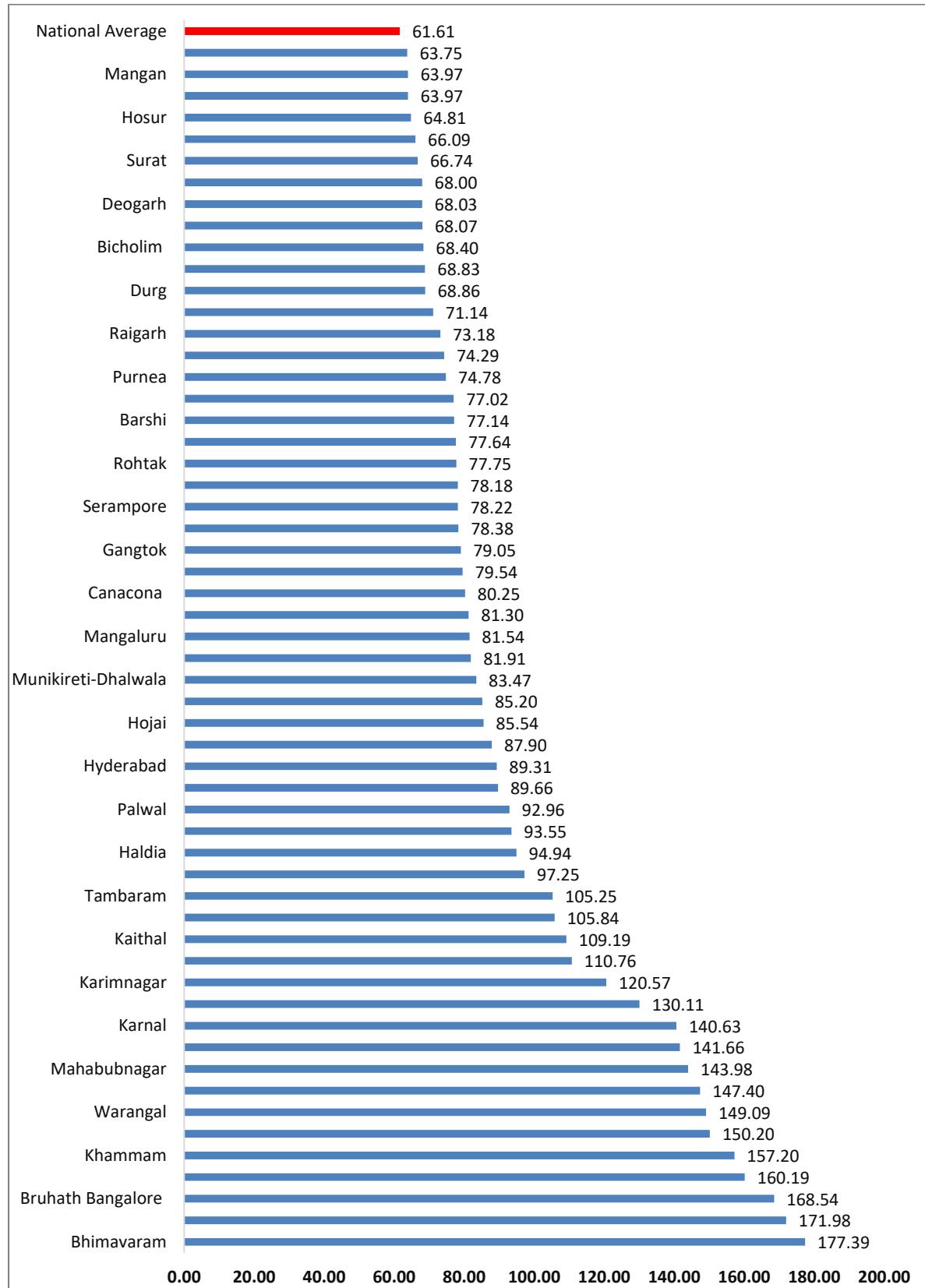
This clearly emphasised that the revenue spending of these ULBs, viz. establishment & salaries, operation & maintenance and interest repayments for loans or borrowings was significantly lower than the size of their own revenue receipts from tax and non-tax revenue receipts. Other well-performing ULBs include Barpeta Road Assam, Haldia from West Bengal, Vijayawada from Andhra Pradesh, Palwal from Haryana and Singrauli from Madhya Pradesh which registered above 90.00% in terms of own revenue as a percentage of revenue expenditure. In addition, Hyderabad from Telangana, Singtam in Sikkim, Hojai in Assam, Kolkata from West Bengal, Munikireti-Dhalwala in Uttarakhand, Ambarnath and Baramati from Maharashtra, Mangaluru in Karnataka, Valpoi and Canacona from Goa registered above 80.00% in the relative share of own revenue as a part of revenue expenditure.

Cities like Gangtok from Sikkim, Udupi from Karnataka, Serampore in West Bengal, Wardha and Barshi in Maharashtra, Rohtak in Haryana, Coimbatore from Tamil Nadu, Ahmedabad from Gujarat, Purnea from Bihar, Indore from Madhya Pradesh, Raigarh from Chhattisgarh and Bongaigaon from Assam are above 70.00% respectively in terms of own revenue as a percentage of revenue expenditure. Additionally, Durg and Bhilai in Chhattisgarh, Bicholim and Ponda from Goa, Giridih and Deoghar from Jharkhand, Allahabad in Uttar Pradesh, Surat in Gujarat, Nayabazar Jorethang and Mangan in Sikkim, Hosur in Tamil Nadu, and Mysuru in Karnataka are above 60.00% respectively in terms of own revenue as a percentage of revenue expenditure. Conclusively, it is reasonable to assume that these ULBs have a higher degree of fiscal autonomy as they all feature above the national average in own revenue as a percentage of revenue expenditure, viz. 61.61% (Table 1).

In FY 2015-16, 50 ULBs had higher per capita own revenues than the national estimate of Rs. 1,074.80 (Table 4 in Annexure 2 and Graph 5). Ahmedabad and Vadodara from Gujarat, Bruhat Bangalore and Mangaluru in Karnataka, Baramati, Kulgaon Badlapur and Wardha from Maharashtra, Coimbatore and Erode from Tamil Nadu, Hyderabad and Khammam in Telangana, Kolkata and South Dum Dum from West Bengal, Vijayawada in Andhra Pradesh, Korba in Chhattisgarh and Gurugram in Haryana were above Rs. 2,000.00 respectively in terms of per capita own revenue receipts. Karnal in Haryana, S.A.S. Nagar in Punjab, Surat in Gujarat, and Barshi and Mapusa from Maharashtra and Goa respectively, were close behind with per capita own revenue estimates of Rs. 1,981, Rs. 1,970, Rs. 1,955, Rs. 1,949 and Rs. 1,940 respectively.

Graph 4: Cities Above National Average in Own Revenue as a percentage of Revenue Expenditure,

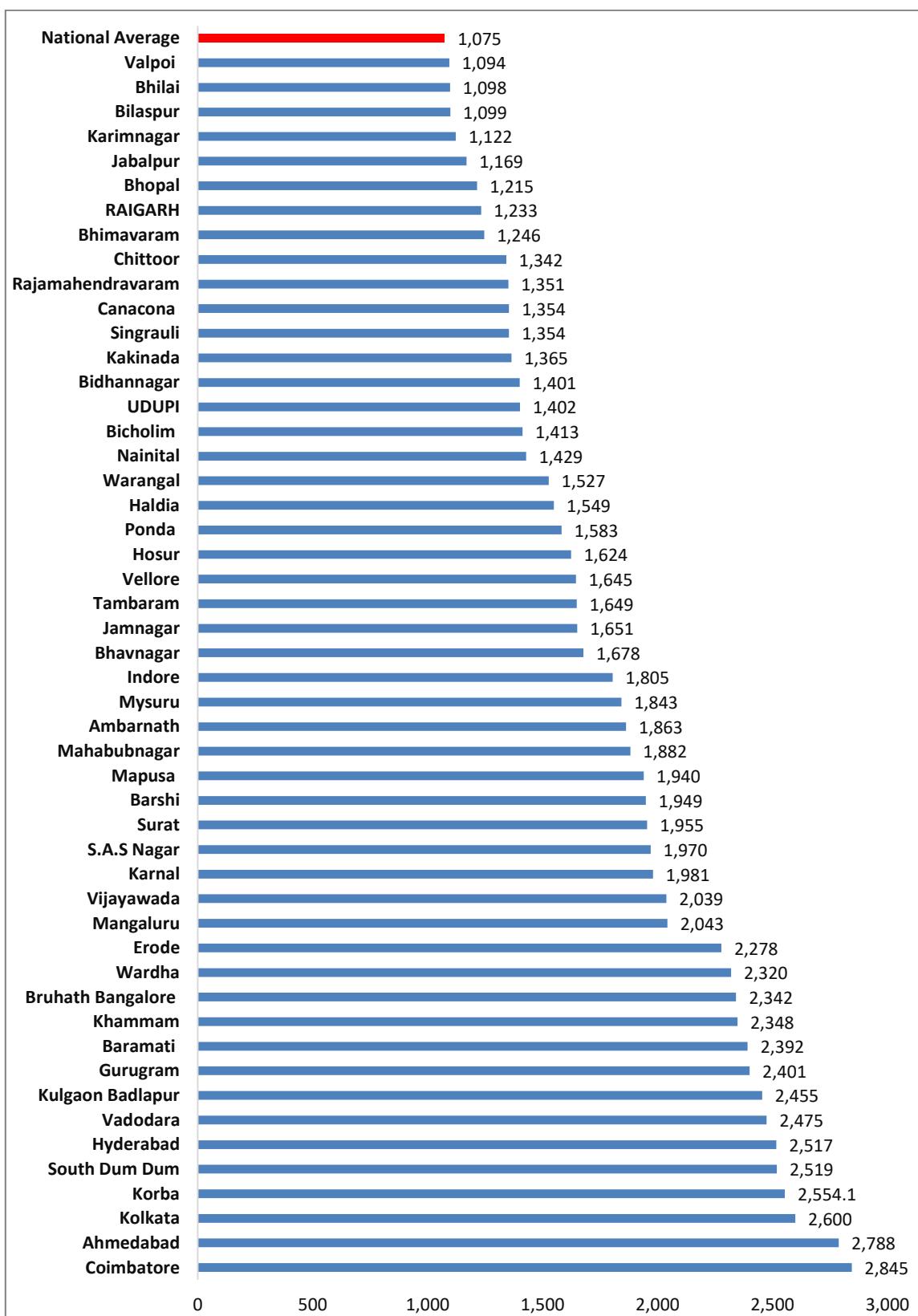
2015-16



Note: Cities are arranged in increased order in own revenue as a percentage of revenue expenditure.

Source: Annexure 1

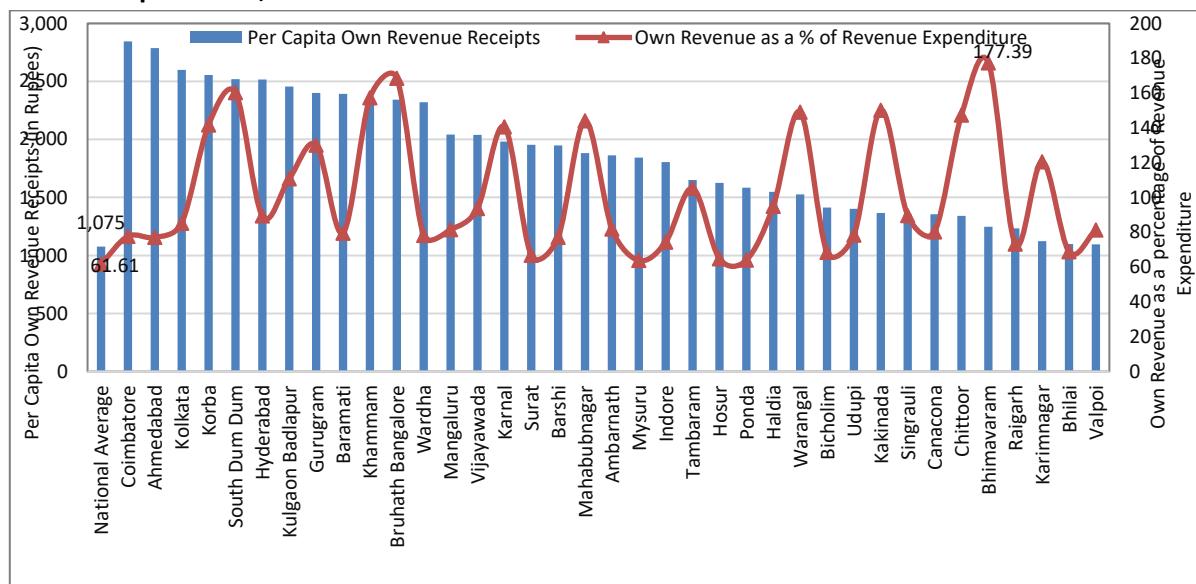
Graph 5 : Cities Above National Average in Per Capita Own Revenue Receipts, 2015-16



Note: Cities are arranged in increased order in Per Capita Own Revenue Receipts, 2015-16. Source: Annexure 2

Hosur, Tambaram and Vellore in Tamil Nadu, Bhavnagar and Jamnagar in Gujarat, Mahabubnagar and Warangal in Telangana, Ponda in Goa, Mysuru in Karnataka, Indore in Madhya Pradesh, Ambarnath in Maharashtra and Haldia in West Bengal registered per capita own revenue receipts between Rs. 1,500 and Rs. 1,890. Cities such as Bhimavaram, Chittoor, Kakinada and Rajamahendravaram from Andhra Pradesh, Bhilai, Bilaspur and Raigarh from Chhattisgarh, Bicholim, Canacona and Valpoi from Goa, Bhopal, Jabalpur and Singrauli in Madhya Pradesh, Karimnagar in Telangana, Nainital in Uttarakhand, Bidhannagar in West Bengal and Udupi in Karnataka had own revenue receipts per capita in the range of Rs. 1,250 and Rs. 1,401. The higher than average per capita own revenue of the ULBs listed above is an important determinant of their fiscal health as a municipal body.

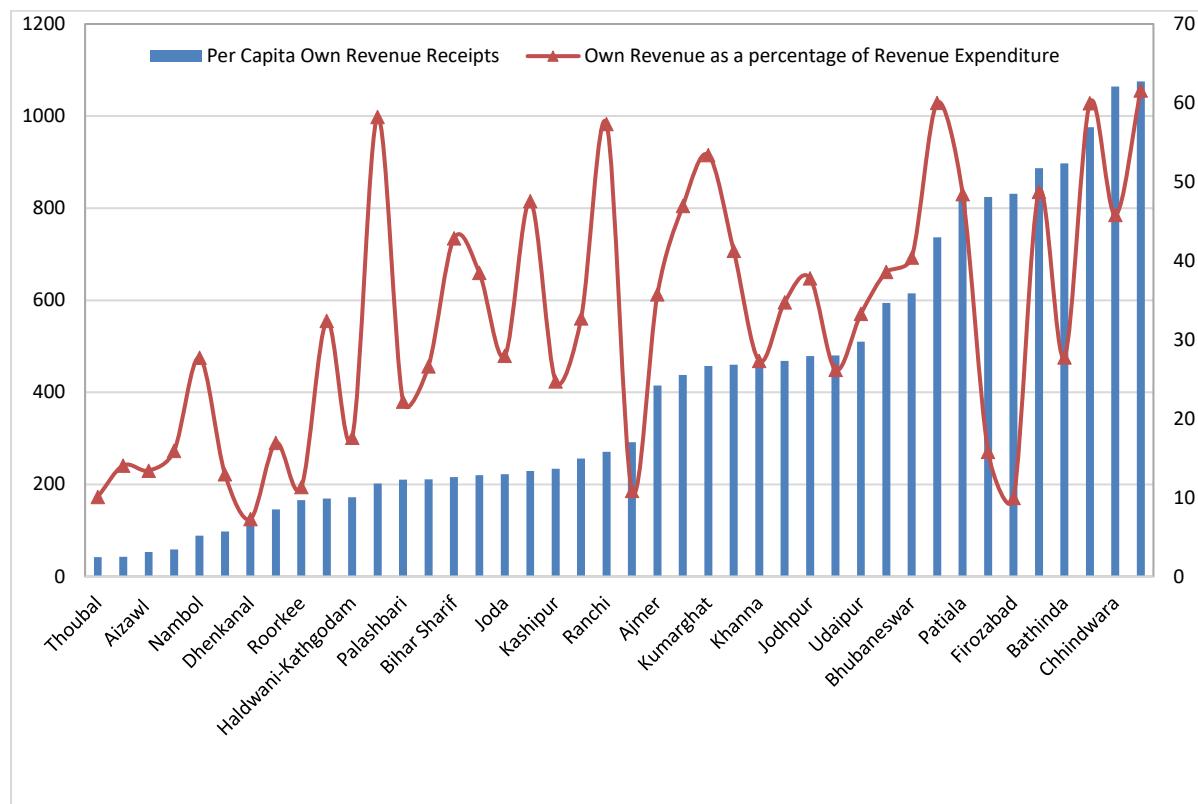
Graph 6: Cities with high per capita own revenue and high ratio in own revenue as a percentage of revenue expenditure, 2015-16



Source: Table 5

Table 5 highlights that out of 1,968 ULBs from 23 States, only 37 ULBs simultaneously have high per capita own revenue and high own revenue as a percentage of revenue expenditure (Table 5 and Graph 6). The cities of Ambarnath, Baramati, Barshi, Kulgaon Badlapur and Wardha from Maharashtra, Hyderabad, Karimnagar, Khammam, Mahabubnagar and Warangal from Telangana, Bhimavaram, Chittoor, Kakinada and Vijayawada in Andhra Pradesh, Bruhath Bangalore, Mangaluru, Mysuru and Udupi from Karnataka, Bicholim, Canacona, Ponda and Valpoi from Goa, Coimbatore, Hosur and Tambaram in Tamil Nadu, Haldia, Kolkata and South Dum Dum in West Bengal, Bhilai, Korba and Raigarh in Chhattisgarh, Ahmedabad and Surat from Gujarat, Gurugram and Karnal in Haryana and Indore and Singrauli in Madhya Pradesh are higher in terms of per capita own revenue receipts and have a higher ratio of own revenue as a percentage of revenue expenditure compared to the national average. It is evident that the fiscal capacity of these cities is significantly higher than their current level of spending on establishment, administrative, salaries expenditure, and O&M. As a result, there is a significant scope to expand the level of spending on Operation & Maintenance (O&M) and thus help increase the stock of basic infrastructural services and improve the standards of living of the people through effective service delivery of ULBs.

Graph 7: Cities with Low per capita own revenue and Low ratio in own revenue as a percentage of revenue expenditure, 2015-16



On the contrary, there are 41 ULBs which have shown a poor performance in per capita own receipts and own revenue as a percentage of revenue expenditure compared with the national average, i.e. Rs. 1,075 and 61.61% respectively (Graph 7). In particular, the North Eastern cities of Thoubal, Mayang Imphal, Wangjing Lamding and Nambol from Manipur and Aizawl from Mizoram have per capita own receipts below Rs. 100 and ratio of own revenue as a percentage of revenue expenditure below 17.00%. These are slightly higher in Assam's cities of Palashbari and Bihpuria with Rs. 210 and Rs. 220 in per capita own revenue receipts and 22.18% and 38.48% in own revenue as a percentage of revenue expenditure respectively. As compared with the above ULBs, Sabroom, Kumarghat, Belonia, Sonamura and Udaipur from Tripura are significantly higher in both indicators ranging from Rs. 292 to Rs. 824 in per capita own revenue receipts and 10.87% to 60.02% in own revenue receipts as percentage of revenue expenditure respectively. Odisha cities of Jatni, Dhenkanal and Barbil have per capita own revenue receipts below Rs. 150 and their relative share of own revenue receipts as a percentage of revenue expenditure is less than 17.0%. The capital, i.e. Bhubaneswar's per capita own revenue receipts is about Rs. 615 and the ratio in own revenue as a percentage of revenue expenditure is 40.43%

Cities from the State of Uttarakhand such as Roorkee, Haldwani-Kathgodam and Kashipur have per capita own revenue receipts below Rs. 250 and less than 25.0% ratio of own revenue as a percentage of revenue expenditure. Among the top performing cities from the State of Bihar, i.e. Patna, Bihar Sharif and Danapur, per capita own revenue receipts are less than Rs. 230 and the

ratio of own revenue relative to revenue expenditure is below 40.0%. Similarly, in Ferozepur, Khanna, Patiala and Bathinda from Punjab, per capita own revenue receipts and own revenue as a percentage of revenue expenditure range from Rs. 256 to Rs. 897 and 32.73% to 48.0% respectively. The per capita own revenue as compared with their population size is significantly low in both Hazaribagh and Ranchi from the State of Jharkhand i.e. Rs. 202 and Rs. 271. Simultaneously, the relative share of own revenue receipts as percentage of revenue expenditure is significantly higher in both, Hazaribagh and Ranchi, i.e. 58.23% and 57.34% respectively. For the major five cities of Rajasthan i.e. Ajmer, Jaipur, Jodhpur, Udaipur and Pali, per capita own revenue ranges from Rs. 415 to Rs. 594 and the relative share ranges from 35.74% to 38.61% in own revenue receipts as a percentage of revenue expenditure.

Similarly, Meerut, Kanpur, Firozabad and Lucknow in Uttar Pradesh lag behind in per capita own revenue receipts and own revenue as a share of revenue expenditure ranging from Rs. 438 to Rs. 887 and 46.96% to 48.73%, respectively. Other cities like Chhindwara, from Madhya Pradesh, Shivamogga from Karnataka, Bathinda from Punjab, Lucknow and Firozabad from Uttar Pradesh, Udaipur from Tripura, Patiala from Punjab and Sonamura from Tripura are close to national average in per capita own revenue receipts (i.e. Rs. 1,075) extending from Rs. 1,064 to Rs. 737 respectively. Sonamura from Tripura, Shivamogga from Karnataka, Hazaribagh and Ranchi from Jharkhand, Kumarghat from Tripura, Lucknow from Uttar Pradesh, Patiala from Punjab, Danapur from Bihar, Meerut from Uttar Pradesh, Chhindwara from Madhya Pradesh, Bihar Sharif from Bihar, Belonia from Tripura and Bhubaneswar from Odisha, are close to the national average in own revenue receipts as percentage of revenue expenditure (i.e. 61.61%) ranging from 60.02% to 40.43% respectively.

Table 7: Per Capita Own Revenue is High and Ratio is also High, 2015-16

S. No.	State	Name of the City	2011 Census Population	Per Capita Own Revenue Receipts	Own Revenue Receipts as a percentage of Revenue Expenditure
		<i>National Average</i>	16,09,07,263	1,075	61.61
1	Tamil Nadu	Coimbatore	10,50,721	2,845	77.64
2	Gujarat	Ahmedabad	55,77,940	2,788	77.02
3	West Bengal	Kolkata	44,96,694	2,600	85.21
4	Chhattisgarh	Korba	3,63,390	2,554	141.66
5	West Bengal	South Dum Dum	4,03,316	2,519	160.19
6	Telangana	Hyderabad	67,31,790	2,517	89.31
7	Maharashtra	Kulgaon Badlapur	1,74,226	2,455	110.76
8	Haryana	Gurugram	15,14,432	2,401	130.11
9	Maharashtra	Baramati	1,08,152	2,392	79.54
10	Telangana	Khammam	1,84,210	2,348	157.2
11	Karnataka	Bruhath Bangalore	84,43,675	2,342	168.54
12	Maharashtra	Wardha	1,06,444	2,320	78.18
13	Karnataka	Mangaluru	4,88,968	2,043	81.54
14	Andhra Pradesh	Vijayawada	10,34,358	2,039	93.55
15	Haryana	Karnal	2,86,827	1,981	140.63
16	Gujarat	Surat	44,67,797	1,955	66.74
17	Maharashtra	Barshi	1,18,722	1,949	77.14
18	Telangana	Mahabubnagar	1,57,733	1,882	143.98
19	Maharashtra	Ambarnath	2,53,475	1,863	81.91
20	Karnataka	Mysuru	8,93,062	1,843	63.75
21	Madhya Pradesh	Indore	19,64,086	1,805	74.29
22	Tamil Nadu	Tambaram	1,74,787	1,649	105.25
23	Tamil Nadu	Hosur	1,16,821	1,624	64.81
24	Goa	Ponda	22,664	1,583	63.97
25	West Bengal	Haldia	2,00,827	1,549	94.94
26	Telangana	Warangal	6,15,998	1,527	149.09
27	Goa	Bicholim	16,986	1,413	68.40
28	Karnataka	Udupi	1,25,306	1,402	78.38
29	Andhra Pradesh	Kakinada	3,12,538	1,365	150.20
30	Madhya Pradesh	Singrauli	2,20,257	1,354	89.66
31	Goa	Canacona	12,434	1,354	80.25
32	Andhra Pradesh	Chittoor	1,53,756	1,342	147.40
33	Andhra Pradesh	Bhimavaram	1,42,184	1,246	177.39
34	Chhattisgarh	Raigarh	1,37,126	1,233	73.18
35	Telangana	Karimnagar	2,61,185	1,122	120.57
36	Chhattisgarh	Bhilai	6,25,700	1,098	68.83
37	Goa	Valpoi	8,532	1,094	81.30

Note: Cities are arranged in descending order in Per Capita Own Revenue Receipts respectively.

Table 8: Per Capita Own Revenue is Low and Ratio is also Low, 2015-16

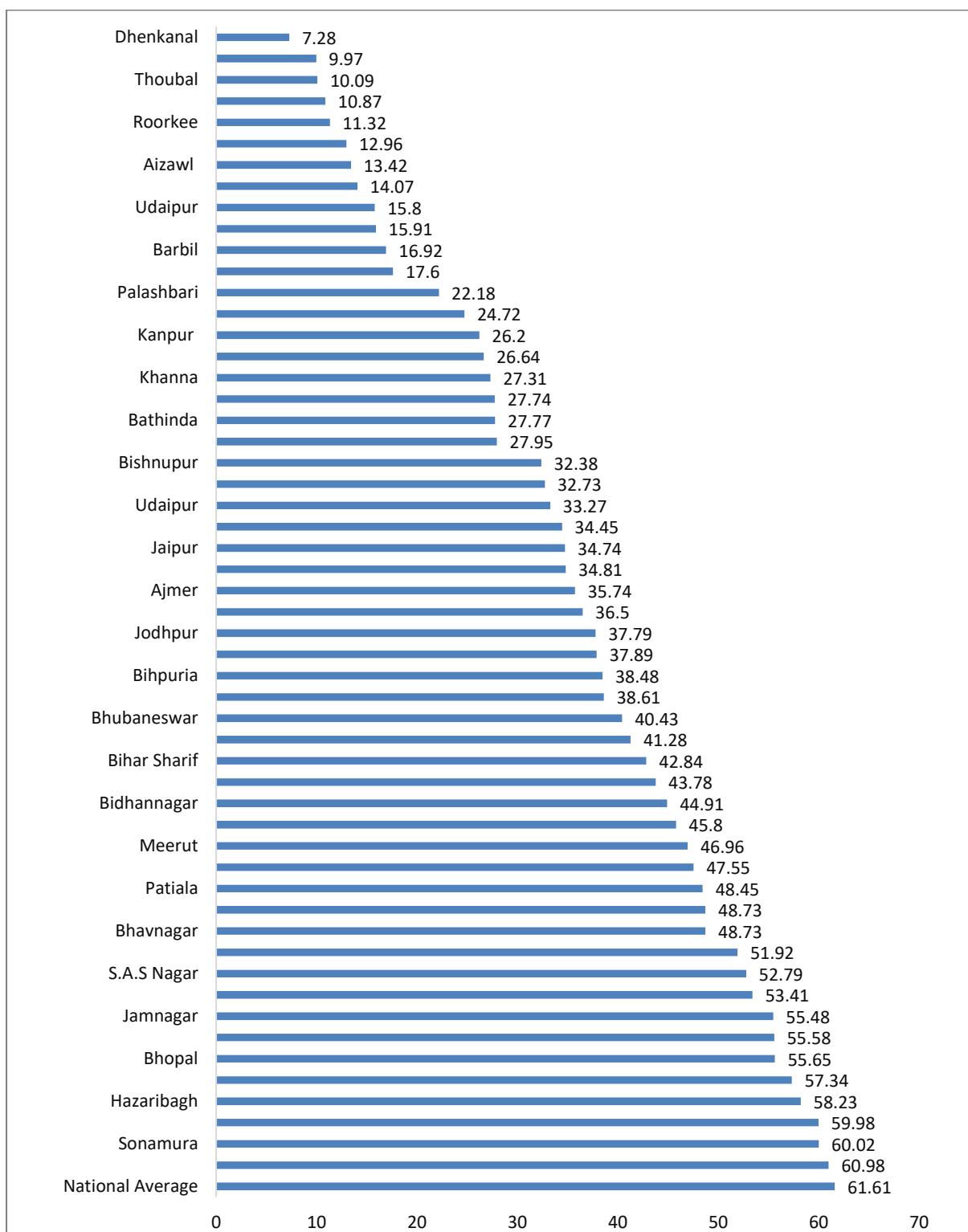
S No	State	Name of the City	2011 Census Population	Per Capita Own Revenue Receipts	Own Revenue as a percentage of Revenue Expenditure
		<i>National Average</i>	16,09,07,263	1,075	61.61
1	Manipur	Thoubal	45,947	42	10.09
2	Manipur	Mayang Imphal	24,239	43	14.07
3	Mizoram	Aizawl	2,93,416	53	13.42
4	Manipur	Wangjing Lamding	8,055	59	15.91
5	Manipur	Nambol	22,512	89	27.74
6	Odisha	Jatni	55,925	98	12.96
7	Odisha	Dhenkanal	67,414	116	7.28
8	Odisha	Barbil	66,540	146	16.92
9	Uttarakhand	Roorkee	1,18,200	166	11.32
10	Manipur	Bishnupur	12,167	169	32.38
11	Uttarakhand	Haldwani-Kathgodam	1,56,078	172	17.6
12	Jharkhand	Hazaribagh	1,42,489	202	58.23
13	Assam	Palashbari	4,925	210	22.18
14	Bihar	Patna	16,84,222	211	26.64
15	Bihar	Bihar Sharif	2,97,268	216	42.84
16	Assam	Bihpuria	12,016	220	38.48
17	Odisha	Joda	46,631	222	27.95
18	Bihar	Danapur	1,82,429	229	47.55
19	Uttarakhand	Kashipur	1,21,623	234	24.72
20	Punjab	Ferozepur	1,10,313	256	32.73
21	Jharkhand	Ranchi	10,73,427	271	57.34
22	Tripura	Sabroom	7,142	292	10.87
23	Rajasthan	Ajmer	5,42,321	415	35.74
24	Uttar Pradesh	Meerut	13,05,429	438	46.96
25	Tripura	Kumarghat	13,054	457	53.41
26	Tripura	Belonia	19,996	460	41.28
27	Punjab	Khanna	1,28,137	462	27.31
28	Rajasthan	Jaipur	30,46,163	468	34.74
29	Rajasthan	Jodhpur	10,33,756	479	37.79
30	Uttar Pradesh	Kanpur	27,65,348	480	26.2
31	Rajasthan	Udaipur	4,51,100	510	33.27
32	Rajasthan	Pali	2,30,075	594	38.61
33	Odisha	Bhubaneswar	8,40,834	615	40.43
34	Tripura	Sonamura	11,285	737	60.02
35	Punjab	Patiala	4,06,192	822	48.45
36	Tripura	Udaipur	11,921	824	15.8
37	Uttar Pradesh	Firozabad	1,33,305	831	9.97
38	Uttar Pradesh	Lucknow	28,17,105	887	48.73
39	Punjab	Bathinda	2,85,788	897	27.77
40	Karnataka	Shivamogga	3,22,650	976	59.98
41	Madhya Pradesh	Chhindwara	1,38,291	1,064	45.8

Note: Cities are arranged in descending order in Per Capita Own Revenue Receipts respectively.

From these two sections of cities, however, Chhindwara, Shivamogga, Lucknow, Patiala and Sonamura are close to national average in both per capita own revenue receipts and own revenue as a percentage of revenue expenditure (i.e. Rs. 1,075 & 61.61%) ranging from Rs. 1,064 to Rs. 737 and 45.8% to 60.02% respectively.

Urban fiscal performance in Manipur, Odisha, Rajasthan, Tripura, Punjab, Uttar Pradesh, Uttarakhand, Bihar, Assam and Jharkhand for 2015-16 has been *quite low* as is evident from the estimates for per capita own revenue (specifically tax and non-tax receipts) and own revenue-revenue expenditure ratio being lower than average, i.e. Rs. 1,074.80 and 61.61% respectively, both at the State-level and for its top five cities. In particular, fiscal performance in all top five cities for the States of Manipur, Odisha, Rajasthan and Tripura significantly lags behind the national average in both per capita own revenue receipts and own revenue as a percentage of revenue expenditure simultaneously. In Punjab, Uttar Pradesh and Uttarakhand, four cities out of top five cities had lower than average per capita own revenue receipts and own revenue as a share of revenue expenditure. Bihar's ULBs fared better as compared to its peers, financially. In Bihar, three out of the top five ULBs underperformed across the indicators of per capita own revenue receipts and its relative share in revenue expenditure as compared to the national average estimates. Meanwhile, in Assam and Jharkhand, only two of the top five cities had lower than average own revenue, both as an estimate and as a share of revenue expenditure.

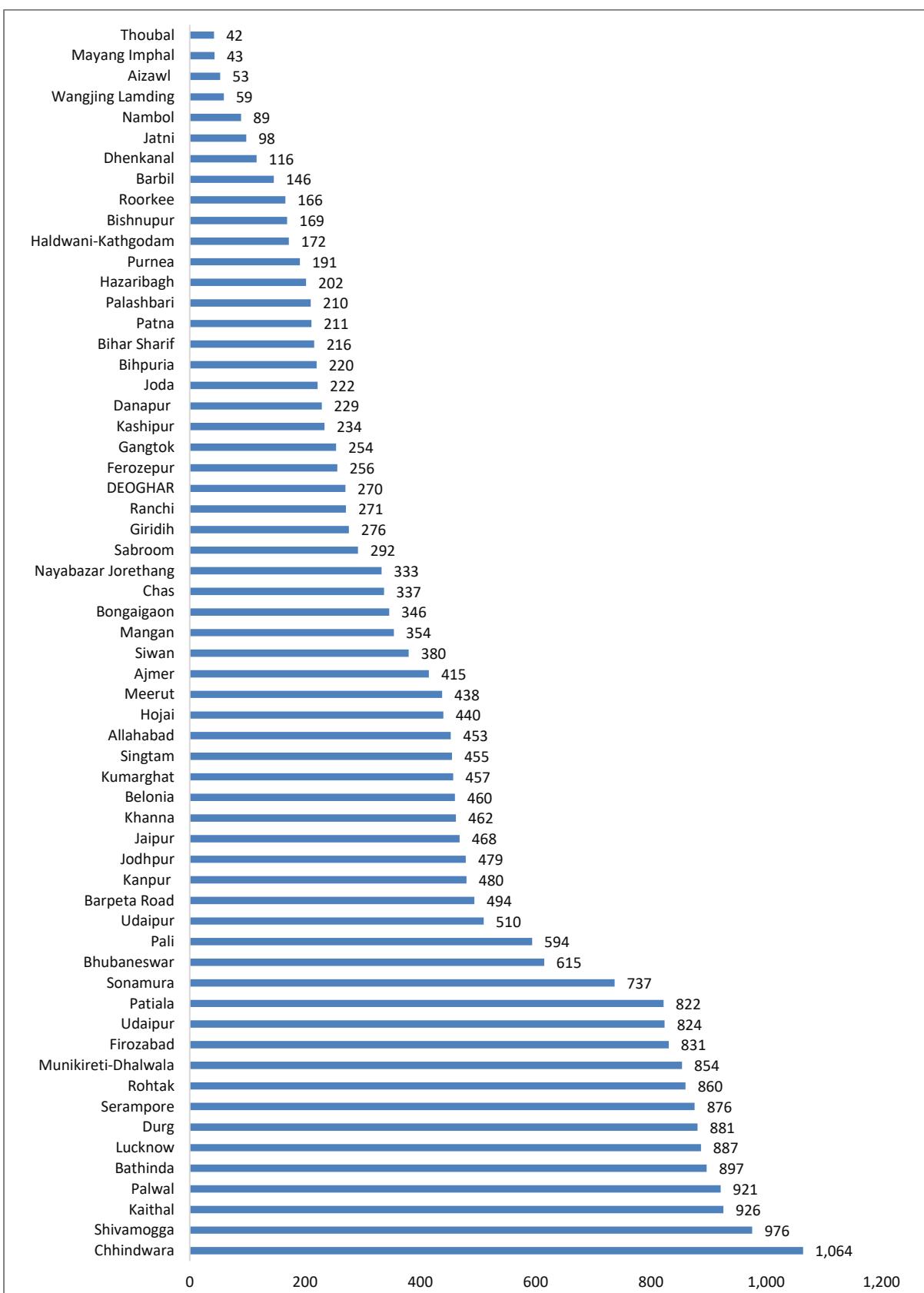
**Graph 8: Cities Below National Average in Own Revenue as a percentage of Revenue Expenditure
2015-16**



Note: All these cities are below national average in terms of Own Revenue as a percentage of Revenue Expenditure i.e. 61.61%

Source: Annexure 4

Graph 9: Cities below National average in Per Capita Own Revenue Receipts, 2015-16



Note: All these cities are below the national average in per capita own revenue receipts i.e.Rs.1075

Source: Annexure 5

Conclusions and Major Findings

A higher relative share of Own Source Revenue (OSR) in revenue expenditure is a strong indicator that increased financial self-reliance is a direct result of spending on strengthening quality and consistency of municipal service delivery. Revenues generated from tax and non-tax receipts are unable to keep pace with a burgeoning urban population that is not being captured as part of the tax base. A higher share of own revenue in revenue expenditures signals increased fiscal autonomy and sustainability. In 2015-16, the national average of own revenue as a share of revenue expenditure was 61.61% based on data from 1,968 ULBs across 23 States. Evidence suggests that nine States i.e. Karnataka, Telangana, Andhra Pradesh, Sikkim, Haryana, Assam, Gujarat, West Bengal and Jharkhand spent a higher share of their own revenue on improving civic services, than the national average. On the other hand, majority of the States have contributed less of their own revenues towards infrastructure spending, compared to the national average. In particular, the North Eastern States of Manipur, Mizoram and Tripura have a much lower own revenue-revenue expenditure ratio than the national average. Similarly, the States of Uttarakhand, Uttar Pradesh, Punjab, Odisha, Rajasthan and Bihar also demonstrated higher reliance on State and Central grants for infrastructure spending. The states of Chhattisgarh, Goa, Maharashtra, Tamil Nadu and Madhya Pradesh were closer to the expected average ratio.

The data on per capita income of the ULBs almost parallels the strength of the State economies relative to their population and the national expected average. For FY 2015-16, the national per capita own revenue average for 1,968 ULBs across 23 States was Rs. 1,074.8. This means that on average, an individual citizen paid their local ULB Rs. 1074.8 for civic services rendered. In nominal terms, in the same FY, the income per capita in India was Rs. 93,293, i.e. the average citizen spent a little under 1/90th of their income on paying taxes, fees and fines to their local ULB. As expected, the six States whose per capita own revenues were significantly higher than the national average were Telangana, Gujarat, Maharashtra, Karnataka, Goa and West Bengal, i.e. States which have strong economies fuelled by a highly productive and educated population. On the other hand, States of Haryana, Chhattisgarh, Andhra Pradesh, Tamil Nadu and Madhya Pradesh were closer to the national average. The weaker economic States of Manipur, Mizoram, Tripura, Assam, Sikkim, Bihar, Jharkhand, Uttarakhand, Uttar Pradesh, Rajasthan, Odisha and Punjab reported low estimates of revenue generation from their respective populations, significantly below the national average estimate of Rs. 1,074.80

Conclusively, the own revenue potential in these States, weighted to their population size, is largely unrealized despite the demand for basic civic services like water supply, electricity, et al. being relatively price inelastic. As a result, both own revenue receipts and spending on services delivery is *quite low* in these States and there is subsequently a higher dependence on intergovernmental transfers to meet the current level of expenditure. In other words, being fiscally prudent should accelerate the pace of revenue generation from their own tax and non-tax revenue receipts and outpacing the population growth rate of the city should help reduce the gap between level of revenue expenditure and their own revenue receipts. This will improve the condition of urban finances at the State level and the cities will have played a crucial role in terms

of generating additional revenue and improving the stock of urban amenities through effective service delivery by ULBs.

AHMEDABAD MUNICIPAL CORPORATION

Multiple Best/Unique Practices have been documented for Ahmedabad Municipal Corporation. The city is one of the major industrial and financial hubs in the country

SECTION II – BEST PRACTICES IN SAMPLE CITIES

2.0 Ahmedabad Municipal Corporation

2.1 City Profile

Ahmedabad is the seventh largest city in India and the largest in the State of Gujarat with an area of 466 sq. kms and a population of 55.77 lakhs as per the Census of India 2011. The city is one of the major industrial and financial hubs in the country. It became the first Indian city to be designated the status of “World Heritage City” by UNESCO in 2017.

Ahmedabad Municipal Corporation (AMC) was established in July 1950 and, as with all Municipal Corporations in Gujarat, is governed under the provisions of the Bombay Provincial Municipal Corporation Act, 1949. AMC provides basic services in the city such as addressing its water supply needs, solid waste management, sewerage, roads and transportation, streetlights, and medical and educational facilities.

The field visit to Ahmedabad yielded insight into the good governance practices of AMC and is discussed in detail in the ensuing paragraphs. The chapter has broadly been divided into seven sections including a brief section on the Demographics of the city. Section II discusses the governance structure of AMC. Section III gives an overview of the municipal finances including subsections on property tax, implementation of GIS and expenditure management of AMC. Section IV and V highlight the provision of basic services in the city and include the practices being adopted by AMC to improve coverage of regular water supply and management of solid waste. Section VI showcases the use of technology by AMC to enhance city-wide security measures while also making civic administration more efficient. The chapter concludes with remarks on areas that need attention and AMC’s best practices that could be replicated in other cities with similar characteristics and challenges.

2.1.1 Demographics

The city grew at an average growth rate of 5.8 percent over a 10-year period between 2001 and 2011. Using the State-level CAGR of 2.24% as the assumed growth rate, the population was estimated to be 60,94,204 in 2014-15, 62,30,570 in 2015-16 and 63,69,987 in 2016-17. The literacy rate of the city is 85.78 per cent and the literacy rate for female population is 80.3 per cent.

2.2 Urban Governance

Founded in 1873, the Municipality of Ahmedabad became a Borough Municipality in 1926 and was subsequently upgraded to the status of a Municipal Corporation in 1950. The AMC governs under the Bombay Provincial Municipal Act (BPMC) of 1949. For the purpose of administration, the city is divided into six zones – central, east, west, north, south and new west zones. Each zone is further sub-divided into wards and at present, there are 64 wards in the city. According to section 63 of chapter VI of the BMPC Act of 1949, the Corporation is expected to perform 25 obligatory functions, seven of which are linked directly to the socio-economic development of the city:

- watering, scavenging and cleansing of all public streets and places in the city and the removal of all sweeping therefrom;
- Collection, removal, treatment and disposal of sewage, offensive matter and rubbish;
- construction, maintenance and cleansing of drains and drainage works, and public latrines, water closets, urinals and similar conveniences;
- construction and maintenance of public hospitals and dispensaries;
- lighting of public streets, municipal markets and public buildings vested in the Corporation;
- management and maintenance of water works and new works necessary for sufficient supply of water for public and private use;
- preparation of plans for economic development and social justice

2.2.1 Other Initiatives

In addition to its mandatory and discretionary functions, AMC has also undertaken a host of other initiatives to promote fiscal independence while improving city-level outcomes. For instance, in 1998, AMC became the first municipality in Asia to issue tax-free municipal bonds (valued at over Rs. 100 crore) to fund urban infrastructure development. Encouraged by the early returns, AMC successfully issued AA+ rated municipal bonds again in 2000, 2002 and 2004. This was possible due to AMC's sound financial management. To improve collection efficiency, AMC introduced unprecedented reforms in Property Tax collection and calculation, shifting away from a gross rateable value to an area-based method, resulting in a zero litigation rate.

2.3 Overview of Finances

Income vs Expenditure

Table 9: Per Capita Revenue Receipts and Capital Receipts, 2014-15 to 2015-16 (in Rupees)

Indicators	2014-15	2015-16	Annual Growth Rate (%)
Population	60,94,204	62,30,570	2.24
Revenue Receipts	4,743	5,508	16.13
Capital Receipts	2,601	2,343	-9.92
Own Revenue	2,457	2,788	13.47
Transfers, Grants, Assigned Revenues	1,931	2,306	19.42
Tax Revenue	1,325	1,359	2.57
Non-Tax Revenue	1,132	1,429	26.24
Property Tax	640	719	12.34
Capital Grants	0	0	0.00
Other Capital Receipts	2,601	2,343	-9.92

Table 10: Own Revenue as a percentage of Revenue Receipts, 2014-15 to 2015-16

Indicators	2014-15	2015-16
Revenue Receipts as a % of Total Receipts	64.6	70.2
Own Revenue as a % of Revenue Receipts	51.8	50.6
Tax Revenue as a % of Own Revenue Receipts	53.9	48.8
Property Tax as a % of Own Revenue Receipts	26	25.8
Property Tax as a % of Tax Revenue	48.3	52.9
Non-Tax Revenue as a % of Own Revenue Receipts	46.1	51.2
Other Revenue Receipts as a % of Revenue Receipts	7.5	7.5
Transfers and Grants as a % of Revenue Receipts	40.7	41.9
State Transfers as % of Transfers/Grants/Assigned Revenue	100.0	100.0
Central Transfers as % of Transfers/Grants/Assigned Revenue	0.0	0.0
Other Transfers as % of Transfers/Grants/Assigned Revenue	0.0	0.0
Capital Receipts as a % of Total Receipts	35.4	29.8
Central Capital A/C Grant as a % of Capital Receipts	0.0	0.0
Capital Grants as a % of Capital Receipts	0.0	0.0
Other Capital Receipts as a % of Total Capital Receipts	100.0	100.0

Table 11: Per Capita Revenue and Capital Expenditure, 2014-15 to 2015-16 (in Rupees)

Indicators	2014-15	2015-16	Annual Growth Rate (%)
Revenue Expenditure	3,451	3,716	7.68
Capital Expenditure	3,416	3,650	6.85
Establishment and Salaries	1,563	1,667	6.65
O&M and Other Expenses	1,888	2,050	8.58
Development Expenditure	1,725	2,088	21.04
Other Capital Expenditure	1,691	1,561	-7.69

Table 12: Revenue and Capital Expenditure as a percentage of Total Expenditure (%)

Indicators	2014-15	2015-16
Revenue Expenditure as a % of Total Expenditure	50.3	50.5
Admin, Est & Salaries as a % of Revenue Expenditure	45.3	44.8
O&M as a % of Revenue Expenditure	19.5	20.4
Others (Loan Rep, etc.) as a % of Revenue Expenditure	35.2	34.8
Capital Expenditure as a % of Total Expenditure	49.7	49.5
Development Works as a % of Capital Expenditures	50.5	57.2
Other Capital Expenditure as a % of Capital Expenditure	49.5	42.8
Own Income as a % of Revenue Expenditure	73.2	77.7

It is evident from the income-expenditure tables that AMC has a budget surplus with own revenue accounting for nearly 70% of revenue expenditure.

Table 13: Five best practices initiated by Ahmedabad Municipal Corporation

Areas of Development	Measures	Outcomes
GIS Mapping	Increased efficiency in property assessments and tax collection	Larger share of Property in Total Tax Revenue
Water Supply Project	SCADA implementation, real-time monitoring, quality improvement measures	24*7 water supply, decline in NRW and cost of operation and improvement in quality of water
Solid Waste Management	Door-to-door waste collection, bin free and dirt free streets	All waste is collected and processed accordingly
Construction and Demolition (C&D) Waste Treatment	PPP model was chosen for collection, transportation and processing of C&D waste	Established C&D treatment facility with 300TDP processing capacity
SASA	Installation of cameras, internet facility, and IOT sensors	Increased safety and ease of traffic movements

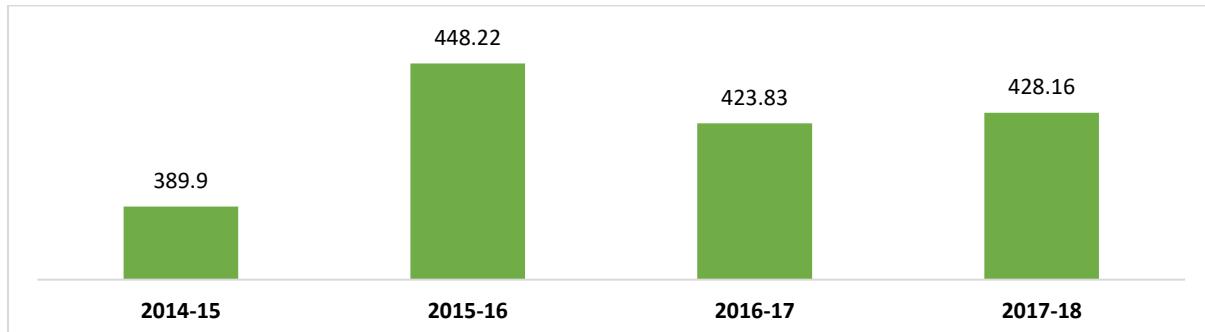
2.1.1 Own Source Revenue

Due to AMC's award-winning financial management and service delivery, own-revenue accounts for the highest share in total revenue earned among all revenue sources. A key factor in AMC's positive balance sheets has been due to a balanced share of revenue generation from both tax and non-tax sources. This has been possible due to increased efficiency in tax collection brought about by innovations in property tax assessment and delivery of quality municipal services to the public. Evidence supports this claim with tax collection efficiency in 2017-18 found to be approximately 80%.

While Own Revenue grew by 16% between 2014-15 and 2015-16, its growth rate nearly halved between 2015-16 and 2016-17. This slight slowdown can be attributed to a temporary shock to the functionality of civic administration due to the Municipal Corporation elections held in December 2015. Below is the short comparison between Property Tax and its share in total revenue. A higher ratio of property tax in total tax revenue is considered to be an indicator of sound financial health of the ULB. In case of Ahmedabad, Property taxes since 2014-15 increased

gradually thus expanding its share in total tax revenue. In 2014-15, share of property tax in total tax revenue was 48.28% and increased to 52.93% by the following year and slipped slightly to 47.25% in 2016-17.

Graph 10: Property Tax in INR Cr



Since property tax remains the second most important source of revenue for AMC, innovations in improving coverage and collection efficiency play a crucial role in ensuring that AMC maintains a fiscal surplus. As a share of Own Revenue, property tax accounted for 26.04% in 2014-15, 25.80% in 2015-16 and 22.40% in 2016-17, second only to the collections from various fees and fines.

2.3.3 GIS mapping and Property Assessment Protocols at AMC

Currently, AMC's coverage of over 20,00,000 properties has been mapped by GIS. Re-measurement and revaluation of properties take place every four years. Since 2001, property surveys have been implemented on a zone-by-zone basis with revaluation taking place in 2005, 2009 and 2013. Once the necessary building permissions are granted, measurement of new buildings are carried out and AMC has successfully managed to assess every property in its coverage area across every four-year period since this survey's inception.

Recovery measures in cases of default/delay in payment of property tax involve:

- Sealing of property if commercial property
- Auction of property
- Disconnection of water supply if residential property
- Disconnection of sewerage connection

Advance property tax payment is encouraged with a 10% rebate given as an added incentive to those who pay tax by the first month of the financial year, i.e. April-May. Strong recovery measures coupled with the 10% rebate provides sufficient incentive for 30-40% owners to pay their property tax prior to even receiving their property tax bills. To ease the process of payment and collection, AMC provides a mobile tax collection van for the sole purpose of collecting property tax.

2.3.5 Other Significant Sources of Revenue

A. Professional Tax

Effective April 1st 2008, the Gujarat State Government assigned the responsibility of collecting professional tax to AMC from the area under AMC's jurisdiction. As per Annexure 1 (B) of Employer & Professional Tax Annexure-1 category (2) to (10), taxpayers have to pay their official Profession Tax to any city civic centre of AMC. In order to facilitate easy payments, 60 city civic centres and collection centres have been made available, along with an online payment option. The mobile tax collection van is also available for the collection of professional tax, in addition to property tax collection. Currently, the coverage for professional tax collections is 66% for a total of 4,60,000 non-residential properties. New initiatives are underway to extend coverage to the remaining 34%. From 2017-18, bill-cum-demand notices are issued to registered individual firms and notices are issued to non-registered non-residential property holders. Property tax numbers of non-registered properties is used to find professional tax evaders.

Professional Tax collected for the period 2016-17 was Rs. 147.50 crores and Rs. 163.60 crores for the period 2017-18, registering a growth of 11%. In 2016-17, Professional Tax contributed to approximately 8% of AMC's own revenue receipts.

B. Advertisement Licence Fees

With Janmarg (BRTS), Kankaria Lake Front Development, Sabarmati River Front Development and Ahmedabad Municipal Transport Service operating as subsidiaries of AMC, AdVision AMC as the sole outdoor media licensing authority of AMC, is responsible for the promotion and regulation of outdoor media of the city and generates substantial revenue from advertisement licencing fees via these subsidiaries.

Some of the major sources of advertisement income in Ahmedabad are through issuance of:

- *licences for hoardings/billboards, kiosks, etc. in municipal properties by tender/auction*
- *licences for hoardings/billboards and wall wraps, balloons advertisements, etc. to agencies in private properties*
- *licences for advertisement on moving vehicles*

E-Governance has been integrated with AdVision to ensure increased revenue through advertisement and enhanced convenience for citizens. Media owners can apply for new outdoor media online through e-Application and also apply, pay and renew taxes for privately holding media online. Bidding for Government-owned sites is available online through e-Auction. Quicker approvals are available for transit media through fast e-Approvals. There are a total of 411 tender sites and 1,509 private sites for outdoor media in AMC.

Advertisement display infrastructure guidelines are laid out in the Comprehensive Development Control Regulations – 2017, UD and UHD by the Government of Gujarat. Advertisement Tax collected by AMC in the year 2016-17 was Rs. 29.50 crores, accounting for approximately 1.75% of own revenue receipts of the Corporation and Rs. 32.45 crores in the year 2017-18.

C. Vehicle Tax

The vehicle tax department collects a municipal vehicle tax on vehicles that are sold/used within the AMC's jurisdiction. The tax is collected at city civic centres and the vehicle tax counter at RTO Ahmedabad. The city civic centres have facilitated ease of motor vehicle tax payment through payment gateways, which has resulted in an increase in the revenue realized from vehicle tax. A common database has also been created to facilitate online access of information. Since April 1st 2013, a lifetime vehicle tax has been collected for each vehicle as a fixed percentage of its basic price, which varies for the different categories and types of vehicles.

D. Town Development Charges

The Town Development Department is responsible for granting building permissions for new constructions, addition/alteration of existing buildings, amalgamation and subdivision of land and taking appropriate action against unauthorized constructions. Additionally, the Town Development Department is also the primary authority for registration and issuance of licences to Architects, Engineers, Clerk of works, Structural Designers and Land Developers. These diverse set of responsibilities generate considerable income in the form of fines and fees for AMC.

WATER SUPPLY PROJECT

Post Implementation of SCADA, energy savings amounted to INR 84 Lakhs, per annum

By closing delivery valves during non-supply hours saved INR 390 Lakhs per annum

It has also helped in the implementation of 24x7 water supply while boosting efficiency of executives, enabling them to handle more infrastructure with limited manpower.

2.4 Coverage of Water Supply

The Sabarmati River and the Narmada canal serve as two main sources of water supply into the city. Additionally, the abundant ground water available is also utilized as a source of water supply to the city. AMC is responsible for catering to the domestic and commercial water demand of the city. AMC's domestic water supply coverage is a strong testament to its quality of service delivery. With over 95% households covered, AMC is committed towards achieving 100% coverage with 24x7 water supply, as per WHO quality standards for drinking water. AMC currently operates four major Water Treatment Plants (WTP) i.e. Kotarpur, Raska, Jaspur and Dudheswar, and there are seven french wells.

The treated water is then transferred to various Water Distribution Stations (WDS) in six zones across the city, which acts as an intermediary between the treatment plant and the end user. Prior to automating this process, all Water Treatment Plants were manually operated on a contract basis with the monitoring of water quality parameters being carried out in a laboratory using manual sampling. Additionally, the water charges were paid on a yearly audit and run on an hourly basis. With the AMC's initiative to utilize advanced technology like SCADA to improve efficiency of water treatment and dissemination, real time data-generation and online monitoring has become possible.

It has also helped in the implementation of 24x7 water supply while boosting efficiency of executives, enabling them to handle more infrastructure with limited manpower. This has led to a decrease in operational breakdowns by reducing manual errors. With better planning of preventive measures, the cost of operation has been significantly reduced. This in turn has helped control Non-Revenue Water (NRW) to a large extent as all the data is transferred to a central monitoring location where the entire water supply system is monitored by the topmost authority of AMC.

2.5. Solid Waste Management

Ahmedabad generates over 3,800 TPD waste including 700 MT of construction and demolition waste. All the waste from the city is collected, transported, treated and disposed according to the Solid

SOLID WASTE MANAGEMENT

AMC started new Door to Door/Gate waste collection system with new vehicles with closed body having different compartments with tipping agreement for collection of segregated waste from citizens

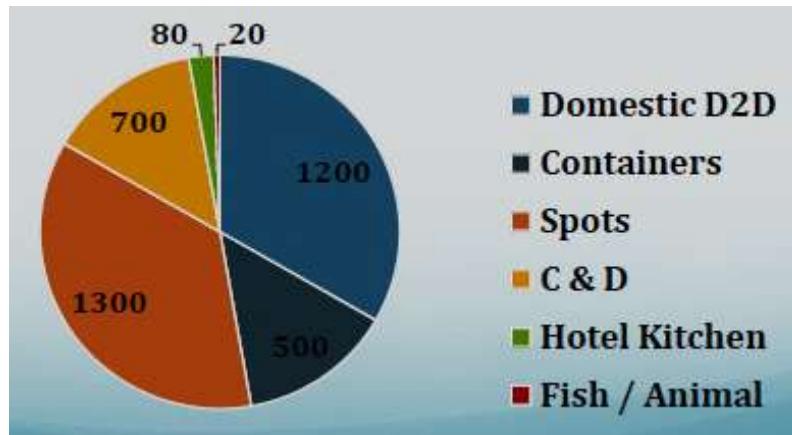
Different agencies have been deployed for collection different category of wastes

A total of 1,240 bins have been installed across all zones in the city

A total of 1046 trolleys have been deployed in all zones of the city

Waste Management & Handling Rules, 2016. In the year 2009, AMC introduced the concept of Door-to-Dump, which appointed contractors to collect waste from residential units in the morning and from commercial units in the evening in closed Hydraulic Euro III vehicles. The waste from these vehicles is transferred to transfer stations from each ward and then to treatment plants. This initiative covers 100% of all residential and commercial units, 365 days of the year. More than 600 vehicles have been dedicated for this initiative. Currently, over 1,300 MT of waste has been collected from more than 14, 33,000 residences and almost 1,50,000 commercial units, and transported to the processing plants through Refuse Transfer Stations. Street sweeping takes care of the waste lying in municipal bins and is a year-round activity employing more than 12,500 workers across all roads of the city. More than 1,200 litterbins have been installed at various roads, public places, pavements, as well as traffic locations. The maintenance of these services has been leased out for five years on an O&M model. The agency is responsible for the collection of waste from all areas and its transfer to the designated location. This process is monitored through GPS along with RFID readers and tags, which helps keep a close track of the entire working system. The agency is paid by AMC on a shift basis.

Exhibit 1: Types of Waste



AMC has deployed a vast number of trucks, JCB machines, hydraulic dumpers, skip lifters, compactors, tankers, vans, bull/wheel dozers, vacuum sweepers and other vehicles towards efficient handling of waste in the city. In all the six zones of the city, transfer stations with capacity of 400 MT each have been constructed with two stationary compactors and ten large containers, with the motive to reduce cost in transportation,

CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT

There are 17 designated spots within the city, or temporary waste storage depots, where citizens are required to transport C&D waste at their own cost.

Six companies sent their offers and the project was awarded to Amdavad Enviro Pvt. Ltd. (AEPL) to set up a 300 TPD C&D processing plant.

AMC has a policy to 25% of the paver blocks and 50% of manhole covers produced by the plant. Final products of the C&D processing plant are utilized in the development of different civil and infrastructure projects of AMC upon approval of the competent authority.

reduce emissions and reduce traffic congestion. Different agencies have been assigned with the task of collecting bio-medical waste (Medicare Environmental Management Pvt Ltd), kitchen waste/biodegradable waste, e-waste, and construction & demolition waste etc., based on their specialties.

Moreover, AMC has initiated IEC activities to generate awareness among people about cleanliness, waste treatment and waste disposal. Some of the activities involve community initiatives like formation of committees and organizing ward-by-ward group meetings or wider-reach initiatives like short films and generating publicity through television, advertisement in newspapers, conducting street plays, organising thought-provoking demonstrations with school and college students, etc. Imparting awareness training to municipal staff and councillors is also critical to effect real change. Furthermore, AMC is credited for launching India's first Sanitation Mobile Court, an unprecedented legal initiative, which seeks to discipline those who litter. Approximately 2.5 lakh cases have been registered since its inception with a sum of approximately Rs. 10 crores levied from offenders as a penalty.

2.5.1. Construction and Demolition (C&D) Waste Treatment

Construction and demolition (C&D) waste contributes to approximately 25% of the total waste collected in Ahmedabad city. Due to rising urbanization and new development in and around the city, many old buildings are demolished. In order to meet the rising need of construction and produce value-added building products from the large quantity of waste produced, there was a need to set up a C&D plant.

In 2009, AMC started an initiative to collect and dispose of C&D waste, separating it from municipal solid waste at the origin. In addition to being able to treat the rising C&D waste, its recycling also helps to reduce mining for aggregates (like sand and blue metal) and save valuable land, which is otherwise wasted by dumping of waste. AMC issued an Expression of Interest (EOI) on 18 March 2012, to design, build, finance, own and operate a C&D treatment plant in PPP mode for 30 years.

Six companies sent their offers and the project was awarded to Amdavad Enviro Pvt. Ltd. (AEPL) to set up a 300 TPD C&D processing plant. AMC allotted 5 acres of land to the agency on lease rent of Rs. 1/sq. mt. per annum for a period of 30 years. Capital investment from AEPL for the project until date is more than Rs. 7 crores. The

CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT

Final products from the C&D waste include precast RCC (benches, drains, concrete manholes, slabs, sleeper, louvers fins, pavers rubber mould, walls, drain covers, pipes and cement articles), precast concrete box culverts and manhole, RCC fencing pole, door frame, grill, kerb stone & ferro cover, road edge stone, paving stone, granite, paving blocks among others

plant has been in operation since 2013 and is viewed as a lighthouse model for other Indian cities.

There are 17 designated spots within the city, or temporary waste storage depots, where citizens are required to transport C&D waste at their own cost. In addition, C&D waste generated by AMC civil works is also transported to these sites. The agency collects treatable waste from these depots and transports it to the treatment plant.

AMC pays Rs. 155 per tonne for collection and transportation of the C&D waste (this rate is increased by 5% annually). The agency pays 2.5% as royalty to AMC on the total sales of products.



Picture: Construction and Demolition Plant at Ahmedabad

Citizens can register their complaints for the collection of construction debris by phone on AMC-operated Comprehensive Complaint Redressal System (CCRS). As per the Mapping and Scheduling for C&D waste below 1 ton, 4 to 5 spots can be covered per trip for which citizens shall be charged a minimum flat charge of Rs. 200 per trip. AMC has a policy to 25% of the paver blocks and 50% of manhole covers produced by the plant. Final products of the C&D processing plant are utilized in the development of different civil and infrastructure projects of AMC upon approval of the competent authority. AMC has also approved a policy for procuring precast/pre stress walls from the agency to build compound walls for various properties of AMC. Recently, AMC modified the agreement to increase daily processing of C&D waste from 300 TPD to 1000 TPD. In this modification, AMC also made provisions to procure 100% of material requirement for its civil and infrastructures projects from the agency's final products.

Final products from the C&D waste include precast RCC (benches, drains, concrete manholes, slabs, sleeper, louvers fins, pavers rubber mould, walls, drain covers, pipes and cement articles), precast concrete box culverts and manhole, RCC fencing pole, door frame, grill, kerb stone & ferro cover, road edge stone, paving stone, granite, paving blocks mortar less for concrete and interlock pathways, bitumen bound materials, concrete, pipe bedding, hydraulically bound mixtures (HBM) for subbase and base, unbound mixtures for sub-base, capping, and embankments and fill. Bitumen bound materials – recycled concrete aggregate can be used in a variety of base course and binder course mixtures. It is also permitted for use in certain grades of concrete and suitably graded recycled concrete aggregate is used in pipe bedding. Recycled clay is used to make various types of bricks, hollow blocks, light-weight blocks and architectural clay items.

SAFE AND SECURE AHMEDABAD

AMC surveillance cameras-
3,274

Police Surveillance
cameras-2,966

130 Zero Tolerance
Junctions

6,000 Smart lighting

50 Environ Sensors

95 PA systems (at
locations)



Picture: Products from C&D Plant at Ahmedabad

Anticipatory shortage of aggregates in construction works has resulted in an increased scope for recycling/processing of C&D wastes. Recycling of C&D waste is important as it helps reduce dependence on natural resources and eliminate adverse environmental impacts such as mining activities, which are highly polluting and energy-intensive.

It also allows salvaging of C&D waste materials for reuse. C&D and other waste can be utilized for making bricks, pavement blocks, construction materials such as aggregates, etc. The Hon'ble Court's intervention on the controversy over sand mining in some States focused the need to explore options for the reuse, recycle and substitute of naturally sourced building material (such as sand), resulting in further need of C&D waste management.

2.6. Safe and Secure Ahmedabad- SASA: SASA is a project under Smart City Ahmedabad Development Limited (SCADL), which aims to open new frontiers in serving its citizens by improving living standards with the use of cutting edge technologies like IOT sensors, smart LED display boards, free Wi-Fi locations, surveillance cameras etc. One of the primary objectives of SCADL under the Smart City initiative is to enhance safety and security while also

Improving the efficiency of municipal services in the city. Hence, a robust pan city ICT infrastructure backbone has been built to ensure high-speed access connectivity.



Picture: Safe and Secure Ahmedabad (SASA) Project at Ahmedabad

Under the SASA project, over 6,000 cameras have been installed at a 1,000 different locations in the city for surveillance purposes. These cameras are connected to a command and control centre for where the entire city can be monitored from one location. Any misconduct recorded is redirected to the relevant department to ensure quicker decision-making. There are 146 video display boards installed at the various locations across the city that keep citizens well-informed, especially in times of emergency.

As discussed earlier, over 1,120 geo-tagged solid waste management vehicles can be directly tracked from the command and control centre to ensure proper collection of waste. Automatic number plate recognition and red light violation detection ensures better traffic control, and violation of the same leads to punishment of offenders through automated e-challan system. SCADL has also taken steps to make connectivity in the city seamless by launching free public Wi-Fi services at 145 BRTS stations through its dedicated 180 kms. long optical fibre cable network.

Access to cost-free internet is available with speeds of upto 2 MB/ps. Wi-Fi has been further extended to 14 strategic public locations including libraries, hospitals and colleges around the city. There is also a dedicated Comprehensive Complaint Redressal System that addresses the entire complaint process right from registration to resolution. A citizen can lodge a complaint through a call centre, website, or by visiting their nearest ward. It is an enterprising solution that allows the government to enhance citizen satisfaction through comprehensive service management and efficient service delivery.

2.7 Remarks

The Ahmedabad Municipal Corporation has operated as a model of efficiency among its peers, both in terms of financial management and quality service delivery. Its innumerable awards are a testament to this claim. While not without its challenges, some of AMC's better practices can easily be replicable in cities of similar size.

The property tax reforms implemented by AMC show that a rational, equitable and transparent system of property taxation, especially with targeted incentive structures, can be more acceptable to taxpayers while generating higher revenues for the ULB. To administer such a system successfully, an excellent database is critical. This can be achieved by making channels of data and tax collection more accessible and convenient.

AMC has also demonstrated the benefits of effective use of technology in quality service delivery. Automating the process of water treatment and delivery helps reduce costs, lost revenues and helps AMC improve the quality of drinking water provided through a rich database created from regular monitoring of composition of treated water. It has intangible positive spill overs on the health of the population because regulated water standards help ensure provision of safe drinking water to the city's populace as a whole. Similarly, using geo-tagging serves a two-fold purpose. It helps create a database to track general trends of solid waste collection and disposal and also helps track down offenders, thus generating revenues in the form of penalty fees through the Sanitation Mobile court. A contractual labour model in hiring workers for the solid waste management initiative helps create competition, thus ensuring quality of service while controlling cost.

SURAT MUNICIPAL CORPORATION

On the bank of river Tapi, Surat is one of the sprawling mega city and commercial hub of Gujarat.

3. Surat Municipal Corporation

3.1 City Profile

Surat is the second largest city of Gujarat in terms of area and population. Sprawled in around 326.5 sq. kms., the city has a population of 44.6 lakh as per the Census of India 2011.

SMC was established in 1966, prior to which the city was administered by the municipal corporation incorporated in 1852. Flood and outbreak of pneumonic plague in the year 1994 severely affected Surat, but the city authorities revamped the entire city in a short span of time.

Especially during the period of JnNURM, SMC made tremendous improvements in governance and infrastructural aspects of the city by fully tapping the opportunity offered by the flagship program of Government of India. Undoubtedly, Surat has presented itself as a city with a promising future having one of the most inclusive approaches towards reforms and development.

The field visit to Surat yielded insight into the good governance practices of SMC and is discussed in detail in the ensuing paragraphs. The chapter has broadly been divided into seven sections including a brief section on the Demographics of the city. Section II discusses the governance structure of SMC. Section III gives an overview of the municipal finances including subsections on property tax, implementation of GIS and expenditure management of SMC.

Section IV and V highlight the provision of basic services in the city and include the practices being adopted by AMC to improve coverage of regular water supply and management of solid waste. Section VI discusses the special efforts made by SMC in the adoption of clean and renewable energy. Section VII of the chapter showcases the technological attempts made by SMC to streamline the entire civic administration system. The last section concludes the chapter with remarks on areas that need attention and the best of practices from SMC, which could act as a model for other cities of similar characteristics.

3.1.1 Demographics

The decennial population growth rate between 2001 and 2011 has been calculated to be 83.57 per cent. Using State CAGR of 2.238, population was estimated to be 48,81,312 in 2014-15, 49,90,538 in 2015-16 and 51,02,208 in 2016-17. The Surat Municipal

Corporation has divided the city into seven zones and 29 election wards. The literacy rate of the city is 87 per cent and the literacy rate for female population is 81 per cent. Surat claims to have practically zero percent unemployment rate.

3.2 Urban Governance

The Surat Municipal Corporation (SMC) came into existence in 1966, before which the city was administered by the municipality that was established in the year 1852. The SMC governs under the Bombay Provincial Municipal Act (BPMC), 1949 with the aim to make Surat a dynamic, vibrant, beautiful, self-reliant and sustainable city with all basic amenities, to provide a better quality of life. Article 63 under chapter VI of the BMPC Act, 1949 describes 25 obligatory functions to be performed by the Corporation. Out of which, a few related to the socio-economic development of the city are as below:

- watering, scavenging and cleansing of all public streets and places in the city and the removal of all sweeping therefrom;
- Collection, removal, treatment and disposal of sewage, offensive matter and rubbish;
- construction, maintenance and cleansing of drains and drainage works, and public latrines, water closets, urinals and similar conveniences;
- Construction and maintenance of public hospitals and dispensaries;
- lighting of public streets, municipal markets and public buildings vested in the Corporation;
- Management and maintenance of water works and new works necessary for a sufficient supply of water for public and private purposes;
- Preparation of plans for economic development and social justice

3.3 Overview of Finances

The efforts made by SMC in improving its revenue resources have been effective and have resulted in noteworthy progress in the augmentation of resources and cost recovery. Major steps taken in this direction would include the introduction of GIS in property tax collection, impetus on renewable energy sources, usage of IT in day-to-day governance of the city, etc. SMC is also planning to introduce Fire Charges as part of non-tax revenue.

However, property tax remains a major source of their own revenue. Non-tax revenue is derived from fees and charges, which includes professional tax, development charges, building fees, advertisement fee, entertainment tax, etc. The reliability on non-tax revenue sources is equally important as on tax revenue for SMC.

3.3.1 Income vs. Expenditure

Table 14: Per Capita Revenue Receipts and Capital Receipts, 2014-15 to 2015-16 (in Rupees)

<i>Indicators</i>	2014-15	2015-16	Annual Growth Rate (%)
Population	48,81,312	49,90,538	2.24
Revenue Receipts	3,426.16	3,520.67	2.76
Capital Receipts	2,829.41	2,349.34	-16.97
Own Revenue	1,837.78	1,954.52	6.35
Transfers, Grants, Assigned Revenues	1,539.93	1,540.63	0.05
Tax Revenue	729.41	773.38	6.03
Non-Tax Revenue	1,108.37	1,181.14	6.57
Property Tax	508.88	514.08	1.02
Capital Grants	1,822.73	1,144.29	-37.22
Other Capital Receipts	1,006.68	1,205.05	19.71

Table 15: Own Revenue as a percentage of Revenue Receipts, 2014-15 to 2015-16

<i>Indicators</i>	2014-15	2015-16
Revenue Receipts as a % of Total Receipts	54.8	60.0
Own Revenue as a % of Revenue Receipts	53.6	55.5
Tax Revenue as a % of Own Revenue Receipts	39.7	39.6
Property Tax as a % of Own Revenue Receipts	27.7	26.3
Property Tax as a % of Tax Revenue	69.8	66.5
Non-Tax Revenue as a % of Own Rev Receipts	60.3	60.4
Other Revenue Receipts as a % of Revenue Receipts	1.4	0.7
Transfers and Grants as a % of Revenue Receipts	44.9	43.8
State Transfers as % of Transfers and Grants	100.0	99.6
Central Transfers as % of Transfers and Grants	0.0	0.0
Other Transfers as % of Transfers and Grants	0.0	0.4
Capital Receipts as a % of Total Receipts	45.2	40.0
Central Capital Grant as a % of Capital Receipts	0.2	3.8
Capital Grants as a % of Capital Receipts	64.4	48.7
Other Cap Receipts as a % of Total Capital Receipts	35.6	51.3

Table 16: Per Capita Revenue and Capital Expenditure, 2014-15 to 2015-16 (in Rupees)

Indicators	2014-15	2015-16	Annual Growth Rate (%)
Revenue Expenditure	2,678.85	2,928.58	9.32
Capital Expenditure	3,577.06	3,524.49	-1.47
Establishment and Salaries	1,604.25	1,761.35	9.79
O&M and Other Expenses	1,074.59	1,167.23	8.62
Development Expenditure	1,175.61	792.03	-32.63
Other Capital Expenditure	2,401.45	2,732.46	13.78

Table 17: Revenue and Capital Expenditure as a percentage of Total Expenditure (%)

Indicators	2014-15	2015-16
Revenue Expenditure as a % of Total Expenditure	42.8	45.4
Admin, Est & Salaries as a % of Revenue Expenditure	59.9	60.1
O&M as a % of Revenue Expenditure	10.7	10.1
Others (Loan Repayment, etc.) as a % of Revenue Expenditure	29.4	29.8
Capital Expenditure as a % of Total Expenditure	57.2	54.6
Development Works as a % of Capital Expenditure	32.9	22.5
Other Capital Expenditure as a % of Capital Expenditure	67.1	77.5
Own Revenue as a % of Revenue Expenditure	68.6	66.7

It is evident from the income-expenditure tables that SMC has a budget surplus with own revenue accounting for nearly 69% of revenue expenditure.

3.3.2 Own Source Revenue

Due to SMC's sound financial management and innovative revenue-generating initiatives, own revenue accounted for the highest share in revenue receipts, i.e. 53% of total revenue in 2014-15 and 55% of total revenue in 2015-16. Additionally, non-tax revenue accounted for 60% of own revenue, indicating that energy cost-saving initiatives like smart streetlights have been relatively successful in generating revenue for SMC and offsetting the losses incurred from a relatively inefficient property tax system.

Table 18: Five Best Practices under Surat Municipal Corporation

Areas of Development	Measures	Outcomes
Property taxation	Introduction GIS system	Property Tax revenues considerably augmented
Coverage of Water Supply	Supply grid improvements, SCADA implementation	NRW declined, Water Quality improved
Solid Waste Management	Door-to-Door collection improved	Waste to Energy plant installed, Maximum waste collected
Energy Efficiency Cell	Installation of machinery/system for renewable sources	Energy costs declined for the ULB
SMAC	Inter-departmental coordination, integrated monitoring and use of latest technology	Greatly improved civic services and quality.

PROPERTY TAX REFORMS

Introduction of GIS in Surat has accelerated the property tax revenue and has changed the structure of governance in the city.

Police officers work on deputation for BMC and on some occasions the third gender is employed and sent for the collection of property tax, which has been found to be an effective deterrent as well.

There remains scope for recovering even more property tax revenue using GIS, by ensuring formal registration of all properties, whether assessable or not.

Amendment in Section 127
Property taxes legible either under
Section 129 or property taxes legible
Under section 141B
Section 129 stands for

Rateable Value Based System

Section 141B stands for
Carpet Area Based System

3.4 Property Tax

As highlighted in the tables above, property tax is the major source of tax revenue for SMC. The current system of property tax is based on section 141 B of the BPMC Act, 1949 where the tax is levied annually under the carpet area based system at such rate per square meter of the carpet area of building (and lands) as the corporation may determine.

Introduction of GIS in Surat has accelerated the property tax revenue and has changed the structure of governance in the city. The execution of GIS initiative has been handled by the Town Planning Department of SMC. After more than three years of surveys, software development, planning the network architecture, and a series of other processes, GIS was finally launched in the year 2015.

3.4.1 Assessment Process-First Time Assessment

Property can be entered for the first time into assessment register By either of following modes:

- Owner's request: The owner can file application for the new assessment.
- Assessment by Surveyor's field visit: New property will be identified during the field visit of the surveyor.
- Other sources (neighbours or parties that are affected).

As reported by the vigilance or any other department of the corporation

Building approval and property tax database were pre-existing SMC systems that were integrated with the GIS applications. For integrating property tax information, physical survey was done for around 15 lakh properties and it was verified using random samples by SMC, which reviews $\frac{1}{4}$ properties every year by carrying out a field survey. Thus updating all the properties of the city every four years. Scanpoint Geomatics Ltd., which is the agency responsible for developing the entire GIS web application for SMC, carried out two surveys – a survey of properties to verify the satellite data and a survey of slums for identifying slum boundaries.

COVERAGE OF WATER SUPPLY

Introduction of GIS in Surat has accelerated the property tax revenue and has changed the structure of governance in the city.

The application of GIS has enabled improvement in revenue realization as it allows for geographical representation of tax defaulters. The application is not exactly used for property tax collection but it can be used to assess which areas are not paying property tax. This visualization of data results in better assessment and ensures necessary action to be taken on time. Thus, with the help of GIS, SMC has been able to achieve 100% property assessment.

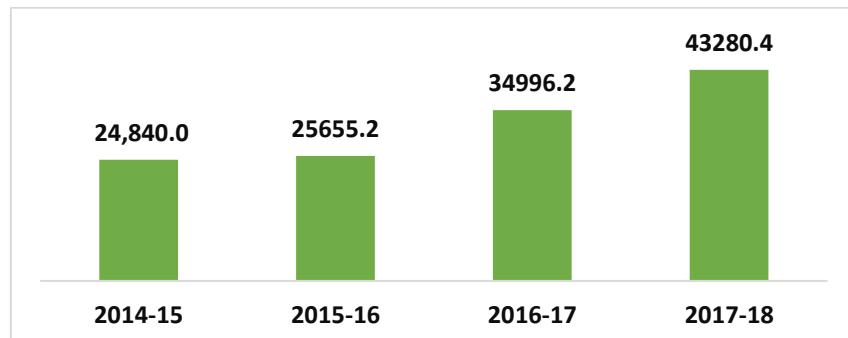
Table 19: Increase in Property Tax Recovery (In Rupees)

Zone	2015-16	2016-17	Annual Growth Rate (%)
West Zone	50,25,76,986	62,03,99,385	23.44
Central Zone	76,59,12,398	94,04,53,854	22.79
North Zone	80,72,09,452	100,04,98,160	23.95
East Zone	108,35,79,832	125,11,37,270	15.46
South Zone	124,26,07,278	148,56,78,196	19.56
South West Zone	76,42,43,247	95,40,68,935	24.84
South East Zone	79,80,76,367	92,10,91,850	15.41
Total	596,42,05,560	717,33,27,650	20.27

Source: Presentation on Property Tax by Town Planner, SMC

It is clear from the evidence that the implementation of GIS in 2015 had a direct impact on property tax collection efficiency. Between 2015-16 and 2016-17, property tax recovered increased by an average of 20% across all zones. This translated to approximately Rs. 120.91 crores of recovered property tax revenue. However, this estimation remains limited to registered properties that failed to pay their property tax prior to GIS. There remains scope for recovering even more property tax revenue using GIS, by ensuring formal registration of all properties, whether assessable or not.

Graph 11: Surat Property Tax in INR Cr



NRW Cell was formed

Leakage Mapping has been an important activity of the recently formed NRW cell; this initiative was actually started in the year 2007.

3.5 Coverage of Water Supply

Surat is located at the end stretch of river Tapi that serves as the major source of water from the city. Initially, water supply for the entire city was dependant on one water work system only, which created hindrance in regular supply system.

At present, SMC has installed eight water work systems that are connected to 34 water distribution centres and form a water supply grid network. This helps the corporation to feed water to any distribution centre in case of failure of any one water work and the

Supply is undisputed as all water distribution stations can be fed from any of the alterative water works.

The system of dual power supply has been provided at all water works to ensure minimum disruption in supply. Approximately 97 per cent of population has been covered under this network grid. The average frequency of water supply to the city is 3.5 hours a day and it is 24x7 in all new areas of the city. In order to meet and ensure the treated water quality is in accordance to drinking water standard IS 10500:1991 edition 2.2, online water quality monitoring system (SCADA) is deployed for round the clock monitoring of essential water quality parameters like pH, Turbidity, Free Residual Chlorine, Total Dissolved Solids (TDS), and Dissolved Oxygen.

Consumer water quality monitoring system has been set up in order to follow the protocol of collection of water samples from various consumers as per CPHEEO and WHO guidelines. As a part of the same, consumer water samples are collected and analysed in a dedicated laboratory. Details of zone-wise status of unfit samples along with its location are published on SMC's website on a monthly basis.

3.5.1 Alternate Sources of Water

To create an alternate source of water, three options are being actively considered:

- Laying 58 Km. long pipeline from Kakrapar to Surat
- Constructing 2 new French wells
- Construction of Balloon Barrage

3.5.2 NRW Cell

As a part of constant endeavour to achieve the targeted benchmark of 15 per cent losses, Non-Revenue Water (NRW) cell of Surat Municipal Corporation has been set up and has started functioning recently. Leakage Mapping has been an important activity of the recently formed NRW cell; this initiative was actually started in the year 2007.

It has been observed that after the Leakage Mapping initiative, the number of leakages in the central zone has reduced gradually. The same is evident for other zones as well. Thus, leakage mapping has resulted in the saving of potable water and a reduction in the probability of occurring water-borne diseases. Water audit ("a thorough accounting of all water into and out of a utility as well as an in-

depth record and field examination of the distribution system that carries the water, with the intent to determine the operational efficiency of the system and identify sources of water loss and revenue loss") will help to keep track of water that is being lost and thereby the extent of NRW. It has been observed that, after the Leakage Mapping initiative, the number of leakages in water supply pipelines reduced gradually in the last seven years.

TREATMENT OF WATER SUPPLY

In 2014, a tertiary treatment plant was commissioned with a capacity of 40 MLD, adopting ultra-filtration (UF) and reverse osmosis (RO) system technologies. A phase II of the tertiary treatment plant is currently under construction, with a capacity of 35 MLD.

The technologies adopted in the TTP are sand filtration, ultra-filtration (UF), reverse osmosis (RO) and activated carbon filter (ACF). The contractor for the plant is Enviro Control Associates (I) Pvt. Ltd. and the technology partner is Hyflux, Singapore

3.5.3 Tertiary Treatment Plant

The sewerage network in the city of Surat covers an area of 167.50 sq. km., which is 82% of the present habitable area of 204 sq. km., catering to 97% of the total population of the city. The length of the sewer network is more than 1,776 km. and has more than 65,000 manholes. There are 60 sewage-pumping stations operating 1,986.70 MLD and 11 sewage treatment plants operating 982.5 MLD.

A single stage biological treatment plant was set up at Bamroli in 2003 with a capacity of 100 MLD, consisting of anaerobic biological treatment through UASB system. A two-stage biological/secondary treatment plant of 100 MLD capacity was set up in 2008, which upgraded the single stage plant through extended aeration to meet the revised stringent effluent discharge standards. In 2014, a tertiary treatment plant was commissioned with a capacity of 40 MLD, adopting ultra-filtration (UF) and reverse osmosis (RO) system technologies. A phase II of the tertiary treatment plant is currently under construction, with a capacity of 35 MLD.

It was felt that to meet the huge water requirement of industrial development, the recycle and reuse of water was essential. Assured water requirement and assured revenue generation enabled guaranteed recovery of O&M cost by implementing such a project on EPC basis. Revenue is thus generated from recycled wastewater, and there is an assured water supply for the Pandesara industrial units.

The project was conceptualized as tertiary treatment of secondary treated sewage and to generate Industrial Grade Water for the supply of Industrial Grade Water to Pandesara Industrial Estate. The resultant recycle and reuse of water would contribute to reducing the dependency on conventional sources of water. The technologies adopted in the TTP are sand filtration, ultra-filtration (UF), reverse osmosis (RO) and activated carbon filter (ACF). The

contractor for the plant is Enviro Control Associates (I) Pvt. Ltd. and the technology partner is Hyflux, Singapore. The capital cost of the project was Rs. 85.10 crores. While the current freshwater cost to industries is Rs. 23/KL, the cost of recycled water to the industries is Rs. 19.84/KL, with a yearly increment on indexation base. The project was commissioned in August 2014 and the total recycled water supplied to industries since the commission of the project until April 2018 was 43,929.51 ML. The total income through Industrial Grade Water during the same period is Rs. 86.63 crore.

The tertiary treatment process followed is as below

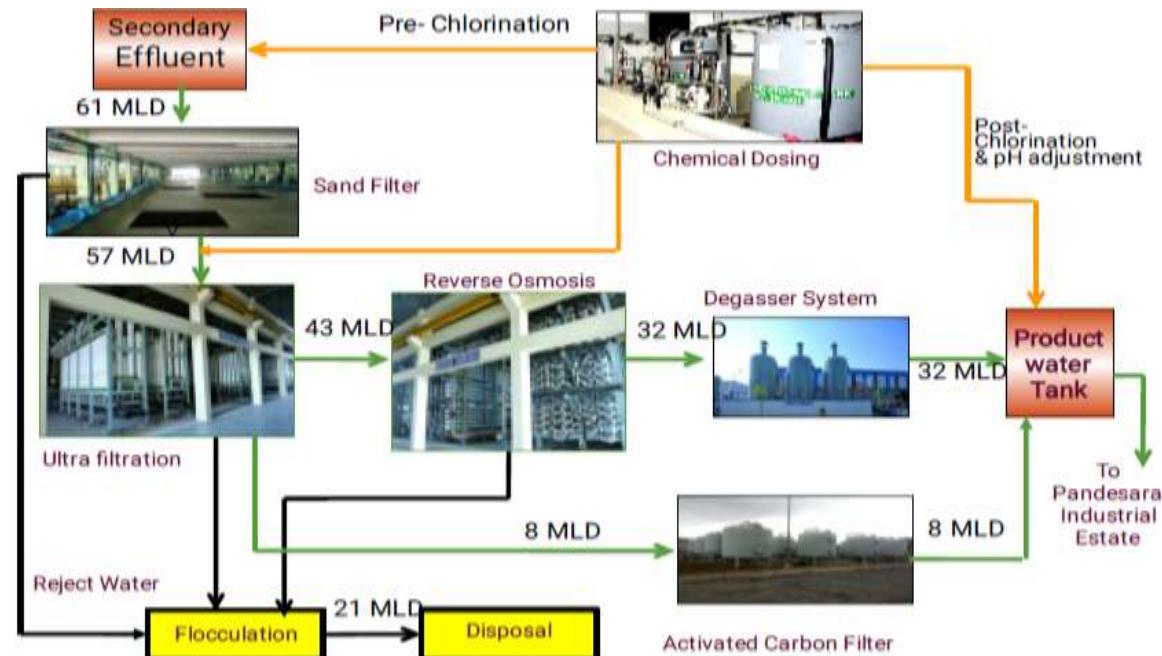


Table 20: Treated Water Quality Achieved

Parameters	Inlet of TTP	Outlet of TTP	Desirable limits as per Drinking water standard IS-10500
Color (Hazen units)	55	<5	5
pH	6.5-7.5	6-7.5	6-8.5
Total Hardness as CaCO ₃ (mg/L)	750	<300	300
Iron as Fe(mg/L)	0.63	<0.25	0.30
Manganese as Mn (mg/L)	0.12	<0.10	0.10
Total Dissolved Solids (mg/L)	2100	<500	500
BOD (mg/L)	20	<5	No Standard
COD (mg/L)	100	<50	No Standard
Suspended Solids (mg/L)	30	<2	5.0 (Turbidity)
Total Nitrogen as N (mg/L)	14	<10	10.20
Total Phosphorous as P (mg/L)	8	6-10	-
Residual Chlorine (mg/L)	0.5	0.5	<0.25

The tertiary treatment plant resulted in reducing the diversion of drinking water for non-potable purposes, conserved valuable ground water resources for future generations, facilitated recycling of

wastewater, provided an assured resource for Pandesara Industrial Estate, enabled SMC to reduce pressure on conventional water sources in the city, and guaranteed revenue generation for SMC.

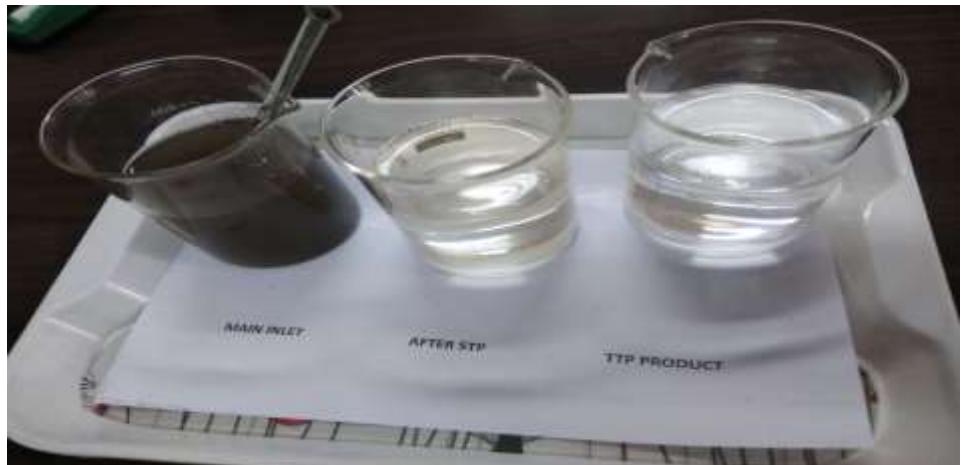
While the existing tertiary treatment plant at Bamroli caters to the needs of Pandesara Industrial Estate, another 35 MLD capacity plant is being set up at Bamroli to cater to the needs of Sachin Industrial Estate. To explore further usage of tertiary treated sewage water for gardening and lake development, a TTP of 1 MLD capacity has been taken up as a pilot project at Kavi Kalapi Garden in the west zone of Surat. For six proposed EWS housing schemes, having more than 3,000 units under the Smart Cities Mission, SMC initiated the establishment of a TTP to treat domestic sewage and reuse it for toilet flushing and gardening.

SOLID WASTE MANAGEMENT

SMC has an estimated daily waste collection of over 1,850 MT, which is collected from more than 16 lakh households. Door-to-door (d-to-d) garbage collection system was introduced in the year 2004 with a closed body vehicle equipped with VTS. An average daily d-to-d collection is around 55% of total waste collection

Under the Anudan Scheme for Urban Dweller Units, residential societies and industrial area are given a grant for cleanliness

SMC has also started using secondary treated sewage water for gardening, plantation along the roads and for sewer cleaning. The Ministry of Power gave a resolution on 28 January 2016, according to which, thermal plants, including the existing plants located within the 50 km. radius of sewage treatment plant shall mandatorily use treated sewage water and the cost on this account is allowed to pass through in the tariff. SMC has already negotiated with five power plant operators.



Picture: Final Product at Tertiary Treatment Plant in Bamroli, Surat

3.6 Solid Waste Management

SMC has an estimated daily waste collection of over 1,850 MT, which is collected from more than 16 lakh households. Door-to-door (d-to-d) garbage collection system was introduced in the year 2004 with a closed body vehicle equipped with VTS. An average daily d-to-d collection is around 55% of total waste collection.

A separate mechanism was introduced in the year 2000 for the collection and transportation of hotel and kitchen waste, which is now done by the hotel associations. Under the Anudan Scheme for

SMAC CENTRE

The SMAC Centre integrates & collaborates data from various departments.

Acts as single command and control centre for various departmental functions of Surat Municipal Corporation.

CCTV and online monitoring
Video Wall size 250: Sq Ft
SMAC Centre Area: 2100 Sq Ft

Urban Dweller Units, residential societies and industrial area are given a grant for cleanliness. SMC has covered more than 600 societies under this scheme and an area of over 5 lakh sq. km. Eight modern transfer stations are operational in different zones which consist of covered, leak-proof container to prevent spillage of garbage on the roads. In addition, there is no MSW storage, permanent or temporary, at transfer station as it is directly transferred to containers without secondary handling.

Waste-to-Energy project of capacity 1,000 TPD is under execution, besides a 600 TPD compost plant that is under operation. There is also the provision of centralized bio-medical waste collection and disposal.

3.7 Energy Efficiency Cell

SMC has a dedicated energy cell, with a long-term focus on sustainability. Nearly 35 per cent of electricity consumed by SMC comes from renewable sources. This helps save the Corporation a yearly sum of approximately Rs. 45 crores. Following the model of converting waste-to-energy, a biogas-based power plant has been installed with a total production capacity of 5.85 MW, an unprecedented initiative by a municipal body in India. As per the Global Wind Statistics (2018), wind power generation in India has significantly increased in recent years, with current total installed wind power capacity at 32.96 GW. This makes India the fourth-largest wind power generation facility (by capacity alone) in the world.

Additionally, Gujarat is the largest State, second only to Tamil Nadu, as far as installed wind capacity is concerned. In Surat, the total installed capacity of the wind power plant is 30.3 MW, which has been strategically set up in Saurashtra and Kutch. Gujarat government's emphasis on tapping renewable energy has led to a substantial upswing in the generation of energy from wind power farms. So far, the total installed capacity of solar power plants set up by the corporation is 5 MW, which has been set up at different sites with a total project cost estimated at Rs. 30 crores.

There is a plan to install another 1 MW capacity solar plant over BRTS (Bus Rapid Transit System) shelters and other locations, by the end of 2018. Exploring the concept of floating solar cells to generate energy is in the pipeline too. Gol is indeed putting a lot of impetus

On the need to harness solar power as a viable energy source and the Gujarat Energy Development Agency (GEDA) has been proactively involved with the mission of harnessing alternative sources of energy in the State. SMC, keeping in view the greater good and the importance of sustainability, ran an awareness drive to promote greener energy sources. Under this initiative, a solar rooftop campaign was launched by SMC and 2,400 applications for installation of a solar RT (rooftop) plant have already been received. Out of the 2,400 applications received, 1,755 applications were approved and 800 RT installations for domestic and residential usage have been completed. Additionally, energy efficient streetlights are being installed across the city by SMC.

More than 81,000 such streetlights have been installed and more are expected to be fitted. SMC also conducts energy audit at regular intervals of two years with the purpose of assessment and analysis of energy flows in the corporation and energy conservation at the same time.

3.8. SMAC

SMC has a SMAC (Smart City) centre which is an Integrated Command and Control Centre (ICCC) for effectively managing the city of Surat, including provision of good quality municipal/allied services for the citizens.



Picture: Surat Smart City Centre (SMAC)

SMAC Centre of SMC was launched on 25 June 2016 and in the first phase, the following systems were covered:

- Property tax system
- VBD Health Survey Application
- Complaint Management System 46 Success Stories from Mission Cities - SCM
- Monitoring City Operations through CCTV Network
- Water Treatment Plant (WTP) SCADA

- Sewage Treatment Plant (STP) SCADA
- Intelligent Transit Management System (ITMS)
- Swachh Bharat (Swachhta App)
- Monitoring of Door-to-Door Garbage Collection using GPS

At present, the SMAC Centre has evolved to include many more features, such as monitoring:

- Intelligent Traffic Control Systems (ITCS)
- Automatic Fare Collection Systems (AFCS)
- D-to-d Municipal solid waste management
- Biometric attendance
- Parking management
- Hoarding & advertising management
- Call centre
- Road Asset Management System (Service Application for Road and Streets in Surat)
- Health system (Surat Urban Health Action System)
- Water Quality Monitoring (Water+)
- Street Light Maintenance System (i-Promise)

3.8.1 SMAC Centre is an administrative control centre for Surat, which is meant to help the city in:

- Improving coordination, administration/management and service delivery
- Bringing in synergy between different departmental activities by effective coordination/monitoring of city operations
- Monitoring of the abnormal events and help take corrective actions
- Monitoring the Key Performance Indicators (KPIs) for various activities
- Optimal utilization of municipal assets

The SMAC Centre is expected to integrate 30 civic services from SCM and other departments. SMAC Centre also provides for composite management of services where multiple agencies have interest. By providing a 360-degree view of the key functions for managing the city, the SMAC Centre enables city officials in better allocation of resources, adopting preventive maintenance measures, and proactively managing issues that affect the quality of life for citizens in Surat. The SMAC centre has a cost outlay of around Rs. 32 crore, which has been financed entirely from Smart City Mission (SCM) funds. The operation and maintenance of SMAC centre has been planned through PPP mode.

3.9 Information Technology

SMC started the Virtual Civic Centre in April 2012. The services offered by the centre are varied and include:

- Payment of:
 - Property Tax & User Charges
 - Profession Tax (both EC & RC)
 - Water Meter Bills
- Online issuance of Birth/Death Certificate
- Shops & establishment registration & certificate renewal
- Online booking of municipal hall/community hall
- Management of and enrolment for library membership
- Society Civic Facility (Water Supply, Drainage, Road & Street Light)
- Issues related to application for individual water connection/drainage connection
- Various forms (downloadable free of cost)
- General civic complaint registration

SMC is also the first municipal body in India to launch a Mobile App for citizen-centric information and service delivery. This application was launched in August 2013 and has online payment among its many features. The app helps citizen in three ways: providing informative, interactive and transactional services.

3.9.1 Comprehensive Complaint Management System (CCMS)

Through the CCMS, citizens can register complaints through various channels, which are auto-assigned based on the category and location of the complaint. SLA for each complaint is defined and there exists a system of Complaint Escalation. In case of SLA breach by officer at Level-1, complaints are escalated to a higher officer at Level-2. If the complaint remains unresolved in 24 hours, the same is escalated to officer at Level-3. Citizens also have the choice of reopening the complaint if they are not satisfied with the resolution provided to them. Such reopened complaints are assigned to higher officials at Level-2 and Level-3 respectively on 1st and 2nd reopening. Reports of open complaints, complaint escalations are reviewed every week at the Municipal Commissioner level.

3.9.2 Remarks

The Surat Municipal Corporation while not as efficient as Ahmedabad, has been the most innovative of its peers, especially in areas of sustainable energy and leveraging technology in enhancing civic engagement. While not without its challenges, some of SMC's better practices can easily be replicable in cities of similar size.

The property tax reforms implemented by SMC show that increasing transparency and streamlining the system of property taxation, can help generate higher revenues for the ULB. To administer such a system successfully, an excellent database is critical. This can be achieved by using GIS-based technologies to make channels of data and tax collection more accessible and convenient.

SMC has especially distinguished itself with a focus on harnessing alternative sources of energy like Wind and Solar to drive down energy costs for its citizens while creating a potentially sizeable revenue source that is environmentally friendly. By introducing SMAC and the Virtual Civic Centre, SMC's citizen-centric approach seeks to generate positive returns. It has helped improve monitoring of civic service issues and quality of service delivery. Linking all existing digital infrastructure has helped recover significant revenues by offering citizens multiple avenues to make payments, lodge complaints, procure government documents and utilize public goods and services more effectively.

3.9.3 Achievements

Surat has bagged many awards and accolades for being a city that constantly experiments and engages in innovative practices in general administration and day-to-day civic management. For these initiatives, SMC has been recognized at different platforms. A few instances from the past year are as below:

Table 21: Awards and Accolades

The Water Digest Water Awards 2017-18 For "Usage of Wind power in water supply system of Surat Municipal Corporation" and "Aquifer Mapping Study for Tapti" By The Times Group	March '18
Smart Infrastructure Innovation Awards To Surat Smart City for Enterprise Management system for ITMS for Sitilink By Express Computer	March '18
10th CIDC Vishwakarma Awards 2018 For Rooftop grid connected Solar Plants through Net Metering Project By Construction Industry Development Council	March '18
The Swachta Award 2017 By Business World (BW Businessworld Smart Cities Conclave & Awards)	Dec. '17
Asian Townscape Award 2017 For Eco-Friendly Ganesh Idols to Conserve River Tapi during Ganesh Utsav By Asian Habitat Society, Asian Townscape Design & Research Centre, Japan	Nov. '17
Smart Infrastructure Symposium Award 2017 For SAFAL (Surat Action for Augmenting Livelihood) Mobile App By The India Express (P) Ltd.	Nov. '17
Best City Bus Services Award By Union Ministry of Housing and Urban Affairs, GoI	Nov. '17
SKOCH Swachh Bharat Award (Silver) & Certificate of Merit For Slum Rehabilitation Efforts of SMC	Sept. '17
SKOCH Smart City Award (Silver) & Certificate of Merit For Water Conservation in Water Supply System	Sept. '17
SKOCH Smart City Awards (Order of Merit) For Processing & Disposal of Organic Urban Solid Waste Using Environment Friendly & Financial Sustainable – Vermicomposting	Sept. '17
SKOCH Smart City Awards (Order of Merit) For Installation and Promotion of Rooftop Grid Connected Solar Plants through Net Metering in Surat	Sept. '17
Smart Cities India Awards 2017 - Jury Excellence Award For Rooftop Grid Connected Solar Power By Exhibition India Group	May '17

HUDCO Award for Best Practices to Improve the Living Environment 2016-17 For Financial Inclusion of Urban Poor Women Through Linkage with Income Generation Activities By Housing & Urban Development Corporation Limited	April '17
ISGF Innovation Award For Innovative Policies and Regulations Promoting Renewables and Smart Grids in India By India Smart Grid Forum	March 17
National e-Governance Award Winners 2017 Under Innovative use of GIS Technology in e-Governance By Department of Administrative Reforms & Public Grievances, Ministry of Personnel, Public Grievances & Pensions, GoI	Jan. '17

BHOPAL MUNICIPAL CORPORATION

Significant achievements by BMC were recorded in revenue generation through innovative practices adopted in traditional resources such as property tax and advertisements tax, as well as through integration of technology under Smart initiatives in parking and street lighting.

4 Bhopal Municipal Corporation

4.1 City Profile

Bhopal is the capital of the Indian state of Madhya Pradesh and the administrative headquarters of Bhopal district and Bhopal division. It is known as the City of Lakes for its various natural as well as artificial lakes and is one of the greenest cities in India. With an expanded planning area of 463 square kilometres, Bhopal stands among 15 largest cities of India and is one of the greenest cities in the country.

Bhopal Municipal Corporation (BMC) is the main administrative body of the city and has been fulfilling duties including ensuring efficient delivery of basic services like drinking water, sanitation, roads, streetlights, fire mitigation including disaster management, etc. using clean technologies, cost efficient methods and other smart initiatives. In addition, conservation and beautification of lakes and structural heritage, and planning, construction, upgradation and maintenance of urban transport system, which includes public transport, parking, new corridors (BRTS), etc. have also been taken up by the Corporation.

A team from NIUA had visited Bhopal in May 2018 and witnessed significant achievements in revenue generation through innovative practices adopted in traditional resources such as property tax and advertisements tax, as well as through integration of technology under Smart initiatives in parking and street lighting. The practices followed by the Corporation, making it a lighthouse city in these practices have been detailed in the following sections.

4.1.1 Demographics

As per Census 2011, the population of the city is 17, 98, 218, which increased by 25.10% since Census 2001. Assuming a CAGR of 2.26%, it is estimated that the population of the city is 20, 56, 883 in 2016-17, while it was 20, 11,322 and 19, 66,771 in 2015-16 and 2014-15 respectively. The literacy rate of the city is 83%, of which male and female literacy is 87% and 79% respectively. Unemployment rate of BMC was found to be 1.53% as per the latest unemployment data available from 2011-12.

4.2 Urban Governance

Bhopal Municipal Corporation (BMC) is governed by the MP Municipal Corporation Act 1956 and has been working upon various

duties including, providing basic services to citizens, implementation and monitoring of various development projects (Social and Physical Infrastructure), increasing the municipal revenue income as well as generating innovative ways to increase the municipal revenue. Other than the above-mentioned tasks, the Mayor and Commissioner, Municipal Corporation also have a key role in following:

- Coordination between all line departments and agencies involved in development
- Coordination between various department/sections of Bhopal Municipal Corporation
- Ensuring efficient delivery of basic services like drinking water, sanitation, roads, streetlights, fire mitigation including disaster management, etc. using clean technologies, cost efficient methods and other smart initiatives
- Conservation and beautification of the lakes, and structural heritage
- Planning, construction, upgradation and maintenance of urban transport system, which includes public transport, parking, new corridors (BRTS) etc.
- Work As Ex-officio Board of Directors, Bhopal City Link Limited (City Transport SPV), which ensures commercial operation of public transport (Inter City Bus Service, Intra City Bus System, Intra City Public Taxi Service, etc.)
- Implementation of projects sanctioned under the Central and State governments, various PPP Projects (Multilevel Parking, etc.).
- Regulatory works like building permission, development permission, and encroachment removals
- Computerized Municipal Processes through SAP-ERP based Municipal Administration System
- Implementation of various social sector schemes, survey of Samagra Samajik Suraksha Mission (SSSM)
- Support to district administration in municipal Area expansion mapping
- Demography based regularization of ward boundaries
- Support to district administration for municipal and local elections

In addition to the above, BMC organizes and supports various agencies in Government events like State-level Panchayats, Ceremonies, and National Workshops. For the purpose of governance, the city has been divided into 19 zones and 85 wards. It is headed by the elected City Mayor who presides over the Council of Corporators. Its administrative head is the Commissioner who is appointed by the State and is a civil services officer. Ward officers are deputed for governing their individual wards and ensuring the implementation of BMC regulations.

4.3 Overview of Finances

BMC has the following significant sources of revenue:

- Property Tax
- Other significant taxes – Water user charges, Advertisement tax, Professional tax, conservancy tax, lighting tax
- Education cess, urban development cess, fire cess

- Fees and User Charges – Water connection charges
- Service charge against property tax on Central/State Government properties
- Rental income from municipal properties

Income vs. Expenditure

Table 22: Per Capita Revenue and Capital Receipts, 2014-15 to 2015-16 (in Rupees)

Indicators	2014-15	2015-16	Annual Growth Rate (%)
Population	19,66,771	20,11,322	2.27
Revenue Receipts	2,742.32	3,254.41	18.67
Capital Receipts	1,774.44	2,224.41	25.36
Own Revenue	1,213.87	1,215.43	0.13
Transfers, Grants, Assigned Revenues	1,342.30	1,896.37	41.28
Tax Revenue	900.30	1,001.16	11.20
Non-Tax Revenue	313.57	214.27	-31.67
Property Tax	509.13	636.66	25.05
Capital Grants	553.54	532.88	-3.73
Other Capital Receipts	1,220.90	1,691.53	38.55

Table 23: Per Capita Revenue and Capital Expenditure, 2014-15 to 2015-16 (in Rupees)

Indicators	2014-15	2015-16	Annual Growth Rate (%)
Revenue Expenditure	1,817.67	2,184.22	20.17
Capital Expenditure	3,348.84	3,626.13	8.28
Establishment and Salaries	966.29	1,144.90	18.49
O&M and Other Expenses	851.38	1,039.31	22.07
Development Expenditure	3,154.93	2,858.65	-9.39
Other Capital Expenditure	193.91	767.47	295.79

Table 24: Own Revenue as a percentage of Revenue Receipts, 2014-15 to 2015-16

Indicators	2014-15	2015-16
Revenue Receipts as a % of Total Receipts	60.7	59.4
Own Revenue as a % of Revenue Receipts	44.3	37.3
Tax Revenue as a % of Own Revenue Receipts	74.2	82.4
Property Tax as a % of Own Revenue Receipts	41.9	52.4
Property Tax as a % of Tax Revenue	56.6	63.6
Non-Tax Revenue as a % of Own Rev Receipts	25.8	17.6
Other Revenue Receipts as a % of Revenue Receipts	6.8	4.4
Transfers and Grants as a % of Revenue Receipts	48.9	58.3
State Transfers as % of Transfers and Grants	97.5	81.9
Central Transfers as % of Transfers and Grants	2.5	18.1
Other Transfers as % of Transfers and Grants	0.0	0.1
Capital Receipts as a % of Total Receipts	39.3	40.6
Central Capital Grant as a % of Capital Receipts	1.4	13.6
Capital Grants as a % of Capital Receipts	31.2	24.0
Other Capital Receipts as a % of Total Capital Receipts	68.8	76.0

Table 25: Revenue and Capital Expenditure as a percentage of Total Expenditure (%)

Indicators	2014-15	2015-16
Revenue Expenditure as a % of Total Expenditure	35.2	37.6
Admin, Est & Salaries as a % of Revenue Expenditure	53.2	52.4
O&M as a % of Revenue Expenditure	33.4	31.6
Others (Loan Repayment, etc.) as a % of Revenue Exp	13.4	16.0
Capital Expenditure as a % of Total Expenditure	64.8	62.4
Development Works as a % of Capital Exp	94.2	78.8
Other Capital Expenditure as a % of Capital Exp	5.8	21.2
Own Revenue as a % of Revenue Expenditure	67.1	56.0

Table 26: Four Best Practices Undertaken by Bhopal Municipal Corporation

Areas of Development	Measures	Outcomes
Governance	Digitization of Services, attendance and monitoring	Ease of services and operations
Property Tax Reforms	Expanded Tax Base Adaptation of SAP software	Property Tax collection improved
Smart Parking	60 Locations turned into Smart Parking	Optimized Parking Space Ease of Traffic Movement
Smart Poles and Smart Lighting	Energy Efficiency Smart Poles and LED Lights	Reduction in energy costs Increased lightening

4.3.1 Governance-SAP Software

All works in the Corporation are completed digitally and a SAP-based double entry accounting system is followed. BMC was the first municipality in India to automate and centralize all public services offerings through the SAP software and was awarded the 2013 SAP Ace Award for using SAP to provide municipal services. It integrated municipal services across all the BMC wards and implemented SAP for public sector solutions as a single ERP instance.

The HR module of Municipal Administration System (MAS) has eliminated ghost records in BMC, saved efforts on attendance reconciliation and a biometric/RFID-based system is proposed to track attendance of field functionaries. A single window system exists in Bhopal for efficient monitoring and transparency.

The SAP system enabled transparency in all public services, created visibility of citizens' accounts, eliminated manual processes in tax computations, assessments, and account reconciliations and efficiently managed back-end processes such as procurement, inventory management, accounting and HR. If any payment cheques bounce, a penalty is charged from the citizens. Earlier, BMC would not be aware of the cheques bouncing.

All functions of BMC are now integrated online, including accounting, birth, death, etc. Based on the National Manual Accounting System, e-filing of infrastructure, invoicing, etc. is carried out online, which eliminates the chances of errors and increases efficiency. Several municipal services such as grievance redressal, building permission, birth/death registration, tax payments and receipts are available online.

BMC is able to maintain a healthy surplus of income over expenditure, and had ratios for own revenue compared with revenue expenditure of 67.1% and 56.0% in 2014-15 and 2015-16 respectively.

4.3.2 Own Source Revenue

While BMC has recently hauled their property tax and advertisement tax collection practices to augment their own revenue sources, these sources do not contribute to the majority of its revenue receipts as they are only 44% and 37% in 2014-15 and 2015-16. The share of revenue from transfers, grants and assigned revenues is higher in revenue receipts than that contributed from own revenue sources, thereby making the corporation more dependent on transfers from State or Central Governments.

Further, tax revenue is significantly higher than non-tax revenue at 74% and 82% in 2014-15 and 2015-16 respectively, indicating that the Corporation is still dependent on traditional own revenue sources such as property tax, advertisement tax, etc. instead of exploring non-tax revenues such as fees and user charges, betterment charges, development fees, etc. which can contribute to their own financial sources to a large extent.

PROPERTY TAX REFORMS

Further, through computerization of records, the number of properties in the tax net have increased from 1,35,000 in 2011-12 to 4,11,000 currently

Enablement of property tax through GIS is currently going on in the city and the 1st phase of GIS have been completed covering 25-26 wards out of 85.

4.3.3. Property Tax Reforms

While Property Tax collection in Bhopal has increased significantly, it is not simply due to technological intervention, but due to a host of activities and initiatives that have been undertaken by BMC officials to ensure timely collection of tax and minimum defaulters. It involves information dissemination through multiple avenues and enabling easier processes and channels for citizens. A 20% growth in the collection of property tax was witnessed in 2017-18 and the Corporation received an award for the highest percentage growth in the State of Madhya Pradesh in Property Tax collection.

Property tax collection in Bhopal has recently increased due to increased coverage. Many new colonies in Bhopal, which were not included in the tax net earlier, have been added to the coverage. Approximately 1,000-1,200 units under property tax have increased. However, the rate of property tax has not been increased. Additionally, a service charge has been levied on all State Government properties against their property tax. Earlier, this service charge was only levied on Central Government properties. This has also resulted in increased property tax realization. Property tax is calculated from the annual letting value, which is based on the circle rate for that area.

Prior to 2008, all the activities pertaining to collection and management of property tax were carried out manually. In 2008-09, BMC adopted the SAP system for monitoring of Property Tax collection and all activities are carried out digitally. All property assessments are carried out online and no assessments are done manually. Through IT, monitoring of defaulters is carried out and actual demands for tax established through surveys done routinely. Further, through computerization of records, the number of properties in the tax net have increased from 1,35,000 in 2011-12 to 4,11,000 currently.

The rate of online payments of property tax is 11% in Bhopal. All unassessed properties – new colonies, flats, etc. – are covered and the current coverage of property tax is 95% in the city. Being the capital city, there are about 25,000-28,000 residential quarters and 7,200 BHEL residential houses, belonging to the Government that are exempt from property tax. BMC was the first ULB in India to give an online lottery in BSUP to provide housing for the urban poor.

PROPERTY TAX REFORMS

Innovative Practices

Nagar Nigam officials also visit homes repeatedly or announce names of the defaulters in the colonies, which act as further deterrents for defaulting

Police officers work on deputation for BMC and on some occasions the third gender is employed and sent for the collection of property tax, which has been found to be an effective deterrent as well.

Enablement of property tax through GIS is currently going on in the city and the 1st phase of GIS have been completed covering 25-26 wards out of 85.

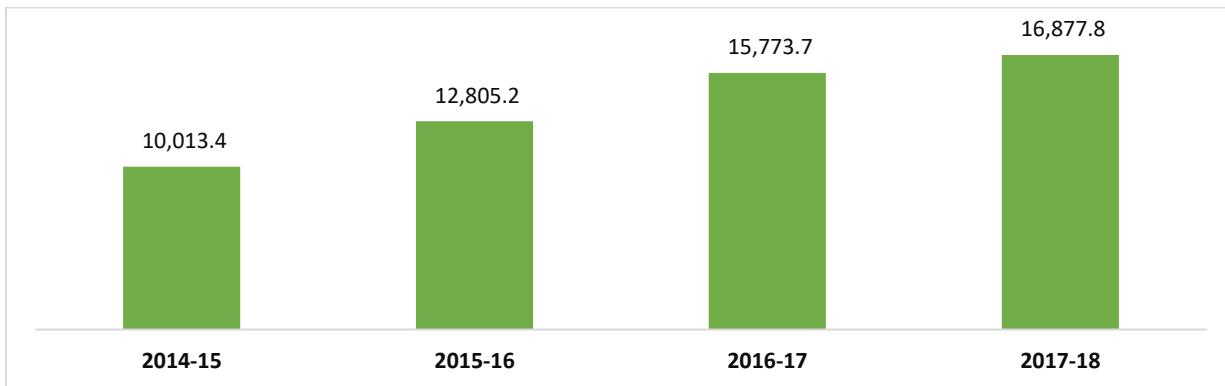
From 66 wards, there is an increase to 85 wards. An internal survey in these wards finds that 5% of the properties were commercial without having reported their use, which translated to nearly 12,000 properties. They were then made to change their land use. A team known as the ‘flying squad’ generated awareness amongst people through media for paying their property tax dues timely for fear of a ‘chhaapa.’ Continuous monitoring of litigation cases is also carried out. Tax rates change seldom but the land use of properties is changed suitable whenever any discrepancies arise. There are 100 handheld machines with BMC for facilitating the door-to-door collection of property tax.

A change in the mind-set of the residents has also been observed, as the citizens are willing to pay for the development of the city. About 50% of the property tax collected is returned to the wards for their development, which results in a willingness among the residents to pay their taxes on time. Every week to fifteen days, the Property Tax Office of BMC speaks to the zonal offices to get the list of defaulters. This list is then published in their offices and in newspapers, which brings a sense of shame among the defaulters, thereby encouraging them to pay their dues in a timely manner.

Nagar Nigam officials also visit homes repeatedly or announce names of the defaulters in the colonies, which act as further deterrents for defaulting. For defaulters or those who do not pay the tax within the given period, the property is seized after giving enough reminders and notices as per the rules of the Act. Timelines are defined in the software itself that has been created keeping legal issues that may arise from time to time in mind.

Police officers work on deputation for BMC and on some occasions the third gender is employed and sent for the collection of property tax, which has been found to be an effective deterrent as well. In case of incorrect self-assessment of property tax, 5-10% penalty is charged for wrongful declaration. The users are allowed to revise within a fixed timeline. A computerized property tax bill is sent through SMS to residents every 2-3 months and regular reminders through advertisements in FM, hoardings and jingles are sent.

Graph 12: Bhopal Property Tax in INR Cr.



Many local government assets that are not being utilized are leased by the Corporation. Notices are sent by the Corporation post December of each financial year, in order to achieve their collection targets and a significant increase is witnessed in the payment of property taxes following this. It is expected that a drop in the collection of property tax will be observed after 2-3 years when the collection of all the dues is over and only the annual charges are collected. The rate of property tax has not been increased in the last five years. The user charges collected in the property tax bill is Re. 1/day in addition to a cess on drainage, Prakash (lighting), swachhta and fire. A rebate of 6% is given on the property tax on timely submission.

A problem that is faced by the Corporation in efficiently carrying out their duties is the regular transfers of officials and workers from one department to another, which greatly hampers the output and efficiency of completing the work. Further, it is felt that monitoring should be done at the ward level, instead of at the city level.

4.3.4 Four other sources of revenue - Advertisement Tax

Post the implementation of GST, few avenues for own source revenue generation in the form of taxes are available with local governments and Advertisement Tax is one of them. Prior to 2016-17, there were no policies for advertisement and the Corporation faced revenue loss from court cases, etc. The State Government was directed to create a policy by the High Court on how to manage the hoardings, etc.

Especially since the arena of advertisement has increased a lot in the current times. Hence, to keep up with the current scenario, Madhya Pradesh Outdoor Advertisement Media Rules, 2017 were notified on March 28, 2017. This development has allowed BMC to augment revenue generation from an existing revenue source, simply through streamlining the process and reducing litigations as a result of the same. With zero capital costs associated with implementation of these rules, BMC has realized significant revenue increase from the Advertisement Tax channel.

There are multiple facets of outdoor advertisements, such as aesthetic, safety and revenue that the city government is required to take into consideration. Prior to the introduction of the outdoor advertisement media rules, there was a lack of monitoring of measurements and of tracking outdoor advertisements, leading to their rampant illegal presence across the city. After the introduction of

these rules, their implementation has been taking place through automation, which has resulted in BMC being able to address these concerns such as adding revenues, aesthetics, safety, monitoring and tracking.

Automation has also provided ease of doing business to the citizens as those who want to place any advertisements can simply register online for placing outdoor ads. Another issue that has been addressed through automation and the advertisement rules is the illegal advertisements on private lands. Only property owners can be given permission now to place advertisements on private land and have to register for the same. Earlier, especially due to the emergence of consumerism, there was a huge number of advertisements placed across the city on private lands that along with being illegal, were also spoiling the city façade and aesthetics.

Since the implementation of the outdoor media rules, Rs. 1 crore had been raised in seven months only though registration. License fee of Rs. 50 lakhs was realized in the initial quarter itself from private lands. Competent authority – scrutiny officers – are managing the monitoring and implementation of these rules through their automation. Regulatory powers of BMC have increased and the outdoor advertisements are tracked better through GPS coordinates, ownership, etc., each of which is available online. Penalties can be paid online as well – up to Rs. 2 lakh penalty can be generated automatically online through automation based on timeline, etc. or termination is followed.

About 356 locations have been identified from public lands and e-Auctions are planned to utilize these spaces for advertising as advertising space is limited now. Seven packages have been sold through e-Auctions as of May 2018, realizing a 45% hike from their revenue. A 20-package e-auction is planned that expects to fetch BMC Rs. 16 crores. Cinema screens can display advertisements by paying a fee of Rs. 5,000 per month, per hall. Private commercial vehicles also have to apply to BMC for display of advertisement, and can apply online from home. The online mechanism has also led to increased transparency.

SMART PARKING

400 Smart Poles are to be installed across the city, which offer multiple services to the city's residents

Intelligent street lighting provides sub-solutions that address safety, connectivity and energy efficiency. It will also help BMC save costs through energy efficient LED lights and raise revenue from providing mobile boosters in the intelligent lighting infrastructure

4.4 Smart Parking

In Bhopal, 60 locations have been identified for providing Smart Parking and from the Smart Parking areas already implemented in the city, Rs. 18 lakh have been earned in revenue. Many international companies have applied for developing Smart Parking areas along with BMC. Similar to the Outdoor Media Advertising Rules, the State Government is in the process of creating Parking Rules. Capacity evaluation of the 60 locations was carried out and a Parking Base Price (PBP) was calculated while keeping multiple factors in mind. The Smart Parking tender document floated by Bhopal is created with unparalleled attention to detail and provides no ambiguity. It is referred to by multiple parties across the country for reference on creating their own RFP documents.

Smart Parking provides great convenience for the citizens of the city and a mobile app has been created (Bhopal Smart Park) to enable greater ease and comfort for them. This project creates an impact in the city with integrated smart parking solutions, which enable faster accessibility with single space detection, parking guidance in real-time and allow guests to reserve parking slots. It also provides smart solutions, which would reduce travel time, carbon emission, search time, and traffic congestion in the city. In addition, it also improves traffic flow within the parking lot with efficient design.

Since limited parking spaces are available across the city, especially in busy areas that are congested, the idea is also to make citizens pay a premium for parking. Hence, parking and enforcement are clubbed together under a single authority with a single complaint mechanism. Smart Parking areas provide advertisement locations, which in turn provides a source of revenue for the local government. All charges such as vehicle towing charges, parking charges, etc. are collected in an escrow account and 34% or Rs. 3 crores, whichever is the higher amount, is shared with the developers. Premium parking bays are provided and land is owned by BMC. In future, it is anticipated that Smart Parking areas will be developed on a BOT model, except for multi-level parking areas that have already been created. BMC is also exploring the idea of allowing public parking on private lands and a policy is currently under process for the same. The Command & Control Centre is integrated with the Smart Parking areas and provides greater vigilance, security and safety for citizens. Simulation-based cameras are provided for two wheelers.

SMART PARKING

The basic premise of this solution is to organize and reuse existing infrastructure for several purposes, leading to greater efficiency of not only financial but human resources as well.



Picture: Smart Parking at Bhopal

Benefits and Features

- Locating a parking space with clear and simple direction and variable message reduces traffic congestion
- Quick entry and exit to parking lots (on-street, off-street and multi-level parking) with lesser transactional time
- Availability of parking slot on real-time with the help of web portal/parking app
- Parking violation detection on real-time basis
- Guides citizens in directing to available parking slots and making optimal usage of parking space
- Real-time update of entry & exit of vehicles, thus improving occupancy levels
- Increases revenue by efficient systems and reduces pilferage
- Real time information, Smart Meters and ease of payment improve parking operations

SMART POLES

Heavy industrial zones will have air quality monitoring sensors to regulate industrial emissions and areas prone to waterlogging problems will be provided with water-level sensors to enable timely and effective action from the city officials

- Clear, simple directions and ease in parking reduce road accidents (effective design and signage for ease of parking, reducing chances of accidents)
- Delights users by saving time, effort and cost
- Less parking search time reduces carbon emission and controls pollution
- Flexibility of tariff fixation based on the demand (peak, non-peak, special events etc.)
- Identification of parking violations, over-stayed events and suspicious parking
- Availability of real-time data for analysis and Business Intelligence, which help in understanding consumer behaviour, parking demand and supply, etc

4.5 Smart Roads (Smart Poles and Street Lights)

Bhopal has introduced Smart Roads in the city by providing smart poles and intelligent streetlights through PPP under the Smart Cities Mission. This project has been structured innovatively to provide bundled smart services to citizens and maximum value for money at the same time to city authority.

4.5.1 Smart Poles and Intelligent Street Lighting

~400 Smart Poles are to be installed across the city, which offer multiple services to the city's residents. Some of the key features of these Smart Poles include the following:

- Energy efficiency and remotely controllable LED street lights
- Surveillance cameras for safety and parking violation detection
- Environmental sensors to monitor air quality, temperature and humidity
- Wi-Fi hotspot services
- Electric vehicle charging points to promote use of electric vehicles
- Mobile-based application with the functionality of SoS
- Optical fiber for better bandwidth to Wi-Fi users/providing backhaul to telecom operators
- Smart pole has telecom tower infrastructure to match with city aesthetic and is ready to accommodate upcoming technology as 4G and 5G

- ~20,000 LED streetlights will be replacing conventional sodium and mercury lamps and providing intelligent street lighting features such as:
 - Increased life of LED lights
 - Intelligent and programmable street light system for efficient power management
 - Remote operation and control of street light system
 - Report of operating (green sign) and non-operating (red sign) luminaries
 - Power theft control detection
 - SMS to maintenance field staff in event of faults
 - Workforce cost saving

The idea of Smart Poles is conceived to leverage maximum accessories on lighting infrastructure. It includes identification of poles that can be converted to smart poles through reusing infrastructure and minimizing the digging of roads. Intelligent street lighting provides sub-solutions that address safety, connectivity and energy efficiency. It will also help BMC save costs through energy efficient LED lights and raise revenue from providing mobile boosters in the intelligent lighting infrastructure. The basic premise of this solution is to organize and reuse existing infrastructure for several purposes, leading to greater efficiency of not only financial but human resources as well.

Telecom service providers invest in the creation of infrastructure for installing signal boosters. Smart poles facilitated by BMC are designed to allow the installation of mobile boosters on them, thereby allowing telecom operators to use them and work towards zero call drops. It is expected that this model will result in revenue collection for the Corporation, savings for the service providers and improved call quality for citizens, as well as reducing the payback time for the intelligent lighting and reducing the strain on municipal finances at the same time.

Energy efficiency can be obtained through remote scheduling and monitoring of LED lighting. This will result in energy savings and functioning of streetlights only when required, thereby leading to reduced financial costs tied to lighting opex. Further, it will help the city meet its goals for sustainability. These Smart Poles can also be leveraged for providing safety features, through convergence with MP surveillance initiative that can provide citywide surveillance. SOS terminals are also planned at regular intervals for increasing the safety of women. The SOS application will facilitate residents with quick response in case of emergency or distress. Environment sensors are planned at certain intervals in the city to measure pollution.

Heavy industrial zones will have air quality monitoring sensors to regulate industrial emissions and areas prone to waterlogging problems will be provided with water-level sensors to enable timely and effective action from the city officials. Several government services will be provided through planned, city-level, restricted Wi-Fi. Private retailers can also provide location-specific services and updates to people through the same. Hotspots will be installed on the Smart Poles and the citywide optical fiber network can leverage the existing electricity ducts as well. They will also be developed to provide real-time digital signage and parking sensors for public parking management. The optical fiber network also helps establish connectivity between Government departments, city infrastructure and Command & Control Centre. Smart Poles have li-on batteries to eliminate diesel generators as a secondary power source, hence being able to provide back up during electricity outage. Electric

Vehicle (EV) Charging Points will be provided that will encourage the use of electric vehicles and help reduce carbon footprint.

It is anticipated that 10% of the streetlight poles will be transformed into intelligent poles that will incorporate telecom and energy savings integration. Based on a single tenancy model (with one Telecom operator using the infrastructure facilitated by BMC to provide telecom services), it is expected to generate a revenue of Rs. 978 crores over a 10-year period. As the tenancy increases, the revenue generated will also increase. This project will help provide mobile applications for citizen services that will enable citizens to use government services through smartphones, as well as better governance and coordination through a centralized command and control centre.

A challenge faced in the implementation of this project was to gather data on existing LED lights in the city, poles and feeder panel status, which proved to be a difficult task keeping in mind the large area of the city and the multiple kinds of streetlights that were installed previously. Bhopal Smart City Development Corporation Limited (BSCDCL) appointed an external agency – ERDA – to carry out a complete survey of LED streetlights and gather information about the existing setup and the requirement in the city.

A concessionaire was appointed for the installation of LED lights and for conducting a survey of the existing streetlights and their relevant components. In many of the existing installations, there were old poles and damaged brackets, which were required to be changed or repaired by the concessionaire. Another challenge that was presented to BSCDCL was switching the lights ON/OFF remotely and finding lights that were faulty or needed repair. The LED light solution ordered by BSCDCL had remote communication and controlling features that enable collection. Finally, BSCDCL chose the location of Smart Poles keeping in mind areas with the maximum footfall; important junctions and call drop areas so that maximum benefits can be obtained.

INDORE MUNICIPAL CORPORATION

India's Cleanest City,
Swachh Survekshan 2018

IMC motto was to make
Indore

1. Bin Free
2. Litter Free
3. Dust Free

5.0 Indore Municipal Corporation

5.1 City Profile

Indore is one of the largest and most populous cities in Madhya Pradesh with a population of about 2 million. It functions as the commercial capital of the State as many IT sector companies have recently been set up in the city and it hosts industrial hubs within the city. It is also a well-known education hub and home to India's third oldest stock exchange, in addition to being the State's financial capital.

Indore Municipal Corporation (IMC) has been involved in the development of Indore and providing basic infrastructure facilities as per section 66 of Municipal Corporation Act 1956. At present, the Municipal Corporation is divided into 19 zones for the ease of administration and covers an area of 276 square kilometres.

During the 14FC Cell's visit to Indore, the Cell visited and witnessed the day-to-day solid waste management practices of the city over the course of a day. Since the city has exceptional municipal SWM (MSWM) practices and has consistently been ranked as the no. 1 cleanest city in the country by the Swachh Survekshan for the last three years, i.e. 2017, 2018 and 2019, the focus of the visit to the city was on the city's best practice in the country – MSWM. The governance and demographics of the city, its financial overview and its best practice have been highlighted in detail in the ensuing sections.

5.1.1 Demographics

According to the 2011 Census, Indore District has a population of 32,72,335, roughly equal to the nation of Mauritania or the US state of Iowa. This gives it a ranking of 106th in India (out of a total of 640). By 2041, it is expected that the city's population would reach 60 lakhs. The district has a population density of 839 inhabitants per square kilometer (2,170/sq. mi). Its population growth rate over the decade 2001-2011 was 32.71 %. Indore has a sex ratio of 924 females for every 1000 males, and a literacy rate of 82.32 %.

5.2 Urban Governance

Indore Municipal Corporation (IMC) is the governing body of the city of Indore. The Municipal Corporation consists of a democratically elected Mayor who presides over the Councillors.

The Municipal Commissioner is the administrative head. In accordance with the 74th Constitutional Amendment, 25 seats out of 69 are reserved for women. At present, the municipal area is divided into 19 zones and 85 wards of various sizes and population, for effective decentralized planning and implementation. The Corporation renders useful services to its citizens like birth and death certificates, assessment and collection of property taxes, water taxes, license renewal, health and education centres, etc. Town and Country Planning Office, Bhopal, has been preparing the master plans for Indore. However, the responsibility to implement the city's Master Plan lies with Indore Development Authority (IDA). Moreover, the Plan to develop the fringe areas of Indore Municipal Corporation are conducted by architects of IDA. The provision of physical infrastructure like electricity, sewerage line, and water supply is worked out by IDA.

Finally, the function of IDA is to control and regulate the development. That is, plan offered private developers (institutional/residential) needs to be approved by IDA. Water supply of Indore city is looked after by the Municipal Corporation with participation of Public Health Engineering Department (PHED) of Madhya Pradesh. Public Works Department Madhya Pradesh is engaged in planning, designing, construction and maintenance of Government assets in the field of built environment and infrastructure development. Madhya Pradesh Pollution Control Board is responsible to maintain air, water and soil quality in healthy and useable form. Presently it operates in 12 regional offices, where Indore is one of them.

All 18 functions have been transferred to the ULB under the 74th CAA. E-governance and computerization has been implemented for reforms in Property Tax, Accounting, Water Supply and other utilities, birth and death registration, citizens' grievance monitoring, personnel management system, building plan approval, e-Procurement, etc

5.3 Overview of Finances

The main revenue sources of Indore Municipal Corporation are:

Tax Revenue:

Property Tax (includes components of property tax, water supply cess, drainage tax, vyapak swachhta kar, town development cess and education cess)

- Water Supply Charges
 - Advertisement Tax
 - Show Tax
 - Fees and User Charges
 - Premium on F.A.R. (Value capture finance method)
 - Water connection charges
 - Assigned Revenues and Compensation
 - Compensation in lieu of Octroi
 - Stamp Duty
 - Commercial Tax Surcharge
1. Rental Income from Municipal Properties
 2. Sale of Tender Papers
 3. Trade Licence Fees

5.3.1 Income vs. Expenditure

Table 27: Per Capita Revenue Receipts and Capital Receipts, 2014-15 to 2015-16 (in Rupees)

Indicators	2014-15	2015-16	Annual Growth Rate (%)
Population	22,02,478	22,66,467	2.91
Revenue Receipts	3,778.81	4,578.56	21.16
Capital Receipts	1,294.26	1,172.00	-9.45
Own Revenue	1,526.96	1,804.68	18.19
Transfers, Grants, Assigned Revenues	2,213.94	2,722.12	22.95
Tax Revenue	1,219.42	1,486.66	21.92
Non-Tax Revenue	307.54	318.02	3.41
Property Tax	813.67	920.73	13.16
Capital Grants	1,111.59	1,083.53	-2.52
Other Capital Receipts	182.68	88.47	-51.57

Table 28: Own Revenue as a percentage of Revenue Receipts, 2014-15 to 2015-16

Indicators	2014-15	2015-16
Revenue Receipts as a % of Total Receipts	74.5	79.6
Own Revenue as a % of Revenue Receipts	40.4	39.4
Tax Revenue as a % of Own Revenue Receipts	79.9	82.4
Property Tax as a % of Own Revenue Receipts	53.3	51.0
Property Tax as a % of Tax Revenue	66.7	61.9
Non-Tax Revenue as a % of Own Rev Receipts	20.1	17.6
Other Revenue Receipts as a % of Revenue Receipts	1.0	1.1
Transfers and Grants as a % of Revenue Receipts	58.6	59.5
State Transfers as % of Transfers and Grants	94.7	91.7
Central Transfers as % of Transfers and Grants	5.3	8.3
Other Transfers as % of Transfers and Grants	0.0	0.0
Capital Receipts as a % of Total Receipts	25.5	20.4
Central Capital Grant as a % of Capital Receipts	1.7	23.5
Capital Grants as a % of Capital Receipts	85.9	92.5
Other Cap Receipts as a % of Total Capital Receipts	14.1	7.5

Table 29: Per Capita Revenue and Capital Expenditure, 2014-15 to 2015-16 (in Rupees)

Indicators	2014-15	2015-16	Annual Growth Rate (%)
Revenue Expenditure	2,521.66	2,429.28	-3.66
Capital Expenditure	1,817.61	1,241.68	-31.69
Establishment and Salaries	1,152.13	1,141.03	-0.96
O&M and Other Expenses	1,369.53	1,288.25	-5.93
Development Expenditure	647.97	656.97	1.39
Other Capital Expenditure	1,169.64	584.71	-50.01

Table 30: Revenue and Capital Expenditure as a percentage of Total Expenditure (%)

Indicators	2014-15	2015-16
Revenue Expenditure as a % of Total Expenditure	58.1	66.2
Admin, Est & Salaries as a % of Revenue Expenditure	45.7	47.0
O&M as a % of Revenue Expenditure	46.5	39.4
Others (Loan Repayment, etc.) as a % of Revenue Exp	7.8	13.6
Capital Expenditure as a % of Total Expenditure	41.9	33.8
Development Works as a % of Capital Exp	35.6	52.9
Other Capital Expenditure as a % of Capital Exp	64.4	47.1
Own Revenue as a % of Revenue Expenditure	64.1	78.7

As per the income and expenditure information for IMC tabulated above, it is evident that the Corporation has a budget surplus and can meet nearly 79% of their revenue expenditure from their own revenue sources.

5.3.2 Own Source Revenue

Despite a surplus in revenue receipts as compared to revenue expenditure, IMC does not have a good ratio of own source revenue relative to revenue receipts and only meets approximately 40% of its revenue receipts from own revenue sources. The corporation is dependent on transfers/grants and assigned revenues from higher tiers of government to generate approximately 60% of their revenue receipts. Between 80-82% of own source revenue is met through tax sources, while 18-20% is met through non-tax sources, indicating that the Corporation has not yet explored non-tax avenues for augmenting own revenue receipts and is dependent on tax sources, especially property tax for generating own revenue.

5.4 Solid Waste Management Initiatives

SOLID WASTE MANAGEMENT

In 2015 IMC launched integrated massive pilot project to deal with rapidly declining waste management conditions in the city

Indore is a model city in the country in terms of Solid Waste Management (SWM) practices and has consistently been ranked no. 1 in the Ministry of Housing and Urban Affairs' (MoHUA) Swachhata Survekshan in 2017 and 2018 for being the cleanest city in the country.

It has come a long way from being ranked number 25 in the first Swachh Survekshan in 2016 and with untiring efforts of the officials of Indore Municipal Corporation, as well as the citizens of the city, was successfully ranked as the cleanest city in the survey in 2017. The city also endeavoured to retain the title of being the cleanest city in the country and coined the slogan "Indore Rahega No. 1." In

SOLID WASTE MANAGEMENT

Pilot project started in ward 71 and 42 in January 2015

D2D collection of waste in wards in March 2015

Bin Free initiative was started in March 2016

D2D waste collection was started in all wards in October 2016

Bin Free City by December 2016

Operation cost was INR 2886 per metric ton for D2D collection through tricycle and INR 1,662 by Tata Ace/tipper

2018, for the second consecutive year, the city earned the number 1 rank in the Swachh Survekshan 2018.

Under the Swachh Bharat Mission (SBM), IMC planned to make the city Bin-free, Litter-free and Dust-free. Until 2015, the situation of SWM in the city was poor with tricycles being used to collect waste that was unsegregated, and this waste was dumped at open dumping points. Further, this process was also affected by the inefficiency of the staff involved, as there was a manual attendance system, high absenteeism, random allocation of work, inefficient supervision and monitoring, and scattering of waste.

In addition, the vehicles employed for the collection and transport of waste were insufficient, there was a shortage in workshop staff, tools and machinery, poor infrastructure, there were no motor body building or paint shops and the working practices were outsourced at a high cost. Through integrated solid waste management comprising of ICT-based intervention, door-to-door waste collection, manual sweeping in wards, plastic waste management and material recovery centre, IEC/BC activities, mechanized road sweeping, ODF, scientific landfill site, bioremediation of old dumped waste, decentralized composting, source segregation, etc. IMC aimed to enhance and improve the existing SWM practices in the city.

SOLID WASTE MANAGEMENT

Pilot project started in ward 71 and 42 in January 2015

D2D collection of waste in wards in March 2015

Bin Free initiative was started in March 2016

D2D waste collection was started in all wards in October 2016

Bin Free City by December 2016

Operation cost was INR 2886 per metric ton for D2D collection through tricycle and INR 1,662 by Tata Ace/tipper



Picture: Door-to-door Waste Collection in Indore

Many awareness campaigns were launched across the city to educate citizens on the importance of aspects of cleanliness and their role and responsibility through rallies, oath by citizens at ward level to keep city clean, organized programmes with MP, Mayor, Commissioner, citizens, etc. The pilot project for segregation at source and door-to-door collection of waste was launched in a couple of wards in the city from December 2015 to January 2016. Tata ace tippers were procured for primary door-to-door waste collection, which was found to result in cost savings, as operational cost of employing rickshaws/tricycles for D2D waste collection was Rs. 2,886 per tonne, while it was found to be Rs. 1,662 per tonne while employing a Tata Ace-Tipper.

Other vehicles were procured for secondary waste collection and transportation. The D2D waste was collected segregated at the primary level into wet waste, dry waste and sanitary & domestic hazardous waste. The practice of wet and dry waste segregation was inculcated among citizens of Indore through a source segregation awareness by dustbin distribution, awareness generation through nukkad natak, demonstration by IMC workers, etc. Campaigns were also undertaken to promote the use of segregated litterbins in commercial areas and 3,000+ twin litterbins for segregated waste were installed in commercial areas. Spot fines have been introduced for littering, throwing shop waste outside,

SOLID WASTE MANAGEMENT

A strong safety and protection framework was followed for the SMW workers-masks, rain coats and gloves were distributed.

Masks primarily guard against toxic gases and dust emanating from filth, garbage, and areas of dirty

OHSAS 1800:2007

Occupational Health and Safety Management Certification is an international standard which provides a framework to identify, control and decrease the risks associated with health and safety within the workplace

keeping polythene, throwing household waste in litterbins, spitting, open urination, etc.

By December 2016, IMC had successfully removed all bins from the city, thereby realizing their objective of making Indore a bin-free city. In January 2015, a pilot project was started in wards 71 and 42, which was extended to 10 wards by March 2015. The bin-free initiative was started in March 2016 and by October 2016, D2D collection of waste had been implemented in all the wards, making the city bin-free by December 2016.

Currently, 7,500 safaimitra are employed by IMC in sweeping and D2D collection of waste and biometric attendance for staff and workers has been enabled with an MIS and online dashboard of Aadhaar-Enabled Biometric Attendance System (AE-BAS), consisting of attendance statistics, breakups of the number of employees, attendance activity, etc. These employees are motivated through IEC and training in the form of capacity building, training on effective management of field staff, and motivating staff to stretch working hours. Personal protection gears have been distributed to all SWM workers such as raincoats, hand gloves, fluorescent jackets, and masks, etc. and it is ensured that every employee uses the personal protective safety gear while working in the field. In commercial areas, manual sweeping takes place in the mornings, evenings and at night, while mechanized road sweeping and jet washing (for cleaning monuments, etc.) has also been introduced in some parts of the city.

A separate mechanism is in place for the segregation and collection of waste from bulk waste generators. Waste is collected from 1,587 commercial bulk waste generators, 206 hospitals and nursing home, as well as meat, fish and poultry markets. A common biomedical waste treatment facility exists, and a separate vehicle collects and transports domestic hazardous and sanitary waste to the facility from a transfer station, which is collected by IMC through a third bin fixed on all D2D vehicles. As per the latest CPCB norms, a fully automatic incinerator of 300 kg/hour waste incinerating capacity is installed at the biomedical waste facility.

More than 3,00,000 dustbins were distributed on minimal cost as part of a corporate social responsibility (CSR) initiative. In addition, Eicher Foundation provided two electric vehicles for waste

Transportation and 200 twin litterbins. Revamped ISO-certified workshop is set up for the vehicles deployed for the collection and transportation of waste. A GPS-based vehicle tracking system is in place and the best performing drivers are given due recognition.

SOLID WASTE MANAGEMENT

Farmer outreach programmes were organized at block level to generate awareness among farmers about the use and benefits of "Indore City Compost" and free samples were distributed to farmers.

A comprehensive IEC plan was prepared and NGOs and PR agencies were engaged by IMC to implement the IEC plan through hoardings, wall writings, songs, short movies, social networking, electronic and print media, nukkad natak, bus panels, etc.

Ten ultra-modern, mechanized transfer stations have been constructed at various locations in the city. Waste is collected from residential areas in vehicles and brought to the transfer stations from where it is then carried to the trenching ground in portable compactors. Transfer stations were created to comply with the Solid Waste Management Rules, 2016, to improve the existing standards of public health and environment quality through efficient collection and transportation of solid waste. These transfer stations allow clean and hygienic collection and transportation of solid waste, improve the productivity of man, materials and equipment, and require less space as compared to conventional static transfer stations.

IMC has obtained ISO 9001:2015, 14001: OHSAS 18000:2007 for segregation, collection, transportation and disposal of solid waste. Furthermore, material Recovery Facility (MRF) of 500 TPD capacity has been established by IMC and allows the sorting of all types of dry waste such as paper, plastic, iron, glass, e-waste, polythene, rugs, leather, shoes, pet bottles, rubber, etc. 700 rag pickers can be provided livelihood through the MRF.



Picture: Material Recovery Facility at Indore

SOLID WASTE MANAGEMENT

5 NGO's were empanelled across 13 zones in the city

6 PR agency were deleted with different work responsibility

Hoarding and Graffiti,

Songs, Short Movies

Social Media and Print Media publications

Bus panels and wall paintings and short drama programs were organized

There are two engineered landfills of 6.25 acres each, where inert material is unloaded, filled and compacted. Bio-mining and bioremediation of old dumped waste is also being carried out, and a green belt has been developed on the bio-remediated land. Organic waste processing has been decentralized and bulk waste generators are encouraged to practice onsite processing of organic waste through composting machines, pre-fab composting pits, composting pits, etc.

Currently, the number of organic waste processing plants for of organic waste processing for hotels, hospitals, marriages, gardens, restaurants, schools and colleges, are 244 units

- 76 units for RWAs, 368 units for city gardens,
- 20 TPD biomethanation plant at Choitram Mandi.

For establishing a farmer outreach programme, coordination meetings were organized with agriculture department and Agriculture College and strategies for awareness and sale of compost to farmers were formulated. Farmer outreach programmes were organized at block level to generate awareness among farmers about the use and benefits of "Indore City Compost" and free samples were distributed to farmers. Notifications were published in all leading newspapers to inform farmers about the sale of the Indore City Compost, as well as through IEC activites such as radio jingles, videos, nukkad natak, hoardings, wall paintings, public transport branding, talk shows, etc



Picture: Bio-methanization Plant in Indore

In order to achieve successful implementation of sanitation and SWM, behavioural change on the part of citizens is of primary importance. A comprehensive IEC plan was prepared and NGOs and PR agencies were engaged by IMC to implement the IEC plan

through hoardings, wall writings, songs, short movies, social networking, electronic and print media, nukkad natak, bus panels, etc. D2D visits were undertaken to communicate the message of segregation and pledges on segregation were taken in school, in addition to holding pledge and painting competitions on the same topic.

In addition to these, 388 road rallies were carried out with 66,100 participants, 408 street plays with 22,876 audience, 476 RWA meetings with 11,785 participants, route mapping on 464 vehicles, interactions with 628 hotels/institutions, 525 oath taking ceremonies with 25,860 school children and staff, children groups engaged in thematic drives, 567 meetings for imparting trainings to 6,500 safaimitra, 108 meetings with 1,247 shop owners and

awareness generation on ODF with a “swachh rath” were carried out. Other awareness events such as signature campaigns for residents of the city, walkathon, Indori-subah on Swachhata on Sundays, talk shows, etc. Further, a Swachh Ward Ranking was introduced by the IMC Mayor to create a healthy competition between wards.

All 85 wards participated in this competition and QCI conducted assessment of the wards. People from different sections of the society were also engaged by IMC such as religious leaders to promote source segregation and decentralization and transgender for awareness generation, etc. IMC engaged with petrol pump owners to ensure free citizen access to toilets at fuel pumps, including having the toilets cleaned four times a day, providing proper signage, lighting and proper approach paths/roads. Meetings were also held with Automobile Association owners who agreed to sell small car dustbins on concessional rates at the time of vehicle delivery.



Picture: “Indore City Compost”

Swachhata Committees are formed in all Government and private schools and NGOs are empanelled to provide support to the schools for swachhata activities. A Swachhata Grahi Monitoring Committee has also been set up for CTs/Urinals. Bids for advertising were received for managing 84 CTs by IMC, and the highest bid received for advertisement rights was Rs. 85 lakh. 84 Swachhata committees are in place for monitoring and CSR/Jan Bhagidari take care of clusters of 2-3 CTs for O&M.

Roads and squares in the city have been improved to make them dust-free, more than 8,423 back lanes in the city have been cleaned and more than 60% of them have been cemented. In addition, the cleaning Kanha/Saraswati River was also undertaken, hoardings were removed and improvements to sewerage and water supply were carried out. User charges and spot fines have been introduced for marriage processions, political, social and religious gatherings, melas, temporary markets, fairs, etc. and removal of C&D and garden waste.

Spot fines have also been levied on littering by pet dogs in gardens and in front of houses and notifications and public notices were issued by IMC for the spot fine. As per data received from the Chief Medical and Health Officer (CMHO), Indore, respiratory and other diseases in the city reduced by 50% in the year 2016-17, as compared to the previous years. Citizens of Indore have been satisfied with the cleanliness standards of the city and the ULB is able to discharge their duties more efficiently.

PUNE MUNICIPAL CORPORATION

Pune Municipal Corporation in recent years has greatly transformed municipal services and increased efficiency.

From Issuance of Municipal bonds, drastic improvements in Water services to property tax collection efficiency, PMC has set a vibrant example

6.0 Pune Municipal Corporation

6.1 City Profile

Pune is sprawled over an area of 243.84 sq. kms with a population of over 31.15 Lakhs. Once considered a Pensioner's city, Pune's rapid growth has now transformed it into an Educational – Administrative Hub with a dynamic economy.

Pune Municipal Corporation (PMC) was established in 1950 and is governed under the Bombay Provincial Municipal Corporations Act, 1949 (Bom. LIX of 1949), rechristened as the Maharashtra Municipal Corporations Act of 1949. PMC is mainly responsible for the administration of the city, maintaining infrastructure facilities, and providing various civic services such as water supply, solid waste management, sewerage, education, health and others to its citizens.

The field visit to Pune yielded insights into the good financial practices of PMC and has been discussed in greater detail in the ensuing paragraphs. Robust financial governance of PMC is of great import for the urban local bodies to bring together new avenues of raising finances for the functioning of the ULBs. One of the pioneering steps PMC took in 2015 was to float bonds for Water Supply project. PMC took a step further to maintain and plan a sustainable system of water supply by issuing bonds for the water supply project in the city.

Broadly, this chapter is divided into seven sections:-

- Section I on Introduction to the city. Section II discusses the governance structure of PMC.
- Section III provides an overview of PMC's finances.
- Section IV highlights 24x7 Water Supply System details.
- Section V discusses issuance of Municipal Bonds for the Water Supply Project.
- Section VI of the chapter showcases the issues and important steps that PMC undertook in the area of property taxation, including GIS for mapping the properties, etc.

- Section VII concludes the chapter with remarks on areas that need attention and the best of practices from PMC, which could act as a model for other cities of similar demographic characters.

6.1.1 Demographics

The decennial population growth rate between 2001 and 2011 has been calculated to be 23.09 per cent. Using State CAGR of 2.09%, the population was estimated to be 33, 95,123 in 2014-15, 34, 66,377 in 2015-16 and 35, 39,126 in 2016-17. Pune city is divided into 5 main zones and further subdivided into 15 administrative wards. Pune city administration of 15 wards is further divided into 76 electoral wards called ‘Prabhags’. The literacy rate of the city is 89.56 per cent, 85 percent which is higher than the State average of 82.34 per cent and the literacy rate for male and female population is 92.31 and 86.67 per cent respectively.

Figure 1: Four Best Practices Undertaken by the Pune Municipal Corporation



6.1.2. Urban Governance

The BPMC Act, 1949 defines the scope and extent of responsibilities of the Corporation. The Act has entrusted PMC the responsibility for the maintenance, operation and development of certain public utilities in the city. Mandatory and discretionary functions of the PMC are listed under the Sections 63 and 66 of the BPMC Act.

PMC is branched into administrative wing and an elected/deliberative wing. The administrative wing is headed by the Municipal Commissioner who is responsible for the infrastructure development work in the city. The elected wing, on the other hand, is mostly responsible for the financial deliverance and approvals for the various developmental works undertaken by the administrative wing of the PMC. The governance is distributed in terms of policy-making as a responsibility of the General Body, financial decision making as a responsibility of the Standing Committee and Municipal Commissioner as the Chief Executive of the authority. Standing Committee is the most powerful body in Pune Municipal Corporation as per the BPMC Act, responsible for all the decisions pertaining to municipal finance matters. Four special committees were formed in 2012, which are law committee,

women and children welfare committee, naming committee, and city improvement committee. These are the special committees formed in the city by the Corporation for special purposes. The Standing Committee enjoys unlimited financial powers pertaining to municipal finance matters and is subjected to supervision by the State government.

6.3. Overview of Finances

Financial reporting is an important tool of accountability enabling policymakers to assess, monitor and regulate the efficiency of the Urban Local Body. Financial reports produced by the Accounts Department enables the decision makers to assess the efficiency, and identify financial stopgaps in the performance of the Governing Body.

The Municipal Corporation under the 74th CAA is empowered to levy and collect taxes and charges at rates prescribed by the State Government. In the Eleventh Finance Commission report and Guidelines for the Utilization of Local Bodies Grant, the Comptroller and Auditor General of India have constituted a task force to recommend Audit and Budget Formats for ULBs in India. Migration to Double Entry Accrual Based Accounting System is one of the recommendations by 13th Finance Commission to Urban Local Bodies. PMC has successfully achieved complete transition from its single entry accounting system to accrual-based double entry accounting system.

STRONG FINANCES

Almost 90% of the revenue receipts come from own sources revenue, which indicates effective tax collection services and stronger enforcement of payment obligations

National Average for Own Revenue as percentage of Revenue Receipts stand at 43.31 for 2016-17

6.3.1 Income vs. Expenditure

According to the data (refer to Annexure 10), Pune is extremely self-sufficient financially and is able to meet 100% of its revenue expenditure from its own revenue sources and still have significant surplus.

6.3.2 Own Source Revenue

PMC's own source revenues account for more than 90% of its revenue receipts. Due to lack of data on financial assistance received in the form of transfers/grants, it is prudent that all municipal expenditures are funded by the revenues generated through different forms of taxes and its municipal bond program. While property tax collections grew by 40% between 2014-15 and 2015-16, it still accounts for less than a third of total tax revenues. This is a potentially underutilised source of own revenue that needs to be addressed by PMC. Revenue generated from non-tax sources have also shown strong growth, indicating that PMC has been exploring 87 alternative sources of revenue, possibly through improving civic service delivery. Despite the limited data, it is reasonable to assume that PMC is financially sustainable.

Table 31: Deficiencies and Shortcomings in Water Distribution System Prior to Implementation of the Program

Problem Areas	Measures and Actions Initiated
Insufficient Water Supply	Identification of areas and reasons for insufficient or intermittent supply
NRW	Assessment of Water Losses, repair and replace obsolete and ailing components Installation of SCADA and other measures
Lack of Metering and Billing	Installation of meters at storage reservoir level, treatment plant level and at household level Regularization of illegal connections and other measures
Corrosion/Damage/Repair	Identification and assessment of damaged components and replacement thereof
Technical and Economic Sustainability	Rehabilitation, repair and replacements of key inefficient components and equipment's
Transmission and Distribution	Reorganizing and strengthening of the water supply department Adoption of adequate tariff based on telescopic water rates to promote rational and efficient use of water

WATER TAX COLLECTION IMPROVED

Over the years, the gap between water tax billed and collected improved significantly

One of the key reasons is PMC revamped its assessment mechanism for water connections, improved monitoring on water consumed and introduced many avenues for payments of water taxes

6.4 Water Coverage

PMC has taken important steps to improve 24x7 water supply in the municipal area. Challenges that PMC was faced with while envisioning this project were related to pipe bursts, reservoir leakages, air valve leakages, illegal tapings, pumps on house service connections, water scarcity, unauthorized house service connections, and water tanker supply mafia.

This project was aimed to address important problems of the water distribution system existing in Pune. The main objectives of the 24x7 water supply project was to provide safe and equitable water supply to all citizens for the next 30 years, distribution of water 24 hours every day, reduction in the amounts of water losses and 'Non-Revenue Water' and ensuring technological, economic and environmental sustainability of the water supply service

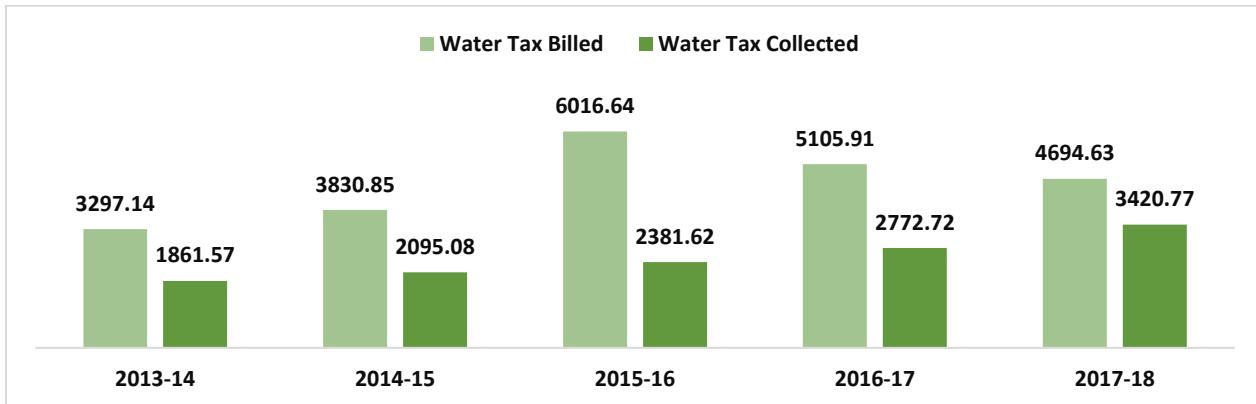
The water demand was estimated for the next three decades (up to year 2047) based on the population growth projections. The number of water treatment plants, pumping stations, and storage tanks required by the city were then arrived at. The city has been divided into 6 supply areas and the transmission and distribution network was accordingly proposed to be revamped. The project was implemented in a phased manner.

The following approach was followed by PMC to address the above-mentioned challenges:

- Introduction of universal smart-metering of water consumption and application of water charges based on the effective water consumption by the consumer
- Conducting of water audits by setting bulk flow meters in all stages of the water supply system
- Introducing a SCADA system for timely and effective control of system operations, water quality monitoring and achieving high service level benchmarks.
- Undertaking systematic leakage detection and repair activity to bring down the level of 'Non-Revenue Water' in the distribution system to the desired level of 15% - 20%

- Use of GIS-based technologies to integrate geo-spatial and real-time data
- Deploying innovative and IEC (Information, Education and Communication) strategies in print and digital media to proactively engage with all citizens

Graph 13: Water Tax Billed Vs Collected in INR lakhs



Source: Pune Municipal Corporation Open Data Website (Weblink- <http://opendata.punecorporation.org/Citizen/CitizenDatasets/Index>)

MUNICIPAL BONDS

PMC launched India's largest Municipal Bonds Program worth INR 2,264 CR at coupon rate of 7.59% for the first tranche of bond program.

PMC is amongst the highest rated urban local body in the country

The rating exercise of PMC bonds was carried out by India Ratings. In 2016, PMC long term issuer rating upgraded to IND AA+.

One of the significant outcomes of Water Services enhancement program by the PMC, was rapid increase in amount of water tax collected since 2013-14. As it can be seen in the above, in the year 2013-14 total amount of water taxes collected were INR 1,861.57 Cr and by 2017-18 it roused to INR 3,420.77 Cr, indicating a growth rate of almost 84% over the period of 5 years. On the other hand it must be noted that growth of water tax that was billed was 42%.

Water Supply Department has a total of 1155 Staff which includes 76 Engineers up to Class IV, 30 clerical staff and other workers such as valve men, watchmen, plumbers, fitters, mistri, pump operators, electrician's supervisors and other repair works staff.

6.5 Issuing Municipal Bonds for the Water Supply Project

In 2017, PMC added a new chapter in the history of the country's urban transformation. While furthering the goal of financially empowering urban local bodies, it launched India's largest Municipal Bonds program (approx. Rs. 2,264 crores) at the Bombay Stock Exchange, Mumbai. It was the first issuance since the publication of 'Issue and Listing of Debt Securities by Municipalities Regulations, 2015' by Securities and Exchange Board of India (SEBI).

MUNICIPAL BONDS

The key drivers for these ratings were higher reliance on own revenue resources, consistent and growing revenue surplus, comfortable debt position, relatively limited impact of Local Body Tax abolition, efficient coverage of civic services like water and sanitation against the service level benchmarks set by MoUD for Urban Local Body (ULBs).

This analysis is not mandated under the SEBI Guidelines and is purely voluntary in nature.

Affordability is defined as providing enough cash flow margins after debt service for unexpected contingencies, pay-as-you-go capital expenditures or contributions to reserves

Another important step that PMC took to advance the aim of creating a robust financial sustainable system of resources for the coming years was to undergo a credit rating exercise since the introduction of Jawaharlal Nehru National Urban Renewal Mission (JNNURM) as per the mission guidelines issued by MoUD. The adoption of NMAM also facilitated this process. The rating exercise is being carried out by India Ratings. In 2016, it upgraded PMC's long-term issuer rating to "IND AA+" with a stable outlook. The key drivers for these ratings were higher reliance on own revenue resources, consistent and growing revenue surplus, comfortable debt position, relatively limited impact of Local Body Tax abolition, efficient coverage of civic services like water and sanitation against the service level benchmarks set by MoHUA for Urban Local Body (ULBs). PMC also underwent an exercise of dual ratings for its bond issue. CARE Ratings has assigned the above mentioned issue as 'CARE AA+' with 'Stable' outlook.

PMC recognized the importance of Municipal Bonds as a useful tool to meet the growing infrastructure financing needs of the city. PMC proactively worked with Government of Maharashtra (GoM), Union Ministry of Finance (MoF), Union Ministry of Urban Development (MoUD), SEBI, SBI Capital Markets Ltd. (SBI Caps) and advisors from the US Department of Treasury's Office of Technical Assistance (OTA) in developing this new financial asset class. Standing Committee and General Body of PMC approved a consumption-based telescopic water tariff structure for the next 30 years.

This policy which aimed to progressively increase the revenues generated from the '24x7 Water Project' leading towards self-sustenance. Additionally, as a part of the structured escrow payment mechanism, a portion of PMC's Property Tax has also been pledged for the debt servicing of the bond program. As per the financial prudence prevailing at different points in time in the future, while simultaneously adhering to the relevant regulatory framework, the bonds may also be partly/fully paid from PMC's several revenue sources. The Government of Maharashtra (GoM) gave its approval for the bond program of PMC in June 2017.

It is an important step towards reducing the excessive dependence of ULBs on grants from the union/state governments and intergovernmental organizations. The successful development of the municipal bond market in India will go a long way towards introducing innovation and creativity in public finance.

6.5.1 Selection of Merchant Banker-cum-Arranger

MoHUA issued a list of a few investment bankers that could act as arrangers for the bond program for ULBs in India. Financial and Technical Proposal were invited by the PMC, and the Financial Proposal of the technically top-ranked Technical Advisor-cum-Merchant Banker was opened by the PMC's evaluation committee. PMC followed a rigorous selection procedure based on the financial and technical criteria to select SBI Capital Markets Ltd.

6.5.2 Debt Capacity Analysis

PMC used debt capacity analysis template as a tool to help municipal officials coordinate their debt issuance for capital improvements within a debt management framework that is affordable for the municipality's finances, and which protects the municipality's existing or desired credit rating. Although, debt capacity analysis is not a mandatory step in the issuance of bond by the SEBI guidelines, PMC undertook this exercise voluntarily. Affordability is defined as providing enough cash flow margins after debt service for unexpected contingencies, pay-as-you-go capital expenditures or contributions to reserves.

Once the municipality has set the debt service coverage parameters, the template evaluates the ability of historical finances to service debt on an annualized basis and on a monthly basis, both by overall municipal cash flow available for debt service, and by pledged revenues. The former measure suggests an upward limit on affordable debt service by overall municipal financial performance, while the latter suggests an upward limit on affordable debt service by pledged revenues; following SEBI guidelines that municipal debt must be secured by a dedicated revenue stream. The goal of the municipality is to undertake a debt capacity analysis at least annually, and also in advance of any prospective bond offering. This analysis requires a few other components such as revenue, expenditure, operating balance and annual debt capacity. (For details regarding debt capacity analysis refer to "Pune's Path-breaking Success in the Municipal Bond Market: A Case Study" which is available at the following web link for your perusal:

<https://pmc.gov.in/sites/default/files/miscellaneous/PuneMunicipalBonds.pdf>

Since PMC was issuing bonds for the first time, various steps were taken to initiate the process. PMC took exemption from SEBI for submitting the half-yearly accounts of the preceding year, to facilitate the ULBs issuing bonds for the first time. SEBI noted that it would be difficult for them to submit the audited accounts for the immediately preceding financial year, in the information memorandum submitted to the stock exchanges, for the private placement issue of debt securities. Although this exemption was limited only to PMC. In order to provide an impetus to the Municipal Bond Market in

India, SEBI provided the following dispensation to the municipalities with respect to the submission of accounts for private placement issues of debt securities under the SEBI Guidelines:

"Any issuer proposing to issue debt securities under these regulations, in the FY 2017-18, shall submit the following documents:

- *Audited accounts for the financial years 2013-14, 2014-15 and 2015-16 in the information memorandum to the stock exchanges.*
- *For the immediately preceding FY i.e. FY 2016-17, the issuers shall submit the half yearly financial statements, as available (audited or unaudited) as on September 2016.*

However, the audited accounts for the said FY i.e., 2016-17 shall be submitted within one year from the end of that FY (i.e. by March 31st, 2018) to the recognized stock exchanges, where the debt securities have been listed. Such audited accounts shall be displayed on the website of the recognized stock exchanges and the issuer. The issuers shall also be required to provide on request, a copy (physical or electronic) of such audited accounts to its investors"

The provisions of this circular shall be applicable for the debt securities issued, in accordance with SEBI Guidelines on or after April 1st, 2017."

In the interest of creating a new entity of asset, it was opined that it should be tax-free bonds. However, the Union Government, after several rounds of discussions decided to introduce a new model whereby Municipal Bonds will not be granted tax-free status (and thus not distort the larger bond market) but it will incentivize the municipal corporations to issue bonds to its 91 Investors at attractive coupon rates. Union Government has proposed to give a compensation of 2% interest subsidy on the total size of the bond issue.

6.5.3 Investor Service and Grievance Handling Mechanism

Issuer (PMC) may have an established mechanism for investor service and grievance handling, with a Registrar and transfer agent appointed and the Compliance Officer appointed by the issuer for this purpose, being the important functional nodes. A system was devised to comply with SEBI guidelines on investor service and grievance handling mechanism. (For details, refer to the Pune's Path-breaking Success in the Municipal Bond Market: A Case study available at

<https://pmc.gov.in/sites/default/files/miscellaneous/PuneMunicipalBonds.pdf>

In pursuance of finalizing the issuance of bonds, PMC issued 2,000 unsecured, rated, listed, taxable, non-convertible, redeemable bonds in the nature of debentures each having a face value of Rs. 10 Lakh of the aggregate nominal value of Rs. 200 Cr. (as the "Subscription Amount") for cash, in dematerialized form on a private placement basis to certain identified investors. PMC caused the

Debentures to be listed on the Wholesale Debt Market segment of the BSE Limited in accordance with the SEBI Guidelines.

The Debenture Trustee (SBICAP Trustee Company Ltd.) agreed to act as the debenture trustee for the benefit of the debenture holders as per the terms of the Information Memorandum (IM) to secure the payment and other obligations of PMC in respect of the issuance of the Debentures. A tripartite agreement between the PMC, SBI CAP as trustee and Band of Maharashtra was signed and PMC established an escrow account with the Bank of Maharashtra. (Details available in the Pune's Path-breaking Success in the Municipal Bond Market:

<https://pmc.gov.in/sites/default/files/miscellaneous/PuneMunicipalBonds.pdf>

PROPERTY TAXATION

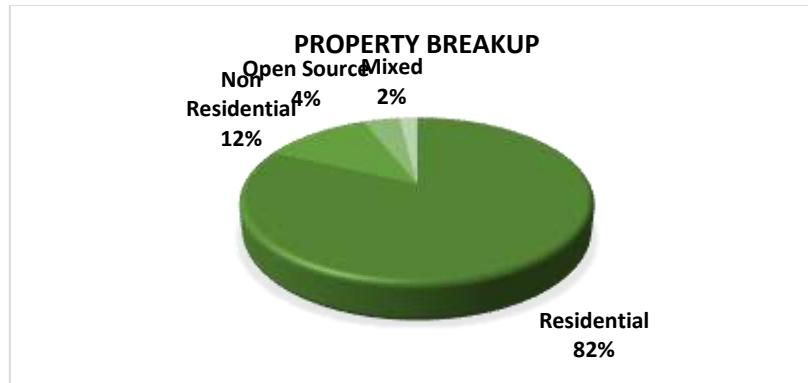
Property tax remains the key contributor to own sources revenue

Property Tax department at PMC created history by year on year collection efficiency.

6.6 Property Taxation

Property Tax Department is one of the key revenue earning departments of PMC. Property Tax Department is divided into three sections, namely (a) assessment, (b) billing, and (c) collection. The properties liable to be taxed are residential, non-residential, open plot and mixed properties. PMC has a total number of 8,79,780 properties, out of which 7,23,537 (82.24%) are residential properties. Approximately 12.62% of properties constituting 1,11,059 are non-residential, 28,712 (3.26%) are open plots and mixed-use properties are 16,472 (1.87%).

Chart 1: Property Breakup



PMC had taken massive efforts to disseminate information about Property Tax department and various schemes. The outreach channels used are newspapers, radio, banners, hoardings, handouts, standees, in-cinema hall, malls, advertisements, TV

PROPERTY TAXATION

Property Tax collection rose by 40% in 2015-16 compared to 2014-15

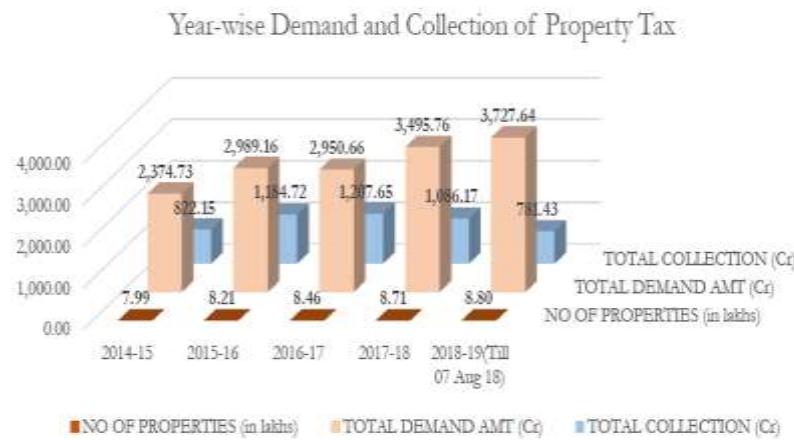
GIS mapping of unassessed properties helped PMC to properly collect taxes

Geo-tagging of properties helped in proper service bills being served to customers with correct address

scrolling banners, auto rickshaw panels, garbage vans, panels on PMPML buses, etc.

A year-wise analysis of demand and collection figures are depicted in the chart below. Total demand of PT includes arrears demand, original demand, penalty amount demand and increased demand amount. Similarly, total collection includes arrears collection, original collection, penalty collection amount and increased demand collection.

Graph 14: Year-wise Demand and Collection of Property Tax



Recovery methods adopted by PMC include 'Band-Baja' through which around Rs. 70 crore from leading hotel chains, malls and big defaulters were recovered.

- Lok Adalats (People's Courts) set up for issues related to recovery resulted in recovery of long-pending Rs. 61 crore from various defaulters in 2015-16.
- Similarly, in 2016-17, 2,645 notices to major defaulters were sent and PMC collected Rs. 27 crore.
- Another unconventional method adopted by PMC is pay at your doorstep-special mobile recovery van was used for on-the-spot collection of tax and Rs. 4.08 Cr. were recovered.

Offline and Online Payment Issue Resolution - Increased the number of cash collection centres from 149 to 340 by adding branches of banks and strengthening the online tax collection system. PMC has also implemented electronic bill presentations and payment services (EBPP), BBPS (Bharat Bill Payment System), UPI, CCSI, IMPS, Credit Card Standing Instructions (SI), Wallets, Cash Cards, Instapay/View and Pay, Quick Pay, mandates, EMI, etc. To boost online payment by net banking and card payments, by ensuring that the transactions charges are zero.

On the demand of consumers, PMC introduced an amnesty scheme due to the non-receipt of bills, individual financial problems, health issues in family, court matters, and pending matters with department; most of the defaulters demanded OTS scheme and hence under this amnesty scheme, a list of tax defaulters was generated & monitored by the department. Limited time was given to the defaulters, to settle the tax through a one-time payment; to avail a 75% and 50% discount (duration based) on the penalty amount. In 2015-16 (11 January 16 to 31 March 16), 1,45,501 defaulters paid Rs. 377.15 Cr and in 2016-17 (05 October 16 to 31 December 16), 1,10,057 defaulters paid Rs. 311.94 Cr. Additionally, by ensuring online transaction fees to be zero, PMC noticed rapid uptick in payments over the period of three years since 2015-16.

- Online collection in 2015-16 was 2015-16- INR 160.03 Cr
- During 2016-17- INR 210.24 Cr
- During 2017-180 INR 343.87 Cr

GIS Based Tax Assessment and Recovery System - The challenges of bringing all unassessed properties in the tax net is to be solved by adopting GIS based property tax assessment and recovery system. The issue of unserved bills due to wrong addresses was resolved through the paid address verification service of the postal service. In future, 100% bills will be served with correct addresses through geo-tagging and GIS-based codes, unassessed properties, additional construction, change of use (residential to non-residential, open plot to residential, etc.) finding properties and geo-enabled database is a measure of concern for the project. Till now approximately 8,34,031 properties surveys are completed.

PMC is the first municipal corporation in Maharashtra that has integrated with Inspector General of Registration and Stamps Department (IGR). This system shows property tax arrears/dues during sale deed to buyer, hence securing the buyer's interest and minimizing fraudulent cases. If the property ID is not shown in the system of property tax, it means that property yet to be assessed. This will enable assessment for increased revenue. Integration of servers of Building 94

Permission department is also proposed. PMC is planning to integrate all the servers with Commissioner of Police; this would also enable them to get the rented property data. Digital signature integration is currently in the pipeline.

Completed Area



6.7 Remarks

There are various initiatives that PMC has undertaken in creating a financially sustainable municipal system. The most prominent one being the issuance of municipal bonds. The system developed with rolling out small initiatives one-by-one, such as adopting the NMAM, accrual-based accounting system, monitoring the functioning of the city through a single command control system, paying attention to revenue generation, etc. Important lessons that need to be emphasized is the efforts of PMC to bring about the issuance of municipal bonds with a systematic approach. Water supply system is the backbone of any city, and one of the most important functions of any ULB. PMC took a huge step of floating bonds for the 24x7 water supply project. Each step was carefully and meticulously planned to bring a conducive environment for seeking political approval for creating a municipal bond market.

This path-breaking success story of issuance of municipal bonds for water supply project is one of the major takeaways from the best practices that are being implemented in PMC. Furthermore, it could serve as a guide for other aspiring ULBs in India to follow a similar path for a robust municipal bond market in India.

NAGPUR MUNICIPAL CORPORATION

Total Revamp of Water Supply and Property Tax assessment and collection

NMC introduced major changes in Property tax collection by overhauling collection, assessment and tax rate mechanisms

Because of the Annual rateable value, property assessment was improper and not all properties were covered

7.0 Nagpur Municipal Corporation

7.1 City Profile:

Nagpur is the third largest city in Maharashtra, after Mumbai and Pune. It is located in the Vidarbha region and is the 13th largest city in India in terms of its population, which is over 24.05 lakhs as per the Census of India, 2011. It is an important political/administrative centre and is home to several government agencies and research institutes. It is also a hub of industrial activities with Btitibori being the largest industrial estate in its vicinity. Other industrial area around Nagpur include Kamptee, Hingna, Wadi, Khapri and Kamleshwar. Meanwhile, a Multimodal International Hub Airport at Nagpur – MIHAN is also being developed as a multidimensional project of international standards along with the creation of Special Economic Zone (SEZ) and allied facilities.

The Nagpur Municipal Corporation (NMC) is the agency mandated with the provision of civic services within the city limits. The Municipal Council of Nagpur, established in 1864, was responsible for carrying out such activities prior to the formation of NMC, which was incorporated in 1951. NMC, since its inception, has done a prolific job of managing basic services in the city, while maintaining good administrative practices.

The field visit to Nagpur yielded insight into the good governance practices of NMC and has been discussed in greater detail in the ensuing paragraphs. This chapter has been broadly divided into four sections through which good governance practices taken up by NMC shall be discussed. Apart from a brief section on Introduction to the city, section II discusses the governance structure of NMC. In section III, financial aspects of NMC have been discussed, including subsections on property tax, implementation of GIS, expenditure management of NMC, and others. Section IV highlights the provision of basic services in the city and includes the practices being adopted by NMC, especially in the area of water supply.

7.1.1 Demographics

The average population growth rate between 2001 and 2011 has been calculated to be 1.61%. Using the average growth rate of 1.61%, the population was estimated to be 26, 20,501 in 2014-

15,26,62,692 in 2015-16 and 27,05,561 in 2016-17. NMC has divided the city into 10 zones and 38 election wards. The literacy rate of the city is 91.92 per cent, which is higher than the State average of 82.34 per cent and the literacy rate for female population is 89.31 per cent.

7.2 Urban Governance

When the Municipal Council of Nagpur was established in 1864, the area under its jurisdiction was 15.5 sq. km and the population was 82,000. The duties entrusted to the Nagpur Municipal Council were to maintain cleanliness and arrange for streetlights and water supply with government assistance. In 1922, the Central Provinces & Berar Municipalities Act was framed for the proper functioning of the Municipal Council. On 22nd January 1950, CP & Berar Act No. 2 was published in the Madhya Pradesh Gazette which is known as the City of Nagpur Corporation Act, 1948 (CNC Act). The NMC came into existence in March 1951. The first development plan of the city was prepared in 1953.

In the year 1956, under the State reconstitution, the Berar Province merged into the Maharashtra State with Mumbai being recognised as its capital; in 1960, Nagpur was declared as the second capital of the State. As per the CNC Act, 1948, the key responsibility for providing Nagpur's citizens basic urban services lies with the Nagpur Municipal Corporation. These services include water supply, sewerage, waste management, slum improvement, land use planning, construction and maintenance of internal roads, street lighting, maintenance of parks and gardens, providing primary health and education facilities, etc. NMC co-ordinates with various other government organizations like NIT, MHADA, MSRTC, the Traffic Police, MPCB, etc. for delivering these basic urban services.

7.2.1 Unique or Best Practices initiated by the Nagpur Municipal Corporation:

As a governing body of the second mega city of the Maharashtra, Nagpur Municipal Corporation (NMC) faced multitude of challenges to meet rapidly growing service delivery expectations and to balance their revenue streams in line expanding net of services. The primary challenge for the NMC was to improve property tax collection efficiency, broaden the property tax base and implement measures that can consistently help enhance revenues for the local body. On the other hand, uneven and untimely water supply across the city, quality of water supplied, lack of commercial efficiency, control over and reduction in NRW and proper water supply in slum areas were some of the key challenges that NMC encountered. The NMC as part its reforms drive and efficiency improvement programs, initiated two mega projects in improvise property tax collection mechanism and water supply across the city.

Table 32: Best Practices initiated by the Nagpur Municipal Corporation

Areas	Process	Results
Property Tax Collection	Use of state of the art of the technology and satellite imagery	Improved efficiency in property assessment and tax collections
Water Services Improvements	PPP created	Water Network Expansion, improved water quality and increased water supply

GEO-CIVIC TAX INITIATIVES

Due to GIS, there was substantial increase in number of properties after GIS mapping

Prior to this system, 4.5 lakh properties were registered and in post implementation scenario properties increased in 4.91 lakhs.

Before implementation annual tax demand was at INR 165 crores and later after execution of reforms, annual tax demand increased to INR 300 Cr.

7.3 GeoCivic-Property Tax Initiative by Nagpur Municipal Corporation (NMC)

In April 2015, NMC adopted a revised taxation method of tax calculation. However, the mandatory parameters required for revised tax calculation were not available in the existing property tax system, which used the Annual Rateable Value (ARV) method. Under the old system, NMC faced huge issues in tracking changes in property characteristics, for example, changes in built-up area, occupancy, usage, etc. These changes were not completely documented in the property tax data, causing the prevalence of many under-assessed properties and leading to sizeable revenue losses for NMC. Additionally, NMC was unable to verify the coverage of all properties in its jurisdiction and the open plot data for most properties was not available. Hence, the project to digitize property tax using GIS systems to monitor and evaluate properties was conceived. Under this project, NMC started using GeoCivic Property Tax Management, a platform designed specially to address the challenges faced by local governments in all matters of property tax.

7.3.1 The Process

The GeoCivic initiative involved four essential steps that redefined the property tax structure of the ULB. Survey, Assessment, Geo Analytics and Citizen Portal were the main 4 steps in the process.

First: Survey of the properties across the city with a proper assessment of the structure based on parameters like age of the building, occupancy, identification of vacant lands, area, no of units and other parameters were conducted across the municipal jurisdiction of the city of Nagpur. Additionally properties that were not visible or vague under the GIS or satellite imagery were personally assessed

Second: The central aspect of assessment was to create a sync between town planning department and Property tax department of the ULB, in order to account for properties that been updated/further constructed was taken into account for assessment.

Third: Geo analytics involved satellite imagery for the city of Nagpur area wise with prime focus on assessing and figuring out number of properties in respective vicinities subject to NMC jurisdiction.

Fourth: GeoCivic Citizenship portal was launched after consolidating spatial surveys property assessment and identification and digitization of property tax process. The aim of the portal to offer single window unique property tax assessment for properties and unit in the city of Nagpur.

The new tax system was launched in 2015-16 but was implemented only in 2017-18. However, the revaluation of existing properties and the assessment of new ones had already started from November 2015.

Prior to this system, 4.5 lakh properties had been registered, with annual tax demand estimated at Rs. 165 crores. Post implementing the new system, 4.91 lakh properties have been revaluated with tax demand from 4.25 lakh properties alone estimated at Rs. 300 crores. It is expected that the current demand is likely to increase further to over Rs. 450-500 crores on completion of revaluation drive.

It is particularly noteworthy that apart from the current demand, NMC's arrears on existing properties is estimated at around Rs. 320 crores.

Despite the success of the Geo-Civic Tax initiative, the most significant innovation by the NMC has been the geo-mapping of open plots, which NMC claims to be the first in entire Maharashtra to implement. This has helped in identifying expansions in existing structures and any other developments taking place on open plots. The map of entire city has been updated using geo-referencing of High Resolution Satellite Images (HSRI) and Differential Global Positioning System (DGPS) survey leading to higher accuracy.

Ground level exercises were taken up to cross verify and correctly demarcate the boundaries wherever there was a difference observed between mapped data and on-ground reality. However, technological innovations can only achieve so much when political readiness and social awareness remained major obstacles in the path of progress. To tackle this issue NMC conducted meetings with respective Corporators, demonstrated ready-to-deploy solutions and generated awareness through campaigns with the use of different channels such as newspapers, pamphlets, public announcements, etc.

CyberTech Systems and Software limited Property Tax Calculator for Nagpur Municipal Corporation				
Annual Letting Value Calculation				
Steps	Description	Parameter Value	Derived Factor	Instructions
4	1 Property Type	Structure/Building	1.00	Select Type of Property unit
5	2 Area of Property (in sq.mtr.)	100	80.00	Enter the Gross Area of Property(House/Building) in Square Meters including (wall thickness)
6	3 Block of the Property	I - (Open Plot Rate 30,001 to 40,000/-Rs)	9.00	Select the property block (Blocks are decided as per the read/reconer value of the open plot in that)
7	4 Type of Construction	B- Good Quality	1.00	Select Type of construction of the Property Type(Structure/Building only)
8	5 Usage of Property	C - Non-Commercial	1.00	Select the usage of property
9	6 Age of Property	A - Less than 10 years	1.00	Select the Age slab of Property Type(Structure/Building only)
10	7 Occupancy Type	Rented	1.00	Select whether the property is rented or Self occupied
11				
12	Monthly Letting Value (in Rupees)		720.00	
13	Annual Letting Value (in Rupees)		8,640.00	
14	Annual Letting Value after 10% Standard Deduction		7,776.00	
15				
16	Other Taxes Calculation			
Sr.No	Description of Charges	Tax Rate (%)	Tax Amount (in Rupees)	Instructions
18	General Tax		0%	Select if 1, more or no ecological schemes are applicable to avail discount in General Tax
19	1 Sewerage Tax	22	1,710.72	
20	2 Sewerage Benefit Tax	12	933.12	
21	3 Special Cleanup Tax	1	77.76	
22	4 Non Hotels			Select if the property is Hotel/Restaurant or Non Restaurant
23	5 General Water Tax	Metered Connection		Select if you have Metered Water Connection or Unmetered Supply
24	6 Water Benefit Tax	0	-	
25	7 Fire Service Tax	1	77.76	
26	8 Road Tax	1	77.76	
27	9 Education Tax (M. Corporation)	1	77.76	
28	10 Tree Tax	1	77.76	
29	11 Education Cess (Government)	Resident		Select Resident or Non-Resident property
30	12 EGS Cess	6	466.56	
31	13 Big Residential Building Tax	0	-	
32	Total Property Tax (Annual, in Rupees)		3,576.96	

WATER SUPPLY PROJECT

Water services were marred by host of issues which led to implementation of mega program by the NMC.

The PPP program implemented by NMC has transformed water services in the city.

It was observed that despite availability of water, main impediments were in transmission and processing and tax collection.

The self-assessment tool for property tax calculation has been made available to all citizens and the assessment module in itself is an example of how convenient the entire exercise has become for citizens. This has not just maximised property coverage and provided up-to-date information on property parameters for NMC, but has also made the property tax database available to all citizens of Nagpur city. There are also facilities for online complaint filing, raising objections and scheduling for hearings.

7.4 Improvements in Water Supply- Water Coverage

Water services in the city of Nagpur during the early of the decade (2010) was in susceptible shape hindered by poor finances, low maintenance, bad quality of water, intermittent or no supply of water, obsolete billing practices, lack of billing and metering systems, unmetered supplies resulting in mounting losses, lack of accountability, lack of customer services, absence of commercial

WATER SUPPLY PROJECT

Water Supply Project by the NMC was implemented on massive scale where the whole process of water supply was rebuild.

Rehabilitation
Metering
SCADA
Mapping
Monitoring
Live assessments and oversight
Quality of Water
Operation and Maintenance

For First five years were dedicated for improvement of the water supply system whereas, operation & maintenance of municipal water system is to be carried out throughout the contract period.

approach to cost recovery, contamination issues through obsolete ferrule HSC's among others.

The city of Nagpur receives water from two major sources namely Kanhan River and Pench Dam. The Kanhan Water Supply Scheme was commissioned in four phases between the years 1940 and 1970. By the end of 2010, its capacity was estimated at 120 MLD. The Pench scheme was commissioned in 1982 and phase IV was recently completed in early 2012 with an estimated capacity of around 520 MLD. The water supply service area is within the jurisdiction of NMC. The total service area within the city is 217 sq. km., of which about 7 sq. km. area is under catchment of lakes at the city's periphery. 99

Thus, these fringe areas of Nagpur are not covered under the piped water supply network. There were losses that were often siphoned off as 'free supply' with the popular perception being that 'water is a free service'. To overcome these hindrances and provide its citizens with water services in a streamlined and sustained manner, NMC, using JNNURM and State grants, proposed a public private partnership module on a performance-oriented leased contract basis for 25 years. As a part of this transaction, the operator, an NMC contractor, was required to co-finance a five-year investment program. The NMC, under the arrangement, was to provide raw water supply from the irrigation department and the operator was supposed to treat the water and transport it as required to ensure supply of potable water to authorized consumers of Nagpur city.

Table 33: Vision and Approach

Key Areas of Focus	Approach and Implementation
Rehabilitation, Operation and Maintenance	Replacement of deteriorated pipes, Rehabilitation of pench II WTP, ESR/GSR, & Misc. Components
Metering	Replacement of household connections with meters
Water Supply Coverage	24*7 supply, laying of new pipeline
Quality of Water, NRW	ESR cleaning technology and Advanced leak detection Equipment to detect leaks, Horizontal drilling among others
Mapping and monitoring	Photo Meter reading app, mobile payments gateway, reliance on state-of-the-art technology

WATER SUPPLY PROJECT-THE PROCESS

Orange City Water Pvt Ltd as a joint consortium of Veolia Water and Vishvaraj Environments Ltd, was set up in November 2011.

The OCW was responsible for processing and implementing the clauses of the contract while NMC supplied the water.

Finally Orange City Water Pvt Ltd (OCW), as a joint consortium of Veolia Water and Vishvaraj Environments Ltd, was set up in November 2011 to spearhead a 24x7 water supply project in Nagpur based off a similar public-private partnership model.

7.4.1 Responsibilities and Process:-

Beginning March 2012, initial five years of the contract were dedicated towards improvement of the water supply system whereas, operation & maintenance of municipal water system is to be carried out throughout the contract period. OCW has an obligation to progressively increase the contractual technical efficiency (CTE) from 60% to 75% in 61st month to 120th month of the contract. 121st month onward, the CTE is to be maintained at 75%. Similarly, the contractual collection efficiency (CCE) is to progressively increase from 75% to 95% from 61st month to 120th month. 121st months onwards CCE needs to be maintained at minimum 95%. The coverage of water supply is expected to rise from 85% to 100%, including for the urban poor.

- Under the initial performance improvement task taken up by OCW, all house connections, including customer meters, have been replaced along with the replacement of deteriorated pipes and fittings. The water treatment plants have been rehabilitated and SCADA, CIS & GIS technology has been introduced to put a check on field network information and analysis of existing network capacity.
- This has helped in reconciliation of authorized and unauthorized connections, which in turn has brought to light all unauthorized connections. These unauthorized connections have either been standardized or disconnected. Flow meter installation, district meter area and subzone formation has helped in analysing consumption patterns of the consumers to identify anomalous changes in consumption.
- OCW, to date, has also carried out the task of carrying out house-to-house leak detection using step tests and pressure tests to monitor pressure through critical pressure points to assess and isolate major leakages. This has resulted in recurring execution of NRW reduction plan to achieve technical efficiency
- With its customer-centric approach, OCW has been able to address any issue related to interruptions in the water supply, as multiple channels have been set up for consumers to contact the OCW. OCW has also established dedicated call centres with a toll free number, for consumers to register their complaints. Additionally, complaints can be filed online on the NMC website or the OCW website or customer care centres or even water houses, which have help desks that register complaints during working hours.

Outcomes of the Water Services Enhancement Project

NRW reduced from 67% in 2011-12 to 52% by 2017-18

Volume of water billed gradually witness up tick from 201 MLD in 2011-12 to 318 MLD in 2017-18

- Regardless of the medium, each complaint is registered through a unique number, for which a Field Order Form is generated by the zonal office and an engineer is dispatched to solve the problem. On resolution, the Field Order Form is filed in the zonal office and the complaint is closed. This system has been further augmented by implementation of the System, Application and Products (SAP) from June 2014 onwards, to help streamline billing and collection of charges.
- The photometer reading has been implemented since July 2014, wherein the meter reading is taken on GPRS-enabled smart phones for real-time upload to a centralized database. It enables accurate reading and better service, resulting in lesser complaints, and has secured hosting with access only to authorized staff.

To increase citizen engagement and general social awareness, OCW has undertaken initiatives like pre-imitation through leaflets, organizing ‘mohalla’ (local community) meetings, conducting school and college awareness programs, engaging self-help groups, NGOs for exponential reach and putting up health check-up camps with the help of hospitals, etc. Water Friends have been identified from all localities to increase public participation. Water Friends get special privileges such as priority complaint Redressal by call centres, displaying their names with photos at prominent places of their respective localities, etc.

7.4.2 Outcomes:

It can be observed from the below graph that cost recovery on water services improved significantly over the period of 6 years. In 2011-12, cost recovery stood at Rs 72 Cr for water consumption demand of Rs 79 Cr, indicating gap between cost incurred and cost recovered. but by 2016-17 the actual cost realisation stood up at Rs 122 Cr for water demand of Rs 128 Cr, indicating a rise of 69% between 2011-12 to 2016-17.

Outcomes of the Water Services Enhancement Project

Quality of water enhanced drastically over the last 7-8 years.

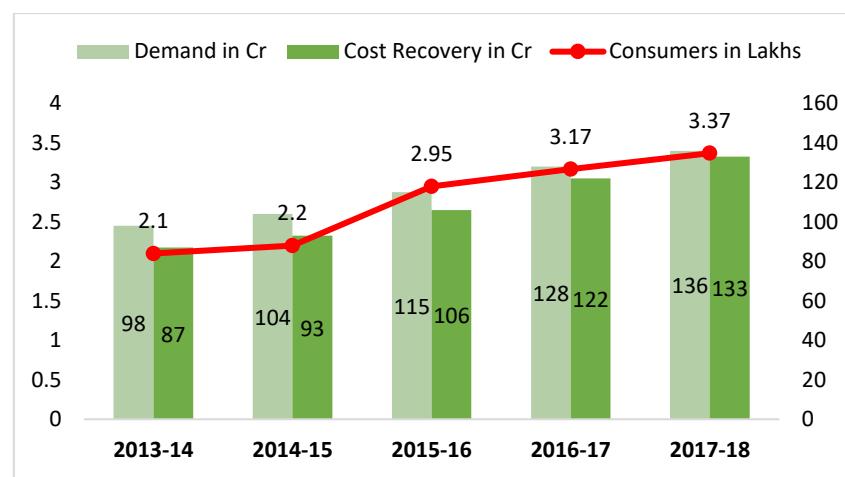
If sample percentage wise was around 80% in 2011-12 and by 2017-18 it increased to 97%.

16 lakh citizens benefitted

Water losses dramatically reduced reflected in reduction NRW.

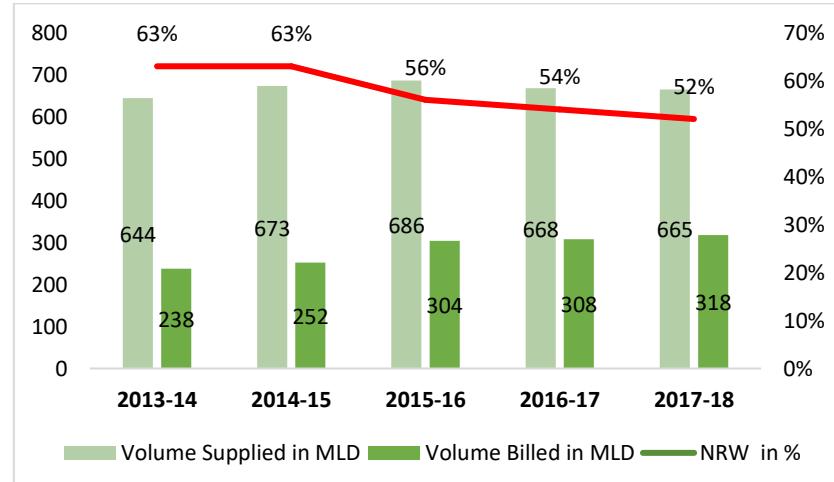
Water tax collection also improved by the program.

Graph 15: Water Demand Vs Cost Recovery in INR Cr (Commercial Efficiency)



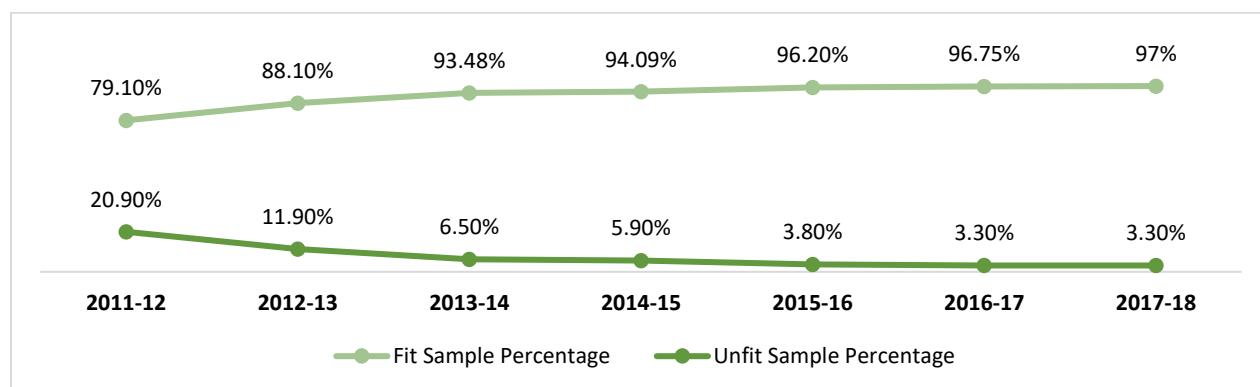
Similarly, volume of water billed through proper mechanism like metering, timely billing and maintenance of infrastructure has improved substantially. In 2011-12, total volume of water supplied was 643 MLD whereas the total billed water was just 210 MLD. With the implementation of water service improvement program, Total volume of water billed increased to 318 MLD from 210 MLD back in 2011-12, indicating a growth of 51%.

Graph 16: Key Water Supply Statistics for Nagpur



Respecting the very resource around which OCW functions, advanced Leak Detection Equipment is used to locate and arrest the invisible leakages in the network. This has helped in saving the water which was wasted since it was difficult to identify. Additionally, NRW which stood at 67% in 2011-12 was reduced more than 10% to 52% by the year 2016-17, indicating a reduction of 22% over the program period.

Graph 17: Improvement in Water Quality in Percentage



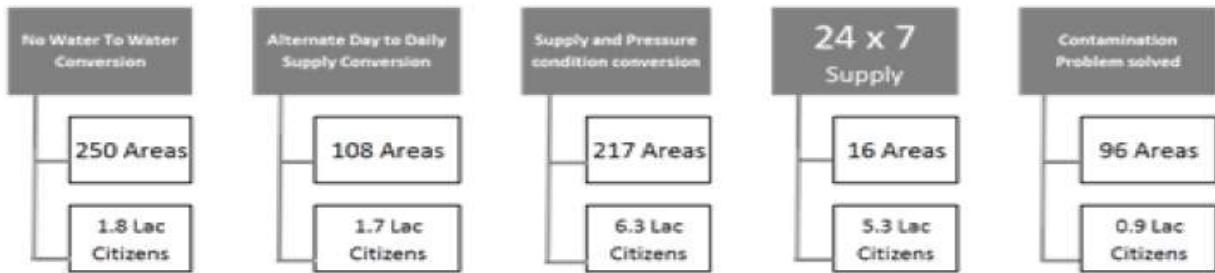
Furthermore, as a consequence of numerous measures undertaken by the OCW, the quality of water improved significantly. OCW is committed to delivering Clean, Safe and Sufficient water to every household in Nagpur. To fulfil this, OCW developed an indigenous system for ESR Cleaning which reduced the cleaning time to less than half of manual cleaning and the quality is way superior. In the year

2011-12, 79% of water out of all the samples was considered fit whereas the almost 20% of water collected as sample was unfit according to water quality standards. The level contaminations and impurities in water decreased dramatically to just 3.30% in 2017-18 indicating almost 97% of water processed was clean and hygienic. By the year 2017-18, water quality resulted in drastic improvement by nearly 20%.

OCW has achieved significant milestones in helping realize NMC's vision, with major parts of the city receiving 24x7 water supply. The current status of rehabilitation projects includes:

- A 588 km pipeline laid under Command Area Rehab Works
- 1.59 lakh House Service Connections completed under Command Area Rehab Works
- 2000 mm Dia Bye-Pass pipe laying commissioned
- Three ESR Rehabilitations completed out of eight in major rehab
- Five out of nine work in progress for minor rehab
- Flow meters installed for bulk audit

Supply Improvement



- Total 16 Lac citizens Benefitted

JHARKHAND STATE

Jharkhand undertook massive municipal reform drive that drastically increased and strengthened revenue sources for the state municipalities.

Property Tax Innovation is one of the mega project implemented by the state in recent years.

Municipal machinery and regulatory framework went serious changes as a part of the reform drive.

8.0 Jharkhand

8.1 State Profile

Jharkhand is a State in Eastern India, which was formed as a by-product of the secession of Southern Bihar in November 2000. With a population of 32.9 million, Jharkhand has an area of approximately 79,000 sq.km. Administratively, the State has been divided into 24 districts which come under five divisions. The capital city is Ranchi, while the largest and biggest industrial hub of Jharkhand is Jamshedpur, in East Singhbhum district.

Forest and woodlands cover more than 29% of the State, a feature that is the highest in India. Jharkhand is endowed with vast natural resources, especially minerals ranging from iron ore, coal, copper ore, bauxite, lime stone, uranium and other minerals. The State is a leading producer of minerals in the country with a total value of mineral production amounting to over ₹3,000 crores. The State has shown a continuous upward trend with growth in areas of agriculture, housing, technological innovations, skill development, entrepreneurship, etc.

8.2 Property Tax Innovation:

As part of their reform drive and improve property tax collections, the Jharkhand State Urban Development Authority (SUDA) formed a Public-Private Partnership to create more public awareness among citizens about the new property tax rules, importance of timely payments of property tax, modes of hassles free online payments methods to smooth-line property tax payments and to strengthen revenue augmentation.

Tax Collection Agency (TCA) and Project Management Unit (PMU) and It was ideally supposed to be implemented from April 2014 as per the Jharkhand Municipal Property Tax (Assessment, Collection & Recovery) Act 2013, but the implementation date was changed to be from April 2016 onwards as per the Jharkhand Municipal Property Tax (Assessment, Collection & Recovery) Amendment Act 2015.

8.2.1 PPP: The Functioning of TCA and PMU

As discussed above, private agencies have been roped in by the State to help facilitate the collection and recovery of property tax. Further, the agency has been helpful in simultaneously making the

PROPERTY TAX REFORMS

Governance reform, ground level assessments, property mapping, institutional empowerment and ease of payments of property taxes were some of the key initiatives.

Formed Tax Collection Agency and Project management Unit to speed up the process of tax assessment and collection.

State-wide massive public awareness campaigns were launched

local bodies understand the entire concept by conducting workshops for their capacity building, suggesting better avenues of revenue augmentation, etc. in order to help and empower municipalities through the power of governance.

- There are three TCAs in the State, established in the month of July 2016, with a staff capacity of over 500-600 professionals, which are responsible for the collection of revenue from property tax, water user charges and trade license. With a cost benefit structure of Rs 24 Cr for 1 TCA to Rs 193 crore as perceived benefits. The major responsibility of the agency is to collect tax from each household and maintain an online database, as well as to conduct a door-to-door survey to identify unassessed households.
- There is one PMU in the State, established in July 2017 with around 20 staff members, that is responsible for strategizing approaches for revenue augmentation and act as an advisory body for the adoption of best practices in municipal revenue generation. The coverage of these PMU was 41 ULB's among 5 clusters with an overhead outlay of Rs 2 Cr. The agency looks after the effective monitoring of revenue collection and administration and has been set up to bridge the gap between municipal bodies, citizens and the government.

8.2.2 Process of Work

Initially, the TCA was responsible for distributing self-assessment forms (SAF) to citizens

Step 1: The TCA distribute SAF by means of organizing local camps, or through "*Jan Suvidha Kendra*", or even going door-to-door

Step Two: Digitization of all collected SAF or and generate a 15-digit unique property number, assigned to for each taxpayer.

An individual taxpayer is identified through a unique property number without which no property in the entire State would be registered, and water connections cannot be applied for.

Step Three: After the collection of the self-assessment forms and the allotment of unique property numbers.

TCA collected property tax, which was again collected by door-to-door means, through "*Jan Suvidha Kendra*", or by citizens directly through the online platform.

PROPERTY TAX REFORMS

Governance reform, ground level assessments, property mapping, institutional empowerment and ease of payments of property taxes were some of the key initiatives.

Formed Tax Collection Agency and Project management Unit to speed up the process of tax assessment and collection.

In this process, it is the responsibility of the PMU to ensure real-time availability of information, monitoring and proper administration throughout the procedure. The cash deposited by TCAs are verified through an internal auditor at a particular municipal body and the final report is cross verified by the PMU.

Table 34: Key Aspects of Property Tax Reforms in Jharkhand

Framework	The Process	Results
Designed PPP and assigned private firms responsibility of tax assessment and collection	Established Tax collection Agency and Project Management Unit	51% increase in property tax of total revenue in 2017-18 compared to 2013-14
Survey and self-assessments forms were distributed by TCA's	Jan Suvidha Kendra were established Door-to-door survey were conducted	Resulted in decrease of arrears by 20%
PMU's were responsible for data collection and monitoring the process	Amnesty scheme was introduced in last quarter of 2017-18	Unassessed properties have reduced by >35% Property Tax revenue growth grew by 12% in comparison with all states for 2015-16

8.2.3 Success Story

The new reform in property tax collection has helped the State in collecting Rs. 105.6 crores from 41 municipal bodies in the financial year 2017-18. This has been a major increase from mere Rs. 10.35 crores collected in the year 2013-14. There has also been an increase in the per capita property tax revenue from Rs. 99.25 per household to Rs. 1,006 per household. The introduction of PPP has also resulted in a decrease in arrears by 20% and the number of unassessed properties have reduced by more than 35%.

A comparison of own revenue over the last five years in Jharkhand shows that there has been an increase in property tax, which has been calculated to be 51% of the total revenue in the year 2017-18.

PROPERTY TAX REFORMS

Property Tax collection showed good signs of healthy growth after the implementation of the reforms drive by the state

Through the Municipal Act Amendment, 2016, major urban reforms have been introduced including the decentralization of power.

Property tax relative to total revenue was merely 19% in the financial year 2013-14

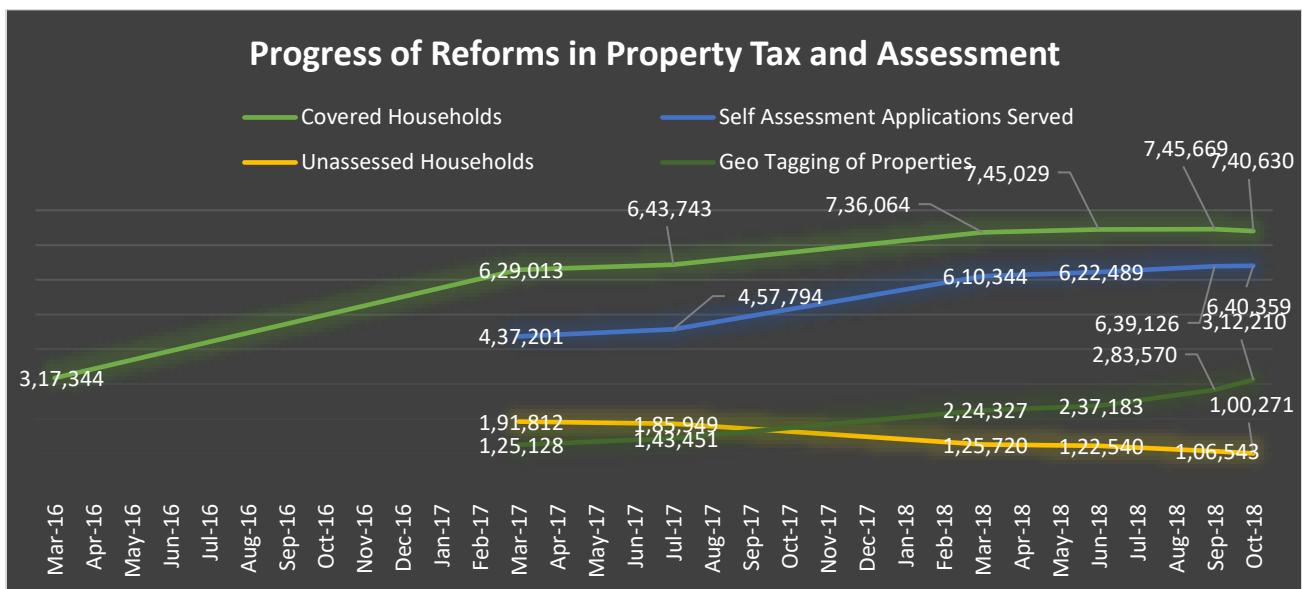
Picture 2: Five Year Comparison of Own Revenue in INR Cr 2013-18



With all this, the journey of Jharkhand towards strengthening own source revenue has just begun. As the finances are increasing with the structural changes, SUDA is planning to explore new innovative avenues for financial augmentation of municipalities. With the success of the PPP module, Jharkhand Government plans to take it a step further and introduce GIS-mapping integrated with RFID tags, which is expected to reduce unassessed cases of properties, along with the introduction of Nagar Prahari Scheme which, at the local level shall help to curb underassessment of properties and generate awareness among citizens. Likewise, the government is looking forward to exploring revenues from mobile towers, OFCs and other interventions of a similar nature.

Through the Municipal Act Amendment, 2016, major urban reforms have been introduced including the decentralization of power. This has helped in enabling local bodies to take appropriate decisions in all spheres of activities, which necessitate improvement of their administration and the ability to take the right decisions. A series of reforms, like accrual-based double entry accounting system, instant transfer of funds to functionaries, e-governance, rewards, and others, form part of a new agenda, which shall help facilitate the goal of municipal self-sustainability.

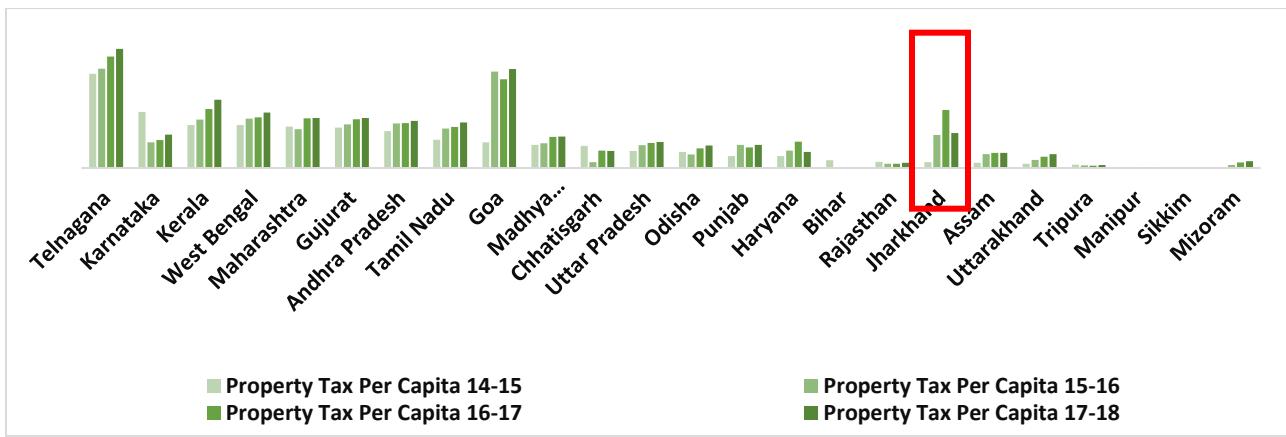
Graph 18: State of Improvement in Property Tax Area for Jharkhand 41 ULB's over the years.



The above graph clearly reveals the state of improvement in various areas of property tax collection process, such as number of properties assessed, number of unassessed properties, and state of Geotagging and progress of distribution of self-assessment forms.

- Number of properties assessed increased from 4.37 lakhs in 2016-17 to 6.40 lakh till Oct 2018
- Increase in assessments by 44.3% over the years
- Substantial decrease in unassessed properties by 35%

Graph 19: Property Tax Per Capita By State 2014-18



Prior to 2016, Jharkhand's property tax collections per capita ranked in the bottom five across all States. Jharkhand's unrealized revenue potential from property tax collections is highlighted by Haryana and Punjab's higher property tax collections per capita in FY 2015-16, two States with similar population sizes and distribution across urban and rural regions. The State-level property tax reform

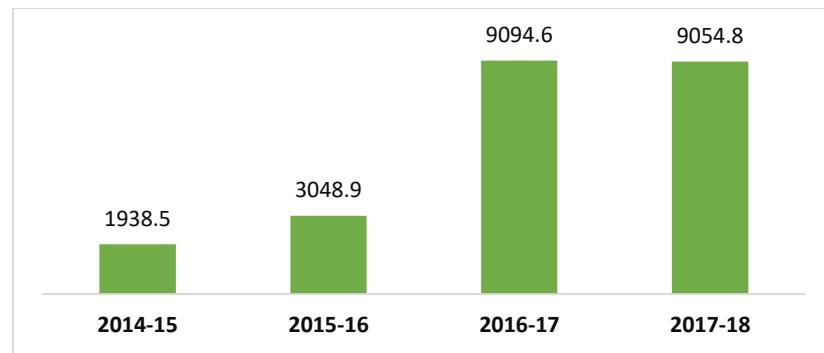
implemented in 2016 can be credited for strong growth in Jharkhand's property tax per capita revenues in FY 2016-17. In 2016-17, Jharkhand reported the highest growth in property tax revenue across all States, by a sizeable margin. While property tax revenues grew by 12% on average across all States between FY 2015-16 and FY 2016-17, Jharkhand reported a growth of 243.6% in the same timeframe.

PROPERTY TAX REFORMS

While property tax revenues grew by 12% on average across all States between FY 2015-16 and FY 2016-17, Jharkhand reported a growth of 243.6% in the same timeframe

Prior to the implementation of a public-private partnership for the collection of property tax, the State of Jharkhand collected merely Rs. 10.35 crores in 2013-14. In terms of property tax collected per capita in 2014-15, Jharkhand ranked among the lowest-performing States, next only to North-Eastern and hill States of Mizoram, Sikkim, Manipur, Tripura, Uttarakhand and Assam.

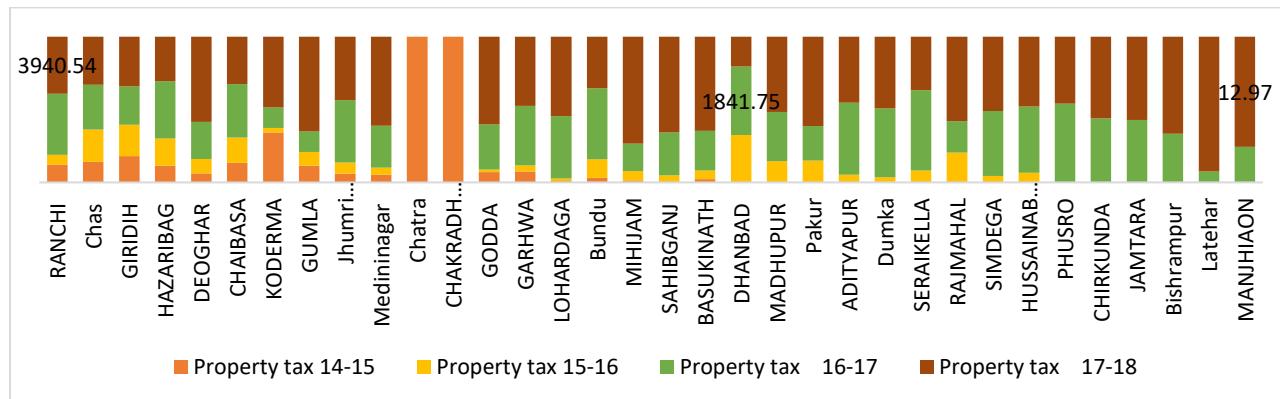
Graph 20: Property Tax in Rs Cr 2014-18



Implementing the Jharkhand Municipal Property Tax (Assessment, Collection & Recovery) Amendment Act in April 2016 saw Total Property Tax collections triple from Rs. 3,048.9 in FY 2015-16 to Rs. 9094.6 in FY 2016-17. Property tax collections improved significantly across all ULBs in Jharkhand due to uniform implementation of State mandated tax reforms.

Prior to the implementation of a public-private partnership for the collection of property tax, the State of Jharkhand collected merely Rs. 10.35 crores in 2013-14. In terms of property tax collected per capita in 2014-15, Jharkhand ranked among the lowest-performing States, next only to North-Eastern and hill States of Mizoram, Sikkim, Manipur, Tripura, Uttarakhand and Assam. The performance of the State remained the same in FY 2015-16 as well. However, post the implementation of the Jharkhand Municipal Property Tax (Assessment, Collection & Recovery) Amendment Act 2015 in April 2016, there was a significant jump in the collection of property tax per capita in 2016-17 and the results were visible from the year of implementation itself.

Graph 21: Property Tax Per Capita in Rupees (ULB Level)



PROPERTY TAX REFORMS

Jharkhand ranked higher than comparable States in terms of property tax collection such as Bihar, Punjab and Rajasthan

An increase in the property tax per capita from Rs 68.11 in 2015-16 to 199.75 in 2016-17 and 195.75 in 2017-18, resulted in lowering the dependency of the State/ULBs on governmental transfers and grants, thereby increasing the self-reliance of ULBs for robust financial health

The average growth rate of property tax per capita collected among the 32 cities of Jharkhand (eligible ULB's for PG 2017-18 was 383% between 2015-16 and 2016-17 and its remarkably high between 2015-16 and 2017-18 with an increase of 533%. The credit for reform in property tax collection by the State Urban Development Authority (SUDA) of Jharkhand can be attributed to introduction of PPP in tax collection and monitoring. Three tax collection agencies (TCAs) have been appointed for the State and more than 500 tax collectors work on ground to cater to 10.34 lakh households.

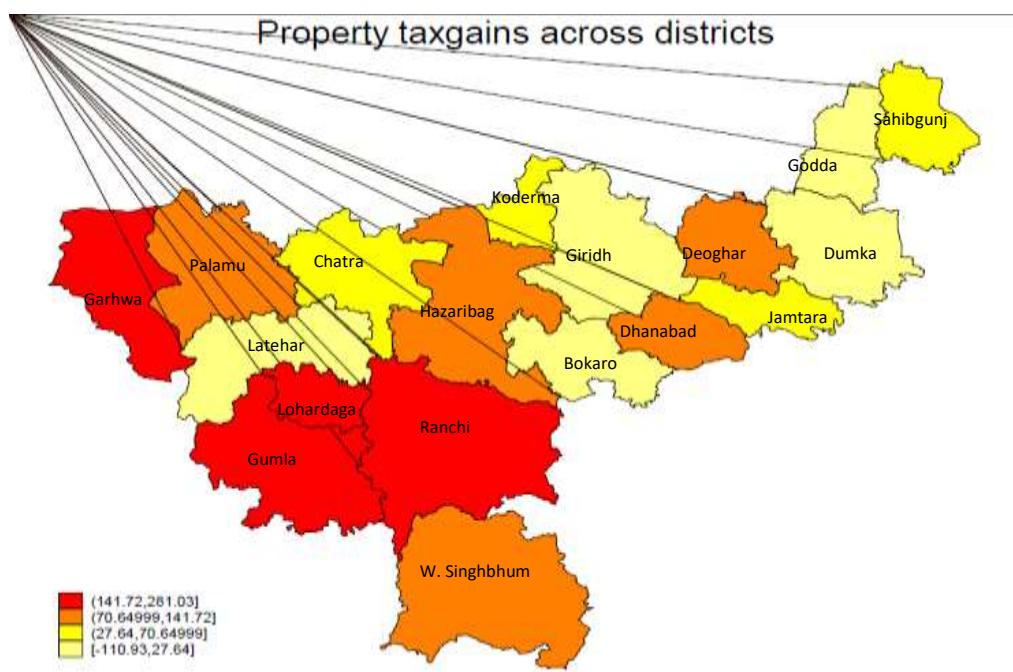
A Project Management Unit has also been set up, resulting in effective monitoring of the revenue collection and administration process. Through door-to-door collection, organization of camps and introduction of Jan Suvidha Kendras (JSKs), the local governments have realized a significant increase in the collection of property tax. In addition to increased collection efficiency, harsher punishments of evasion of property tax were also introduced such as recovery rules for defaulters, right for attachment of property, freezing of bank accounts, etc.

Since the introduction of property tax reforms in the State in 2016, the performance of the State at the national-level also improved significantly. Jharkhand ranked higher than comparable States such as Bihar, Punjab and Rajasthan, in addition to the North-Eastern and hill States of Manipur, Sikkim, Tripura, Mizoram, Uttarakhand and Assam in terms of property tax collected per capita in 2016-17.

An increase in the property tax per capita from Rs 68.11 in 2015-16 to 199.75 in 2016-17 and 195.75 in 2017-18, resulted in lowering the dependency of the State/ULBs on governmental transfers and grants, thereby increasing the self-reliance of ULBs for robust financial health. From the financial information received for 32 ULB's (Eligible for PG grants 2017-18) the share of property tax per capita in relation with own revenue receipts per capita increased from 30% in 2014-15 to 37% in 2015-16, and to 58% in 2016-17 and 57% in 2017-18. In addition, per capita tax revenues across the cities of Jharkhand increased Rs 97 per capita in 2015-16 to Rs 261.65 in 2016-17 and to Rs 207.05 in 2017-18 showing an increase of 270% between 2015-16 and 2016-17 and by 79% between 2016-17 and 2017-18. Hence, property tax reforms introduced by the State have resulted in a significant increase in the share of tax revenues when compared with own revenue receipts, thereby increasing the self-reliance of ULBs as well as their paying capacity, and reducing dependency on grants by upper tiers of governments.

While Transfers (state and central) per capita for the state of Jharkhand for was Rs 391.27 in 2015-16, increased to 647.39 in 2016-17 showing an increase of 65% between the two years, in comparison with national average of per capita transfers for 2015-16 was Rs 1,428.85 and Rs 1,469.79 in 2016-17.

The effect of property tax reforms between the three assessment years on each of the cities can be seen in the graph above.



Districts where the 25 cities in our assessment lie have been used to design the map above. While the districts also include rural areas theoretically, for representation purpose, only data from the cities has been used in the heat map above. At the district level, except for the state of Godda, every district has experienced significantly positive growth in property tax collection in FY 2016-17. This

significant increase in tax revenue across all ULBs can be attributed to Jharkhand's State-level tax reforms and the uniformity in its implementation. The heat map above shows the distribution of growth in property tax revenue from 2015-16 to 2016-17 across districts. The darkest regions of red indicate the highest growth in property tax revenue ranging from Rs. 141.72 to Rs. 281.03 per capita.

The orange regions indicate medium to high growth ranging from Rs. 108.70 to Rs. 141.72 per capita. The yellow regions depict medium growth in property tax revenue per capita ranging from Rs. 27.64 to Rs. 70.65. The lightest shaded region depicts low to negative growth even ranging from a decline of Rs. 110.9 to an increase of Rs. 27.64 in per capita property tax revenue between 2015-16 and 2016-17. Overall, 14 out of 18 districts reported a significant rise in property tax revenue collection efficiency

9.0 Summary of Findings

The present study documents the existing best practices in the six cities and the State of Jharkhand. After detailing the fiscal health and best practices of each Municipal Corporation. Based on this analysis, it describes potential areas of improvement and encourages the use of advanced technology in water supply services, and solid waste management services, while also acknowledging new initiatives by each Municipal Corporation to improve ease of use and access, quality of civic service delivery and the financial base of ULBs.

Table 34: Themes of Interest across select cities.

Cities	Property tax (in Rs. crores)	Coverage of Water Supply	Solid Waste Management
Ahmedabad	2014-15: ₹389.90 2015-16: ₹448.22 2016-17: ₹ 423.83 2017-18: ₹428.16	2016-17 Status: Coverage of water supply connections: 96%, 97.8% in 2018-19 24x7 water supply coverage of all public/community toilets Extent of Non-Revenue Water: 24.23%, 22.1% in 2018-19 (Ideal is 20% or below)	2016-17 Status: Household level coverage: 89.3% Collection Efficiency: 100% Extent of scientific disposal of municipal solid waste: <4%, 10.3% in 2018-19
Surat	2014-15: ₹248.40 2015-16: ₹256.55 2016-17: ₹349.96 2017-18: ₹ 432.41	2016-17 Status: Coverage of water supply connections: 96%, 98% in 2018-19 24x7 water supply coverage of all public/community toilets Extent of Non-Revenue Water: 19%, 20% in 2018-19 (Ideal is 20% or below)	2016-17 Status: Household level coverage: 100% Collection Efficiency: 98.05% Extent of scientific disposal of municipal solid waste: 100%
Bhopal	2014-15: ₹100.13 2015-16: ₹128.05 2016-17: ₹157.73 2017-18: ₹168.77	2016-17 Status: Coverage of water supply connections: 90%, 93% in 2018-19 24x7 water supply coverage of all public/community toilets Extent of Non-Revenue Water: 19%, 15% in 2018-19 (Ideal is 20% or below)	2016-17 Status: Household level coverage: 100% Collection Efficiency: 100% Extent of scientific disposal of municipal solid waste: 0%, 100% in 2018-19

Indore	<p>2014-15: ₹179.20 2015-16: ₹208.68 2016-17: ₹ 293.95 2017-18: ₹ 280.95</p>	<p>2016-17 Status: Coverage of water supply connections: 54%, 47% in 2018-19 24x7 water supply coverage of all public/community toilets Extent of Non-Revenue Water: 65%, 28% in 2018-19 (Ideal is 20% or below)</p>	<p>2016-17 Status: Household level coverage: 100% Collection Efficiency: 100% Extent of scientific disposal of municipal solid waste: 100%</p>
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*Pune and Nagpur has been omitted from the table above due to non-availability of data
Jharkhand being a state and incomparable with independent cities, not presented in the above table*

9.1 Best Practices

9.1.1 Overview

The focus of this section is to summarize the best practices that have worked across the cities in helping boost civic engagement through the delivery of quality municipal services and sound financial management. This will primarily be an evaluation of the practices that have worked across cities and themes of:

1. Financial Self-Sufficiency
2. Coverage of Water Supply
3. Solid Waste Management

9.2.2 Financial Self-Sufficiency

9.2.2.1 Property Tax Collection

Since octroi was abolished, cities have explored a diverse set of options for financing their infrastructure spending. While property tax remains the largest self-generating revenue source for most municipal bodies, some of the cities have either innovated the existing property tax system to be more efficient or spearheaded new initiatives like issuing municipal bonds, or used a combination of the two to improve their fiscal health. The tenets of the Performance Grant under the 14th Finance Commission have been mandated to incentivize financial self-sufficiency. The level of fiscal autonomy has been measured by two primary metrics: Own Source Revenue and Own Source Revenue as a percentage of Revenue Expenditure.

Table 34 highlights the growth in Own Source Revenue and Property Tax collection in the sample cities of Ahmedabad, Surat, Bhopal and Indore between 2014-15 and 2015-16. The Per Capita Property Tax collected increased by 12.4% in Ahmedabad, 1% in Surat, 25% in Bhopal and 13% in Indore. In Ahmedabad, Bhopal and Indore, the significant growth in property tax was the primary driver of the growth in Own Revenues. Each city that has succeeded in expanding its Property Tax base and realization has implemented their own set of technological interventions and reforms.

Ahmedabad has leveraged GIS to map over 20, 00,000 properties and successfully assessed each and every property in its coverage area. To ensure land use standards are maintained, AMC re-evaluates and re-measures all properties every four years, having implemented it in 2005, 2009 and 2013. To incentivize timely payment of tax, advance property tax payments are encouraged with a 10% rebate, a strategy that has succeeded among 30-40% of owners. AMC has also dedicated mobile tax collection vans towards the process of payment and collection to ease access for eligible citizens. Surat and Nagpur implemented similar reforms as property tax remains the major source of internal revenue for SMC and NMC. With the help of its GIS intervention, SMC has successfully managed to increase total Property Tax recovery by 20.3% from 2015-16 to 2016-17, having assessed all mapped properties, using an area-based calculation method, similar to Ahmedabad and Indore. NMC in particular, leveraged media and corporations to raise social awareness about the importance of property tax, while using GIS and GeoCivic Property Tax Management platform to alleviate the earlier issues arising from the Annual Rental Value (ARV) method of assessment.

In Bhopal, technological interventions have been augmented by a whole host of activities by BMC officials that include making the payment process easier for citizens, monitoring land use, information dissemination to raise awareness about property tax laws and using demotivating tactics to attenuate defaulters. Bhopal has also begun phase I of mapping all properties to determine property tax eligibility and link it to the SAP online assessment and collection system that has been in existence since 2008-09. The key to BMC's success has been transparency in utilisation of property tax funds towards development of wards in the tax-eligible base.

As one of the key sources of municipal revenues in Pune, the Property Tax department has dedicated significant time and resources towards increasing efficacy of tax realization. While collection efficiency from the total Property Tax demand base has been ~40% between 2014-15 and 2016-17, there has been a steady increase year-on-year in total collections. Some unconventional methods implemented to improve PT recovery were using tactics like "Band-Baja" to shame defaulters, setting up Lok Adalats to aid in resolving issues regarding tax recovery, setting up door-to-door mobile recovery vans, leveraging online payment services to help facilitate tax payments easily and increasing the number of tax collection centres.

Pune also implemented GIS-mapping software to monitor land use, assess eligible properties and map potential defaulters to increase recovery base. Additionally, to aid recovery from non-deliberate offenders, PMC introduced an amnesty scheme that availed a discount ranging from 50% - 75% (depending on the duration of non-payment) conditional on a one-time payment of the tax leading to a recovery of approximately ₹377.15 crores from 1,45,501 defaulters in 2015-16.

Jharkhand deserves special mention for its particularly innovative property tax reforms. The Jharkhand State Urban Development Authority (SUDA) formulated a Public-Private Partnership between the TCA and PMU and implemented it under the Jharkhand Municipal Property Tax (Assessment, Collection & Recovery) Amendment Act 2015. This reform increased property tax collection tenfold between 2013-14 and 2017-18. The efficacy of this reform can be credited to two

channels of impact: disincentivizing defaulters from repeat offences and leveraging existing financial technologies and platforms to make the payment process easier for citizens.

Currently TCA is responsible for the documentation and survey of registered and unregistered properties for assessment and collection using a self-assessment tool (implemented both door-to-door and online) that helps generate a unique 15-digit property number for each household. The total collections are audited internally and verified by the PMU. With plans to upgrade this program with GIS-mapping using RFID tags, the Jharkhand Government's two-step approach has helped increase the share of property taxes in total revenues to 51% in 2017-18 from an insignificant 19% in 2013-14. The PPP model could potentially serve as a framework for other ULBs lacking the resources to implement GIS directly.

9.2. Alternative initiatives

While the full potential of Property Tax remains unrealized, it still contributes the largest share in municipal revenues across the sample cities. To generate additional non-tax revenue, Pune and Ahmedabad became among the first Municipal Corporations in Asia to issue municipal bonds. AMC led the way in 1998 by issuing over Rs. 100 crores in tax-free municipal bonds, while Pune scaled up this program by launching India's largest Municipal Bonds program valued at over Rs. 2,264 crores in 2017. Both Municipal Bonds programs have successfully issued "AA+" rated bonds to fund infrastructure spending. The key drivers for these stable ratings have been a higher level of fiscal autonomy, efficacy in delivery of quality civic services and comfortable debt position. While initially tax-free, the Union Government revoked the bonds' tax-free status to prevent it from creating distortions in the wider bond market. In the case of PMC, a portion of its Property Tax collections were pledged towards debt-servicing the bond program. The wider motivation for this bonds program has been to finance the increasing infrastructure needs, while also trending towards self-sustenance, i.e. reduced dependence on state and national-level grants.

Table 35: Intra and Inter City Divergence in Per Capita Revenue Receipts and Expenditure (in Rupees)

	AHMEDABAD		Annual GR. Rate (%)	SURAT		Annual GR. Rate (%)	BHOPAL		Annual GR. Rate (%)	INDORE		Annual GR. Rate (%)
	2014-15	2015-16		2014-15	2015-16		2014-15	2015-16		2014-15	2015-16	
Population	6094204	6230570	2.24	4881312	4990538	2.24	1966771	2011322	2.27	2202478	2266467	2.91
Revenue Receipts	4743.3	5508.3	16.13	3426.2	3520.7	2.76	2742.32	3254.41	18.67	3778.8	4578.6	21.16
Capital Receipts	2600.6	2343.5	-9.89	2829.4	2349.3	-16.97	1774.44	2224.41	25.36	1294.3	1172.0	-9.45
Own Revenue	2456.8	2788.0	13.48	1837.8	1954.5	6.35	1213.87	1215.43	0.13	1527.0	1804.7	18.19
Transfers, Grants, Assigned Revenues	1931.4	2305.9	19.39	1539.9	1540.6	0.05	1342.30	1896.37	41.28	2213.9	2722.1	22.95
Tax Revenue	1325.3	1359.2	2.56	729.4	773.4	6.03	900.30	1001.16	11.20	1219.4	1486.7	21.92
Non-Tax Revenue	1131.6	1428.8	26.27	1108.4	1181.1	6.57	313.57	214.27	-31.67	307.5	318.0	3.41
Property Tax	639.8	719.4	12.44	508.9	514.1	1.02	509.13	636.66	25.05	813.7	920.7	13.16
Capital Grants				1822.7	1144.3	-37.22	553.54	532.88	-3.73	1111.6	1083.5	-2.52
Other Capital Receipts	2600.6	2343.5	-9.89	1006.7	1205.0	19.71	1220.90	1691.53	38.55	182.7	88.5	-51.57
Revenue Expenditure	3451.3	3716.4	7.68	2678.8	2928.6	9.32	1817.7	2184.2	20.17	2521.66	2429.28	-3.66
Capital Expenditure	3415.8	3649.7	6.85	3577.1	3524.5	-1.47	3348.8	3626.1	8.28	1817.61	1241.68	-31.69
Establishment and Salaries	1563.2	1666.6	6.61	1604.3	1761.3	9.79	966.3	1144.9	18.49	1152.13	1141.03	-0.96
O&M and Other Expenses	1888.1	2049.8	8.57	1074.6	1167.2	8.62	851.4	1039.3	22.07	1369.53	1288.25	-5.93
Development Expenditure	1724.6	2088.2	21.09	1175.6	792.0	-32.63	3154.9	2858.7	-9.39	647.97	656.97	1.39
Other Capital Expenditure	1691.2	1561.5	-7.67	2401.4	2732.5	13.78	193.9	767.5	295.79	1169.64	584.71	-50.01

9.3 Coverage of Water Supply

According to the Handbook of Service Level Benchmarking, published in 2008 by MoHUA (then MoUD), the coverage of water supply is measured as per the total number of households in the service area that are connected to the water supply network with direct service connections, as a percentage of the total number of households in that service area. The minimum acceptable level for water supply service is a direct, piped connection for water supply within a household. Moreover, water supply provisions at public stand posts cannot be considered as an acceptable service provision. Non-revenue water is the range of water produced that does not earn the utility any revenue and its desired prevalence should be 20% or less. From a cost perspective, it incurs significant losses for the ULBs, a setback that factors into the ULBs' strategy to improve coverage to generate higher revenues from utility services, while minimizing inefficiencies. The best practices regarding coverage of water supply, 24x7 water connection and reduction in non-revenue water in Ahmedabad, Pune and Nagpur can potentially serve as a blueprint for other ULBs.

Prior to technological innovations in the water supply and distribution systems, AMC operated its four major Water Treatment Plants and its Water Distribution Stations manually on a contractual basis, using random sampling by specialists to monitor water quality. Additionally, water service charges were paid annually and run on an hourly basis. This system resulted in huge efficiency losses, inconsistent quality standards and operational breakdowns. AMC implemented SCADA to automate the treatment and dissemination process, monitor and map real-time quality of water, reduce efficiency losses to make a 24x7 water supply service possible and reduce labour costs while boosting productivity. This led to a significant reduction in operational errors, enabling AMC authorities to monitor and control the level of Non-Revenue Water (NRW).

In 2016-17, AMC reported a piped connection in 96% of households with NRW at 24%, which is 4% higher than its desired level. Similarly, SMC has managed to provide water supply coverage to 97% of households through a sophisticated water supply grid network, which connects 8 water work systems to 34 distribution centres. The advantage such a well-connected network affords is the ability to redirect water from any of the other water work systems in the grid in the event of failure of one of the water work systems. SCADA was implemented to monitor water quality and ensure 24x7 availability of drinking water in new areas of the city. SMC set up an NRW cell whose leakage mapping initiative brought the 2016-17 NRW level down to 19%, below the requisite 20% benchmark. To meet the high water demands of Surat, SMC also commissioned a tertiary sewage treatment plan in May 2014 to recycle and reuse wastewater, charging Rs. 23/kl for fresh water and Rs. 19.84/kl for recycled water, thus reducing diversion of drinking water for non-potable purposes and generating recurring additional revenue for the ULB.

In 2017, PMC developed a 30-year plan to map the water demand needs of its citizens using population growth projections and current usage estimates. The purpose of the renovation project was to address issues of pipe bursts, reservoir leakages, water contamination, illegal tappings, unauthorized house service connections and curb the prevalence of water tanker supply mafia. PMC

successfully implemented the new system in phases that involved automating the system operations while also deploying IEC (Information, Education and Communication) strategies to engage with citizens to resolve issues with water quality and service delivery. The innovations focussed on proper pricing of water consumption using smart-metering, tracking total water supplied by installing bulk flow meters at all stages of the supply system, maintaining water quality standards and timely control of systems operations using SCADA to achieve high service level benchmarks, using sensors to detect system leakage to keep non-revenue water levels at 15% and integrating geo-spatial data with real-time data using GIS.

NMC faced its own unique challenges with its existing water supply system. High rates of unaccounted water camouflaged as ‘free supply’, absence of cost recovery strategies, contamination issues and lack of accountability were some of the issues plaguing the water distribution network in Nagpur. To tackle the consistent supply issue, financed by JNNURM and State grants, NMC proposed a Public-Private Partnership under which an external contractor would be subject to a performance-oriented contract to treat and transport water provided to it by the irrigation department through the NMC.

Orange City Water Pvt. Limited (OCW) was set up in November 2011 to set up a 24x7 water supply system while progressively increasing contractual technical efficiency of the supply network from its initial level of 60% to a minimum of 95% by the 121st month. This benchmarking approach was implemented to meet the standards of the performance-oriented contract. In the same period, water supply coverage should increase from 85% to 100% of households, especially targeting the urban poor. SCADA, CIS and GIS technologies were introduced to analyse the existing network capacity and quality while also ensuring all water connections are authorized and meet the standards established by the NMC. OCW has been made available to citizens through various channels to resolve issues of water leakage, interruptions in water supply, pipe bursts and other aspects of the supply network.

9.1 Solid Waste Management

As per the Handbook of Service Level Benchmarking, the extent of scientific disposal of waste means the amount of inert waste that is being disposed at landfill sites, which are designed, built, operated and maintained according to the standards of prevailing laws and manuals of nodal agencies. The Handbook also states that the extent of compliance should be evaluated against the total quantum of waste that is disposed at landfills.

Generating over 3,800 TPD in waste, AMC introduced the Door-to-Dump initiative in 2009 to tackle its waste issue. This program sub-contracts waste collection, maintenance and management work to independent contractors who use RFID tagged trucks to cover residential units during the day and commercial units at night. AMC has deployed a vast network of bins, trucks, hydraulic dumpers and compactors and built 400 MT capacity transfer stations in each of the six zones of the city to reduce environmental and economic costs associated with waste management while monitoring the entire operation using GPS. SMC with an estimated daily waste collection of over 1,850 MT (650 MT more than AMC), employs the same waste management services as AMC. However, SMC has implemented

additional initiatives to address different classifications of waste. Collection of hotel and kitchen waste has been delegated to hotel associations. Eight modern transfer stations are already operational and waste-to-energy conversion plants with a capacity of 100 TPD and compost plant of capacity 600 TPD are expected to become operational soon.

Since the introduction of the *Swachhata Survekshan*, Indore has been the model city for its innovative and effective solid waste management practices. IMC utilized a variety of channels to raise awareness and change people's attitudes towards cleanliness, while mobilizing resources like Tata-ace-tippers for door-to-door waste collection. IMC has used the existing infrastructure like the AE-BAS to monitor and track attendance of sweepers in their employ and used IEC to motivate a result-oriented work ethic. Vast resources have been dedicated towards making IMC a bin-free municipality, to ensure it engages in practices pertaining to proper segregation of waste and its disposal across pertinent facilities like biomedical waste incinerators, transfer stations and Material Recovery Facility. Indore's comprehensive network of waste management services and facilities is only augmented by its initiatives to effect change in citizens' sanitation practices through media campaigns, advertisements and other forms of dialogue, making it the only one of its kind in India. Indore's waste management practices serve to provide a potential framework for navigating the complex issue of sanitation in an Indian context.

9.2 Unique Initiatives

Table 36: Mapping unique initiatives across sample

Cities (and Jharkhand)	Unique Initiatives
Ahmedabad	Safety and Security, Issuing Municipal Bonds
Surat	Energy Efficiency, Smart City Centre, Virtual Civic Centre (IT)
Bhopal	Smart Parking and Roads
Indore	Municipal Solid Waste Management
Pune	Issuing Municipal Bonds
Nagpur	Tech advancements in civic administration
Jharkhand	Property tax innovation

Table 36 provides a summary of the unique initiatives each city has adopted in addition to addressing concerns of financial self-sufficiency and quality delivery of basic civic services, according to the mandate of the performance grant scheme.

Ahmedabad adopted SASA (Safe and Secure Ahmedabad) under the Smart Cities initiative to improve city-level security outcomes while also improving quality of life of its citizens by increasing efficacy of municipal services through an ICT-integrated infrastructure. The purpose of this initiative is engage with and address concerns of the average citizen, strengthen capabilities of law enforcement agencies through heightened surveillance and avail citizens with modern technological services like Wi-Fi at little to no cost to the consumer.

The Gujarat Government through GEDA has been actively invested in renewable energy technologies. Surat's strategic location has made it a hotspot for investment in wind and solar energy capabilities, with a total installed wind power capacity of 30.3 MW. To monitor investment in renewable energy technologies, SMC set up the Energy Efficiency Cell (EEC). As part of its activities, EEC is currently aggressively expanding on its existing installed solar capacity of 5 MW, through the solar rooftop project. More than 800 Solar Rooftops for residential and non-commercial use have already been installed along with 81,000 energy efficient streetlights. The purpose of this initiative is to reduce the state's carbon footprint and reduce energy expenditure. Cost-saving initiatives like EEC could have positive spillovers like increased citizens' trust in municipal governance. SMC also invested heavily in setting up a robust IT infrastructure integrated with a SMAC centre to give a bird's eye view of the key functions for effective city management. This integrated system allows for efficient allocation of resources, implementation of preventive measures instantly and proactive management and resolution of issues that affect a citizen's quality of life. Some examples of such initiatives are Intelligent Traffic Control System, Automatic fare collection system et al.

Nagpur and Bhopal have invested in similar initiatives that address issues of safety, energy efficiency, efficiency of municipal service delivery and civic administration, while also generating revenues to become more financially self-sufficient.

9.3 Issues

The primary issues concerning the above findings are with respect to data limitations, replicability and financial gaps.

9.3.1 Data Limitations

The disaggregated revenue and expenditure datasets consisting of a breakdown of tax and non-tax revenue along with its composition for Pune and Nagpur have not been provided by the ULBs or have been provided but only in Marathi and not in English.

While the focus of this report has been on best practices, there are still gaps in information with regards to issues ULBs faced with implementation, efficiency and revenues generated from services provided. For example, only Ahmedabad has been able to provide a rough estimate of the collection efficiency of its Property Tax program. It makes it difficult to assess the efficacy of these innovations properly without the relevant metrics to measure ULB performance.

9.3.2 Replicability

While these listed best practices provide a framework for replicability, because of the disparity in resources across ULBs, investment in new technologies like GIS and SCADA might not be feasible for smaller ULBs with limited funds. Even among the best performing ULBs, investing in improving all municipal services has not been possible due to lack of financial resources. The capacity to implement reforms will vary from ULB to ULB, especially when salaries constitute a larger share of O&M

expenditures. While adopting certain good practices, it will be important to assess existing infrastructure and utilise them in the best possible way to provide a strong base for revenue generation and later upgrades.

9.3.3 Financial gaps

Exploiting the full potential of the property tax remains an issue even without increasing rates and indeed, even without any structural alteration of the basis of levy. Exploring revenue sources like value capture financing, land-value taxation, implementing GIS in tracking and proper registration of properties to increase property tax revenues are viable alternatives.

9.4 Conclusions

Reforms and innovations can only succeed if they are built using existing systems as their bedrock, because the purpose of these alterations are to make a system more efficient in its functionality concerning financial, legal and administrative aspects.

The report reveals that the ULBs that have achieved some measure of success have prioritized citizen engagement and augmented it with the help of technological innovations. The heart of reform is a two-way process where it is the job of the municipal body to employ initiatives that make people realize the benefits of these reforms in the long run.

The success of each sample ULB in this study has been steeped in two key factors: sound financial management and strengthening existing basic infrastructure. These two factors have played a strong role in building trust with its citizens and in turn generated more revenue for the municipal body enabling further technological interventions to improve quality and consistency of service delivery.

Annexure

Annexure 1

Cities above National Average in Own Revenue as a percentage of Revenue Expenditure, 2015-16

State	S.No	Name of the City	2011 Census Population	Own Revenue as a percentage of Revenue Expenditure
Andhra Pradesh	1	Bhimavaram	1,42,184	177.39
Jharkhand	2	Chas	1,41,640	171.98
Karnataka	3	Bruhath Bangalore	84,43,675	168.54
West Bengal	4	South Dum Dum	4,03,316	160.19
Telangana	5	Khammam	1,84,210	157.2
Andhra Pradesh	6	Kakinada	3,12,538	150.2
Telangana	7	Warangal	6,15,998	149.09
Andhra Pradesh	8	Chittoor	1,53,756	147.4
Telangana	9	Mahabubnagar	1,57,733	143.98
Chhattisgarh	10	Korba	3,63,390	141.66
Haryana	11	Karnal	2,86,827	140.63
Haryana	12	Gurugram	15,14,432	130.11
Telangana	13	Karimnagar	2,61,185	120.57
Maharashtra	14	Kulgaon Badlapur	1,74,226	110.76
Haryana	15	Kaithal	1,44,915	109.19
Bihar	16	Siwan	1,35,066	105.84
Tamil Nadu	17	Tambaram	1,74,787	105.25
Assam	18	Barpeta Road	35,571	97.25
West Bengal	19	Haldia	2,00,827	94.94
Andhra Pradesh	20	Vijayawada	10,34,358	93.55
Haryana	21	Palwal	1,28,730	92.96
Madhya Pradesh	22	Singrauli	2,20,257	89.66
Telangana	23	Hyderabad	67,31,790	89.31
Sikkim	24	Singtam	5,868	87.9
Assam	25	Hojai	36,638	85.54
West Bengal	26	Kolkata	44,96,694	85.2
Uttarakhand	27	Munikireti-Dhalwala	28,636	83.47
Maharashtra	28	Ambarnath	2,53,475	81.91
Karnataka	29	Mangaluru	4,88,968	81.54
Goa	30	Valpoi	8,532	81.3
Goa	31	Canacona	12,434	80.25
Maharashtra	32	Baramati	1,08,152	79.54
Sikkim	33	Gangtok	1,00,286	79.05
Karnataka	34	Udupi	1,25,306	78.38
West Bengal	35	Serampore	1,81,842	78.22
Maharashtra	36	Wardha	1,06,444	78.18
Haryana	37	Rohtak	3,74,292	77.75
Tamil Nadu	38	Coimbatore	10,50,721	77.64
Maharashtra	39	Barshi	1,18,722	77.14
Gujarat	40	Ahmedabad	55,77,940	77.02
Bihar	41	Purnea	2,82,248	74.78
Madhya Pradesh	42	Indore	19,64,086	74.29
Chhattisgarh	43	Raigarh	1,37,126	73.18
Assam	44	Bongaigaon	67,322	71.14
Chhattisgarh	45	Durg	2,68,806	68.86
Chhattisgarh	46	Bhilai	6,25,700	68.83
Goa	47	Bicholim	16,986	68.4
Jharkhand	48	Giridih	1,14,533	68.07
Jharkhand	49	Deoghar	2,03,123	68.03
Uttar Pradesh	50	Allahabad	11,12,544	68
Gujarat	51	Surat	44,67,797	66.74
Sikkim	52	Nayabazar Jorethang	9,009	66.09

Tamil Nadu	53	Hosur	1,16,821	64.81
Goa	54	Ponda	22,664	63.97
Sikkim	55	Mangan	4,644	63.97
Karnataka	56	Mysuru	8,93,062	63.75
National Average			16,09,07,263	61.61

Annexure 2
Cities Above National Average in Per Capita Own Revenue Receipts, 2015-16

State	S. No	Name of the City	2011 Census Population	Per Capita Own Revenue Receipts
Tamil Nadu	1	Coimbatore	10,50,721	2,845
Gujarat	2	Ahmedabad	55,77,940	2,788
West Bengal	3	Kolkata	44,96,694	2,600
Chhattisgarh	4	Korba	3,63,390	2,554
West Bengal	5	South Dum Dum	4,03,316	2,519
Telangana	6	Hyderabad	67,31,790	2,517
Gujarat	7	Vadodara	16,70,806	2,475
Maharashtra	8	Kulgaon Badlapur	1,74,226	2,455
Haryana	9	Gurugram	15,14,432	2,401
Maharashtra	10	Baramati	1,08,152	2,392
Telangana	11	Khammam	1,84,210	2,348
Karnataka	12	Bruhath Bangalore	84,43,675	2,342
Maharashtra	13	Wardha	1,06,444	2,320
Tamil Nadu	14	Erode	1,57,101	2,278
Karnataka	15	Mangaluru	4,88,968	2,043
Andhra Pradesh	16	Vijayawada	10,34,358	2,039
Haryana	17	Karnal	2,86,827	1,981
Punjab	18	S.A.S Nagar	1,46,213	1,970
Gujarat	19	Surat	44,67,797	1,955
Maharashtra	20	Barshi	1,18,722	1,949
Goa	21	Mapusa	39,989	1,940
Telangana	22	Mahabubnagar	1,57,733	1,882
Maharashtra	23	Ambarnath	2,53,475	1,863
Karnataka	24	Mysuru	8,93,062	1,843
Madhya Pradesh	25	Indore	19,64,086	1,805
Gujarat	26	Bhavnagar	5,93,368	1,678
Gujarat	27	Jamnagar	4,79,920	1,651
Tamil Nadu	28	Tambaram	1,74,787	1,649
Tamil Nadu	29	Vellore	1,85,803	1,645
Tamil Nadu	30	Hosur	1,16,821	1,624
Goa	31	Ponda	22,664	1,583
West Bengal	32	Haldia	2,00,827	1,549
Telangana	33	Warangal	6,15,998	1,527
Uttarakhand	34	Nainital	41,377	1,429
Goa	35	Bicholim	16,986	1,413
Karnataka	36	Udupi	1,25,306	1,402
West Bengal	37	Bidhannagar	2,15,514	1,401
Andhra Pradesh	38	Kakinada	3,12,538	1,365
Madhya Pradesh	39	Singrauli	2,20,257	1,354
Goa	40	Canacona	12,434	1,354
Andhra Pradesh	41	Rajamahendravaram	3,41,831	1,351
Andhra Pradesh	42	Chittoor	1,53,756	1,342
Andhra Pradesh	43	Bhimavaram	1,42,184	1,246
Chhattisgarh	44	Raigarh	1,37,126	1,233
Madhya Pradesh	45	Bhopal	17,98,218	1,215
Madhya Pradesh	46	Jabalpur	10,55,525	1,169
Telangana	47	Karimnagar	2,61,185	1,122
Chhattisgarh	48	Bilaspur	3,31,030	1,099
Chhattisgarh	49	Bhilai	6,25,700	1,098
Goa	50	Valpoi	8,532	1,094
National Average			16,09,07,263	1,075

Note: Cities are arranged in descending order in per capita own revenue receipts

Annexure 3

State Wise Cities in above national average in Per Capita Own Revenue and Own Revenue as a percentage of Revenue Expenditure, 2015-16

State	Rank*	Name of the City	Per Capita Own Revenue Receipts	State	Rank*	Name of the City	Own Revenue as a percentage of Revenue Exp
AP	16	Vijayawada	2,039	Goa	29	Valpoi	81.30
AP	38	Kakinada	1,365	Goa	31	Canacona	80.25
AP	41	Rajamahendravaram	1,351	Goa	46	Bicholim	68.40
AP	42	Chittoor	1,342	Goa	54	Ponda	63.97
AP	43	Bhimavaram	1,246	AP	2	Bhimavaram	177.39
Chhattisgarh	4	Korba	2,554	AP	6	Kakinada	150.20
Chhattisgarh	44	Raigarh	1,233	AP	8	Chittoor	147.40
Chhattisgarh	48	Bilaspur	1,099	AP	19	Vijayawada	93.55
Chhattisgarh	49	Bhilai	1,098	Assam	18	Barpeta Road	97.25
Goa	21	Mapusa	1,940	Assam	24	Hojai	85.54
Goa	31	Ponda	1,583	Assam	42	Bongaigaon	71.14
Goa	35	Bicholim	1,413	Bihar	17	Siwan	105.84
Goa	40	Canacona	1,354	Chhattisgarh	10	Korba	141.66
Goa	50	Valpoi	1,094	Chhattisgarh	41	Raigarh	73.18
Gujarat	2	Ahmedabad	2,788	Chhattisgarh	44	Durg	68.86
Gujarat	7	Vadodara	2,475	Chhattisgarh	45	Bhilai	68.83
Gujarat	19	Surat	1,955	Gujarat	39	Ahmedabad	77.72
Gujarat	26	Bhavnagar	1,678	Gujarat	50	Surat	66.74
Gujarat	27	Jamnagar	1,651	Haryana	11	Karnal	140.63
Haryana	9	Gurugram	2,401	Haryana	12	Gurugram	130.11
Haryana	17	Karnal	1,981	Haryana	15	Kaithal	109.19
Karnataka	12	Bruhath Bangalore	2,342	Haryana	20	Palwal	92.96
Karnataka	15	Mangaluru	2,043	Haryana	37	Rohtak	77.75
Karnataka	24	Mysuru	1,843	Jharkhand	3	Chas	171.98
Karnataka	36	Udupi	1,402	Jharkhand	47	Giridih	68.07
MP	25	Indore	1,805	Jharkhand	48	Deoghar	68.03
MP	39	Singrauli	1,354	Karnataka	1	Bruhath Bangalore	168.54
MP	45	Bhopal	1,215	Karnataka	28	Mangaluru	81.54
MP	46	Jabalpur	1,169	Karnataka	34	Udupi	78.38
MAH	8	Kulgaon Badlapur	2,455	Karnataka	55	Mysuru	63.75
MAH	10	Baramati	2,392	MP	21	Singrauli	89.66
MAH	13	Wardha	2,320	MP	33	Indore	74.29
MAH	20	Barshi	1,949	MAH	14	Kulgaon Badlapur	110.76
MAH	23	Ambarnath	1,863	MAH	26	Ambarnath	81.91
Punjab	18	S.A.S Nagar	1,970	MAH	30	Baramati	79.54
TN	1	Coimbatore	2,845	MAH	36	Wardha	78.18
TN	14	Erode	2,278	MAH	38	Barshi	77.14
TN	28	Tambaram	1,649	Sikkim	23	Singtam	87.90
TN	29	Vellore	1,645	Sikkim	32	Gangtok	79.05
TN	30	Hosur	1,624	Sikkim	51	Nayabazar Jorethang	66.09
Telangana	6	Hyderabad	2,517	Sikkim	53	Mangan	63.97
Telangana	11	Khammam	2,348	TN	16	Tambaram	105.25
Telangana	22	Mahabubnagar	1,882	TN	40	Coimbatore	77.64
Telangana	33	Warangal	1,527	TN	52	Hosur	64.81
Telangana	47	Karimnagar	1,122	Telangana	5	Khammam	157.20
Uttarakhand	34	Nainital	1,429	Telangana	7	Warangal	149.09

WB	3	Kolkata	2,600	Telangana	9	Mahabubnagar	143.98
WB	5	South Dum Dum	2,519	Telangana	43	Karimnagar	120.57
WB	32	Haldia	1,549	Telangana	22	Hyderabad	89.31
WB	37	Bidhannagar	1,401	UP	49	Allahabad	68.00
				Uttarakhand	27	Munikireti-Dhalwala	83.47
				WB	4	South Dum Dum	160.19
				WB	13	Haldia	94.94
				WB	25	Kolkata	85.20
				WB	35	Serampore	78.22
<i>National Average</i>			1,075				61.61

*Refers to Ranking at all-India Level, 2015-16

Annexure 4

Cities Below National Average in Own Revenue as a percentage of Revenue Expenditure, 2015-16

State	S.No	Name of the City	Own Revenue as a percentage of Revenue Expenditure
Gujarat	1	Vadodara	62.05
Tripura	2	Sonamura	60.02
Karnataka	3	Shivamogga	59.98
Jharkhand	4	Hazaribagh	58.23
Jharkhand	5	Ranchi	57.34
Tamil Nadu	6	Erode	56.26
Madhya Pradesh	7	Bhopal	55.96
Gujarat	8	Jamnagar	55.88
Madhya Pradesh	9	Jabalpur	53.97
Tripura	10	Kumarghat	53.41
Punjab	11	S.A.S Nagar	52.79
Gujarat	12	Bhavnagar	48.73
Uttar Pradesh	13	Lucknow	48.73
Punjab	14	Patiala	48.45
Bihar	15	Danapur	47.55
Uttar Pradesh	16	Meerut	46.96
Madhya Pradesh	17	Chhindwara	45.95
West Bengal	18	Bidhannagar	44.91
Chhattisgarh	19	Bilaspur	43.78
Bihar	20	Bihar Sharif	42.84
Tripura	21	Belonia	41.29
Odisha	22	Bhubaneswar	40.48
Rajasthan	23	Pali	40.42
Rajasthan	24	Jodhpur	38.73
Assam	25	Bihpuria	38.49
Andhra Pradesh	26	Rajamahendravaram	37.89
Uttarakhand	27	Nainital	36.5
Rajasthan	28	Ajmer	36.08
Tamil Nadu	29	Vellore	35.32
Rajasthan	30	Jaipur	35.03
Goa	31	Mapusa	34.81
Bihar	32	Purnea	34.62
Rajasthan	33	Udaipur	33.27
Punjab	34	Ferozepur	32.73
Manipur	35	Bishnupur	32.38
Punjab	36	Bathinda	28.23
Odisha	37	Joda	27.95
Manipur	38	Nambol	27.74
Punjab	39	Khanna	27.31
Bihar	40	Patna	26.64
Uttar Pradesh	41	Kanpur	26.2
Uttarakhand	42	Kashipur	24.72
Assam	43	Palashbari	22.18
Uttarakhand	44	Haldwani-Kathgodam	17.6
Odisha	45	Barbil	16.92
Manipur	46	Wangjing Lamding	15.91
Tripura	47	Udaipur	15.8
Manipur	48	Mayang Imphal	14.07
Mizoram	49	Aizawl	13.42
Odisha	50	Jatni	12.96

Uttarakhand	51	Roorkee	11.32
Tripura	52	Sabroom	10.87
Manipur	53	Thoubal	10.09
Uttar Pradesh	54	Firozabad	9.97
Odisha	55	Dhenkanal	7.28
National Average			61.61

Note: All these cities are below national average for Own Revenue as a % of Revenue Expenditure i.e.61.61%.

Annexure 5

Large Cities-Below National average in Per Capita Own Revenue Receipts, 2015-16

State	S.No	Name of the City	Civic Status	2011 Census Population	Per Capita Own Revenue Receipts
National Average				16,09,07,263	1,075
Madhya Pradesh	1	Chhindwara		1,38,291	1,064
Karnataka	2	Shivamogga		3,22,650	976
Haryana	3	Kaithal	M Council	1,44,915	926
Haryana	4	Palwal	M Council	1,28,730	921
Punjab	5	Bathinda		2,85,788	897
Uttar Pradesh	6	Lucknow		28,17,105	887
Chhattisgarh	7	Durg	NN	2,68,806	881
West Bengal	8	Serampore		1,81,842	876
Haryana	9	Rohtak	M Corp	3,74,292	860
Uttarakhand	10	Munikireti-Dhalwala		28,636	854
Uttar Pradesh	11	Firozabad		1,33,305	831
Tripura	12	Udaipur		11,921	824
Punjab	13	Patiala		4,06,192	822
Tripura	14	Sonamura		11,285	737
Odisha	15	Bhubaneswar		8,40,834	615
Rajasthan	16	Pali		2,30,075	594
Rajasthan	17	Udaipur		4,51,100	510
Assam	18	Barpeta Road	M Corp	35,571	494
Uttar Pradesh	19	Kanpur		27,65,348	480
Rajasthan	20	Jodhpur		10,33,756	479
Rajasthan	21	Jaipur		30,46,163	468
Punjab	22	Khanna		1,28,137	462
Tripura	23	Belonia		19,996	460
Tripura	24	Kumarghat		13,054	457
Sikkim	25	Singtam		5,868	455
Uttar Pradesh	26	Allahabad		11,12,544	453
Assam	27	Hojai	M Council	36,638	440
Uttar Pradesh	28	Meerut		13,05,429	438
Rajasthan	29	Ajmer		5,42,321	415
Bihar	30	Siwan	M Council	1,35,066	380
Sikkim	31	Mangan		4,644	354
Assam	32	Bongaigaon	M Council	67,322	346
Jharkhand	33	Chas		1,41,640	337
Sikkim	34	Nayabazar Jorethang		9,009	333
Tripura	35	Sabroom		7,142	292
Jharkhand	36	Giridih		1,14,533	276
Jharkhand	37	Ranchi		10,73,427	271
Jharkhand	38	Deohghar		2,03,123	270
Punjab	39	Ferozepur		1,10,313	256
Sikkim	40	Gangtok		1,00,286	254
Uttarakhand	41	Kashipur		1,21,623	234
Bihar	42	Danapur	M Council	1,82,429	229
Odisha	43	Joda		46,631	222
Assam	44	Bihpuria	NP	12,016	220
Bihar	45	Bihar Sharif	M Corp	2,97,268	216
Bihar	46	Patna	M Corp	16,84,222	211
Assam	47	Palashbari	M Board	4,925	210
Jharkhand	48	Hazaribagh		1,42,489	202
Bihar	49	Purnea	M Corp	2,82,248	191
Uttarakhand	50	Haldwani-Kathgodam		1,56,078	172
Manipur	51	Bishnupur		12,167	169

Uttarakhand	52	Roorkee		1,18,200	166
Odisha	53	Barbil		66,540	146
Odisha	54	Dhenkanal		67,414	116
Odisha	55	Jatni		55,925	98
Manipur	56	Nambol		22,512	89
Manipur	57	Wangjing Lamding		8,055	59
Mizoram	58	Aizawl		2,93,416	53
Manipur	59	Mayang Imphal		24,239	43
Manipur	60	Thoubal		45,947	42

Note: All these cities are below the national average in per capita own revenue receipts i.e.Rs.1075

Annexure 6

Details of Receipts and Expenditure of Ahmedabad Municipal Corporation (Rupees in Lakhs)

S. No.	Receipts	Year		Annual Growth Rate (%)
		2014-15	2015-16	
	Total Receipts (A+B)	4,47,550.8	4,89,213.1	9.3
A	Revenue Receipts (1+2+3)	2,89,067.1	3,43,200.6	18.7
1	Own Revenue Receipts (A+B)	1,49,724.9	1,73,711.3	16.0
a)	Tax Revenue	80,765.1	84,687.9	4.9
i)	Property tax	38,990.4	44,822.0	15.0
ii)	Other tax	41,774.7	39,865.9	-4.6
b)	Non-tax revenue	68,959.8	89,023.4	29.1
i)	Fees & fines	64,145.9	83,635.7	30.4
ii)	User Charges			
iii)	Other non-tax revenue	4,813.9	5,387.8	11.9
2	Other Revenue Receipts	21,640.7	25,817.2	19.3
a)	Income from interest/investments	3,027.6	6,585.0	117.5
b)	Other Revenue income	18,613.0	19,232.1	3.3
3	Transfers/Grants/Assigned Revenues	1,17,701.6	1,43,672.1	22.1
a)	State Assigned Revenue	35,074.6	36,185.1	3.2
b)	State Finance Commission (SFC) Grants/Devolution			
c)	Octroi compensation	82,627.0	1,07,487.0	30.1
d)	Other State Government Transfers			
e)	Central Finance Commission (CFC) Grant			
f)	Other Central Government Transfers			
B	Capital Receipts	1,58,483.6	1,46,012.5	-7.9
1	Sale of Municipal Land			
2	Loans			
3	State Capital Account Grant			
4	Central Capital Account Grant			
5	Other Capital Receipts	1,58,483.6	1,46,012.5	-7.9
	<i>Expenditure</i>			
	Total Expenditure (1+2)	4,18,493.4	4,58,950.1	9.7
1	Revenue Expenditure	2,10,330.5	2,31,551.8	10.1
1.1	Administrative Expenses, Establishment and Salaries	95,266.1	1,03,836.0	9.0
1.2	Operation and Maintenance (O&M)	41,105.8	47,212.4	14.9
1.3	Loan repayment (Interest payments)	5,874.4	8,058.6	37.2
1.4	Others	68,084.1	72,444.9	6.4
2	Capital Expenditure	2,08,162.9	2,27,398.3	9.2
2.1	All developmental works under Central/State specific schemes	1,05,099.6	1,30,108.8	23.8
2.2	Loan Repayments (Principal Amount)	9,231.5	0.0	-100.0
2.3	Other Capital expenditure	93,831.8	97,289.5	3.7

Annexure 7

Details of Receipts and Expenditure of Surat Municipal Corporation (Rupees in Lakhs)

S. No	Receipts	Year		Annual Growth Rate (%)
		2014-15	2015-16	
	Total Receipts (A+B)	3,05,353.7	2,92,945.1	-4.06
A	Revenue Receipts (1+2+3)	1,67,241.6	1,75,700.5	5.06
1	Own Revenue Receipts (a+b)	89,707.7	97,541.2	8.73
a)	Tax Revenue	35,604.6	38,595.9	8.40
i)	Property tax	24,840.2	25,655.2	3.28
ii)	Other tax	10,764.4	12,940.7	20.22
b)	Non-tax revenue	54,103.0	58,945.3	8.95
i)	Fees & fines	9,983.4	12,325.0	23.45
ii)	User Charges	38,532.9	41,887.5	8.71
iii)	Other non-tax revenue	5,586.7	4,732.8	-15.29
2	Other Revenue Receipts	2,365.0	1,273.8	-46.14
a)	Income from interest/investments	1,918.4	1,273.8	-33.60
b)	Other Revenue income	446.6	0.0	-100.00
3	Transfers/Grants/Assigned Revenues	75,168.9	76,885.6	2.28
a)	State Assigned Revenue	9,488.9	10,938.4	15.28
b)	State Finance Commission (SFC) Grants/Devolution	0.0	0.0	
c)	Octroi compensation	65,679.0	65,676.0	0.00
d)	Other State Government Transfers	0.0	0.0	
e)	Central Finance Commission (CFC) Grant	0.0	0.0	
f)	Other Central Government Transfers	0.0	0.0	
g)	Others	1.0	271.2	27,021.00
B	Capital Receipts	1,38,112.1	1,17,244.5	-15.11
1	Sale of Municipal Land	9,796.5	29,562.8	201.77
2	Loans	0.0	0.0	
3	State Capital Account Grant	88,739.1	52,706.2	-40.61
4	Central Capital Grant	234.0	4,400.0	1,780.42
5	Other Capital Receipts	39,342.5	30,575.5	-22.28
	Expenditure			
	Total Expenditure (1+2)	3,05,370.4	3,22,042.9	5.46
1	Revenue Expenditure	1,30,762.9	1,46,151.9	11.77
1.1	Administrative Expenses, Establishment and Salaries	78,308.6	87,900.7	12.25
1.2	Operation and Maintenance (O&M)	13,955.8	14,750.7	5.70
1.3	Loan repayment (Interest payments)	4.2	0.0	-100.00
1.4	Others	38,494.4	43,500.5	13.00
2	Capital Expenditure	1,74,607.5	1,75,891.0	0.74
2.1	All developmental works under Central/State specific schemes	57,385.4	39,526.6	-31.12
2.2	Loan Repayments (Principal Amount)	0.0	0.0	
2.3	Other Capital expenditure	1,17,222.0	1,36,364.4	16.33

Annexure 8

Details of Receipts and Expenditure of Bhopal Municipal Corporation (Rupees in Lakhs)

S. No	Receipts	Year		Annual Growth Rate (%)
		2014-15	2015-16	
	Total Receipts (A+B)	88,834.3	1,10,196.7	24.05
A	Revenue Receipts (1+2+3)	53,935.1	65,456.7	21.36
1	Own Revenue Receipts (a+b)	23,874.1	24,446.3	2.40
a)	Tax Revenue	17,706.9	20,136.7	13.72
i)	Property tax	10,013.4	12,805.2	27.88
ii)	Other tax	7,693.5	7,331.4	-4.71
b)	Non-tax revenue	6,167.2	4,309.6	-30.12
i)	Fees & fines	2,783.7	2,520.3	-9.46
ii)	User Charges	2,913.8	1,442.4	-50.50
iii)	Other non-tax revenue	469.7	346.9	-26.14
2	Other Revenue Receipts	3,661.0	2,868.3	-21.65
a)	Income from interest/investments	2,646.5	1,353.1	-48.87
b)	Other Revenue income	1,014.5	1,515.2	49.35
3	Transfers/Grants/Assigned Revenues	26,400.0	38,142.1	44.48
a)	State Assigned Revenue	3,202.0	4,396.9	37.32
b)	State Finance Commission (SFC) Grants/Devolution	341.6	371.3	8.69
c)	Octroi compensation	14,746.7	19,128.3	29.71
d)	Other State Government Transfers	7,460.0	7,332.3	-1.71
e)	Central Finance Commission (CFC) Grant	648.7	6,892.4	962.56
f)	Other Central Government Transfers	0.0	0.0	
g)	Others	1.0	21.0	1,997.00
B	Capital Receipts	34,899.3	44,740.1	28.20
1	Sale of Municipal Land	0.0	0.0	
2	Loans	792.0	3,867.6	388.32
3	State Capital Grant	10,414.7	4,643.1	-55.42
4	Central Capital Account Grant	472.2	6,074.9	1,186.43
5	Other Capital Receipts	23,220.3	30,154.5	29.86
	Expenditure			
	Total Expenditure (1+2)	1,01,613.3	1,16,864.8	15.01
1	Revenue Expenditure	35,749.3	43,931.7	22.89
1.1	Administrative Expenses, Establishment and Salaries	19,004.6	23,027.7	21.17
1.2	Operation and Maintenance (O&M)	11,944.8	13,894.9	16.33
1.3	Loan repayment (Interest payments)	187.7	242.6	29.25
1.4	Others	4,612.2	6,766.5	46.71
2	Capital Expenditure	65,864.0	72,933.1	10.73
2.1	All developmental works under Central/State specific schemes	62,050.3	57,496.7	-7.34
2.2	Loan Repayments (Principal Amount)	3,387.9	14,587.4	330.58
2.3	Other Capital expenditure	425.9	849.0	99.35

Annexure 9

Details of Receipts and Expenditure of Indore Municipal Corporation (Rupees in Lakhs)

S. No	Receipts	2014-15	2015-16	Annual Growth Rate (%)
	Total Receipts (A+B)	1,11,733.3	1,30,334.6	16.65
A	Revenue Receipts (1+2+3)	83,227.4	1,03,771.6	24.68
1	Own Revenue Receipts (a+b)	33,630.9	40,902.5	21.62
a)	Tax Revenue	26,857.5	33,694.6	25.46
i)	Property tax	17,920.9	20,868.1	16.45
ii)	Other tax	8,936.5	12,826.5	43.53
b)	Non-tax revenue	6,773.4	7,207.9	6.42
i)	Fees & fines	3,787.8	4,701.3	24.12
ii)	User Charges	2,046.6	1,461.4	-28.59
iii)	Other non-tax revenue	939.1	1,045.3	11.31
2	Other Revenue Receipts	835.0	1,173.1	40.48
a)	Income from interest/investments	834.0	640.7	-23.18
b)	Other Revenue income	1.0	532.4	53,137.00
3	Transfers/Grants/Assigned Revenues	48,761.5	61,696.0	26.53
a)	State Assigned Revenue	12,639.9	14,064.6	11.27
b)	State Finance Commission (SFC) Grants/Devolution	410.3	424.0	3.33
c)	Octroi compensation	30,779.8	39,383.7	27.95
d)	Other State Government Transfers	2,336.1	2,731.2	16.91
e)	Central Finance Commission (CFC) Grant	2,595.4	5,092.6	96.22
f)	Other Central Government Transfers	0.0	0.0	
g)	Others	0.0	0.0	
B	Capital Receipts	28,505.9	26,563.0	-6.82
1	Sale of Municipal Land	0.0	0.0	
2	Loans (from State Govt. or Banks etc.)	3,936.2	1,769.8	-55.04
3	State Capital Grant	23,997.8	18,327.5	-23.63
4	Central Capital Grant	484.7	6,230.3	1,185.41
5	Other Capital Receipts	87.3	235.5	169.73
	Expenditure			
	Total Expenditure (1+2)	95,571.6	83,201.2	-12.94
1	Revenue Expenditure	55,539.0	55,058.9	-0.86
1.1	Administrative Expenses, Establishment and Salaries	25,375.4	25,861.1	1.91
1.2	Operation and Maintenance (O&M)	25,831.9	21,695.8	-16.01
1.3	Loan repayment (Interest payments)	3,054.4	3,104.6	1.65
1.4	Others	1,277.4	4,397.4	244.25
2	Capital Expenditure	40,032.5	28,142.3	-29.70
2.1	Developmental works under Central/State specific schemes	14,271.5	14,890.0	4.33
2.2	Loan Repayments (Principal Amount)	3,110.9	3,915.6	25.86
2.3	Other Capital expenditure	22,650.1	9,336.7	-58.78

Annexure 10

Details of Receipts and Expenditure of Pune Municipal Corporation (Rupees in Crores)

S. No	Receipts	Year		Annual Growth Rate (%)
		2014-15	2015-16	
	Total Receipts (A+B)	3,325.8	4,037.0	21.4
A	Revenue Receipts (1+2+3)	3,348.2	4,050.8	21.0
1	Own Revenue Receipts (a+b)	3,221.3	3,927.2	21.9
a)	Tax Revenue	1,892.0	2,293.0	21.2
i)	Property tax	589.5	829.6	40.7
ii)	Other tax	1,280.9	1,450.0	13.2
b)	Non-tax revenue	1,328.5	1,634.2	23.0
i)	Fees & fines			
ii)	User Charges	803.0	1,014.0	26.3
iii)	Other non-tax revenue	527.9	619.4	17.3
2	Other Revenue Receipts			
a)	Income from interest/investments			
b)	Other Revenue income			
3	Transfers/Grants/Assigned Revenues	126.9	123.5	-91.4
a)	State Assigned Revenue			
b)	State Finance Commission (SFC) Grants/Devolution			
c)	Octroi compensation	22.5	13.4	-40.1
d)	Other State Government Transfers	8.6	3.2	-62.9
e)	Central Finance Commission (CFC) Grant			
f)	Other Central Government Transfers			
g)	Others	95.8	106.9	11.6
B	Capital Receipts			
1	Sale of Municipal Land			
2	Loans			
3	State Capital Grant			
4	Central Capital Account Grant			
5	Other Capital Receipts			
	Expenditure			
	Total Expenditure (1+2)	3,129.0	3,415.4	9.2
1	Revenue Expenditure	1,857.0	2,010.7	8.3
1.1	Administrative Expenses, Establishment and Salaries	1,147.1	1,197.0	4.4
1.2	Operation and Maintenance (O&M)	709.9	813.0	14.5
1.3	Loan repayment (Interest payments)			
1.4	Others			
2	Capital Expenditure	1,272.0	1,404.7	10.4
2.1	All developmental works under Central/State specific schemes			
2.2	Loan Repayments (Principal Amount)	38.7	38.6	-0.1
2.3	Other Capital expenditure			