Creditworthiness Assessment
- An Approach for Indian Cities

CWAS-CRDF-CEPT University

April 2024

Part II

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Annex 1: Data Dictionary-Indicators definitions

Financial Indicators: Financial indicators for cities are key metrics used to assess the financial health, sustainability, and performance of a municipal government. These indicators provide insights into a city's fiscal responsibility, efficiency, and ability to meet its financial obligations. Here are some common financial indicators for cities.

1. **Income Ratios:** These ratios indicate the ability of the city to translate its economic base into actual revenues based on its capacity to levy and collect taxes and user charges.

   1.1. **Own Tax Revenue to Total Revenue Income Ratio (%):** The Own Tax Revenue to Total Revenue Income Ratio, often referred to as the tax revenue ratio, is a financial metric that indicates the proportion of a government's total revenue that comes from its own tax sources. This ratio is expressed as a percentage and is a key indicator of a government's reliance on tax revenue. Own tax revenue sources include property tax, water tax, sanitation tax, SWM tax, advertisement tax etc.
      - **Indicator**= (Own Tax Revenue Total Revenue Income) × 100
      - **Data Source:** City Finance Data, FY 2018-19, 2019-20, 2020-21, 2021-22, Retrieved for cities from www.cityfinance.in

   1.2. **Non-Tax Revenue to Total Revenue Income Ratio (%):** The Non-Tax Revenue to Total Revenue Income Ratio is a financial metric that indicates the proportion of a government's total revenue that comes from sources other than taxes. This ratio provides insight into the diversification of a government's revenue streams and its reliance on non-tax sources for funding. Non-tax sources include rental income, fees and user charges, interest charges etc.
      - **Indicator=** (Non-Tax Revenue Total Revenue Income) × 100
      - **Data Source:** City Finance Data, FY 2018-19, 2019-20, 2020-21, 2021-22, Retrieved for cities from www.cityfinance.in

   1.3. **Revenue Grants to Total Revenue Income Ratio (%):** The Revenue Grants to Total Revenue Income Ratio is a financial metric that indicates the proportion of a government's total revenue that comes from grants. Grants are funds provided to the government by other entities, such as other levels of government.
      - Revenue Grants is the total amount of funds received by the government in the form of grants.
      - Total Revenue Income is the overall revenue earned by the government from all sources, including taxes, non-tax revenue, grants, and other income.
      - **Data Source:** City Finance Data, FY 2018-19, 2019-20, 2020-21, 2021-22, Retrieved for cities from www.cityfinance.in

   1.4. **Property tax demand as a % of revenue (%):** It is a financial indicator that shows the proportion of a government's total revenue that comes from property tax demand. Property taxes are levied on the value of residential, institutional, and commercial

properties and the property tax demand represents the total amount of maximum revenue to be generated from these taxes.

- **Data Source:** Service Level Benchmarks (SLB) available from PAS Project https://pas.org.in/
- **Indicator:** (Property Tax Demand/ Total Revenue Income)

1.5. **Property tax collection as a % of revenue (%):** It is a financial indicator that shows the proportion of a government's total revenue that comes from property tax collections. Property taxes are levied on the value of real estate, and the property tax collection represents the total amount of revenue generated from these taxes.

- **Data Source:** Service Level Benchmarks (SLB) available from PAS Project https://pas.org.in/
- **Indicator:** (Property Tax Collection/ Total Revenue Income)

2. **Expense Ratios:** Expense ratios determine the city's ability to manage its fixed expenses like establishment and administration expense and operating expenses. It helps in understanding expenditure management of a city, whether a city is overspending or underspending on its fixed expenses.

2.1. **Establishment Expenditure to Total Revenue Income Ratio:** The Establishment Expenses to Total Revenue Income Ratio is a financial metric that indicates the proportion of a local government's total revenue that is allocated to establishment expenses. Establishment expenses typically include the costs associated with salaries, pensions and allowances.

- **Data Source:** Data for various cities is derived from their income expenditure statement uploaded on cityfinance.in and city websites. www.cityfinance.in
- **Indicator:** Establishment Expense/ Total Revenue Income

2.2. **Fixed charges to Total Revenue Income (%):** The Fixed Charge to Total Revenue Income Ratio is a financial metric that indicates the proportion of a local government's total revenue that is allocated to fixed annual expenses like administration and operations and maintenance. Fixed expenses typically include administrative expenses like training and professional development, office supplies and equipment, legal and consulting fees, insurance premiums etc. Operations and maintenance charges include expenses related to regular operations, repair and maintenance for services of the cities.

- **Data Source:** Data for various cities is derived from their income expenditure statement uploaded on cityfinance.in and city websites. www.cityfinance.in
- **Indicator:** (Administration Expense + O&M Expense) / Total Revenue Income

2.3. **Operations and Maintenance Expenditure to Total Revenue Income (%):** The Operations and Maintenance (O&M) to Total Revenue Income Ratio is a financial metric that indicates the proportion of a government's total revenue that is allocated to operations and maintenance expenses. It includes allocation for O&M of city level services.

- **Data Source:** Data for various cities is derived from their income expenditure statement uploaded on cityfinance.in and city websites. www.cityfinance.in
- **Indicator:** O&M Expense/ Total Revenue Income

2.4. **Establishment Expenditure to Total Revenue Expenditure Ratio:** The Establishment Expenses to Total Revenue Expense Ratio is a financial metric that indicates the spending of local government's total revenue expenditure on establishment expenses.
  - **Data Source:** Data for various cities is derived from their income expenditure statement uploaded on cityfinance.in and city websites. www.cityfinance.in
  - **Indicator:** Establishment Expense/ Total Revenue Income

2.5. **Fixed charge to Total Revenue Expenditure (%):** The Fixed Charge to Total Revenue Expenditure Ratio is a financial metric that indicates the proportion of a local government's spending on fixed annual expenses from the total revenue expense.
  - **Data Source:** Data for various cities is derived from their income expenditure statement uploaded on cityfinance.in and city websites. www.cityfinance.in
  - **Indicator:** Fixed Expense/ Total Revenue Expenditure

2.6. **Operations and Maintenance Expenditure to Total Revenue Expenditure (%):** The Operations and Maintenance (O&M) to Total Revenue Expenditure Ratio is a financial metric that indicates the government's spending on O&M from the total revenue expenditure.
  - **Data Source:** Data for various cities is derived from their income expenditure statement uploaded on cityfinance.in and city websites. Retrieved from www.cityfinance.in
  - **Indicator:** Operation and Maintenance Expenditure/ Total Revenue Expenditure

3. **Operating Ratios:** These ratios determine whether the city/cities revenues are adequate to meet operational expenses prior to depreciation and interest and support additional debt servicing.

3.1. **Surplus/Deficit to Total Income Ratio (%):** The Surplus/Deficit to Total Income Ratio is a financial metric that indicates the proportion of a government's total income that represents its surplus or deficit prior to depreciation and interest. This ratio helps assess to test the fiscal health and financial performance of a local government.
  - **Data Source:** Data for various cities is derived from their income expenditure statement uploaded on cityfinance.in and city websites. www.cityfinance.in
  - **Indicator:** (Revenue Income-Revenue Expenditure)/ Total Revenue Expenditure

4. **Debt Service Coverage Ratio (DSCR):** Debt Servicing Ratios indicate the adequacy of municipal cash flows to meet debt servicing requirements in a timely manner.

4.1. **Interest Service Coverage Ratio (Operating Surplus- Depreciation/ Interest):** The Interest Coverage Ratio is a financial metric that measures a company's ability to meet its interest payments on outstanding debt.
  - **Data Source:** Data for various cities is derived from their income expenditure statement uploaded on cityfinance.in and city websites. www.cityfinance.in

- **Indicator:** (Operating Surplus- Depreciation/ Interest)

5. **Leverage Ratios:** This ratio indicates the level of current leveraging of their urban local body/city vis-a-vis its net worth and revenue profile.
    - **Indicator: Total borrowings/ Total revenue income**
    - **Data source:** Data for various cities is derived from their income expenditure statement uploaded on cityfinance.in and city websites. www.cityfinance.in

6. **Liquidity Ratio:** Liquidity is a measure of the cash and other current assets cities have available to quickly pay bills and meet short-term business and financial obligations.
    - **Indicator**: (Cash and bank balance + investments)/ Revenue Expenditure prior to depreciation
    - **Data source:** Data for various cities is derived from their income expenditure statement uploaded on cityfinance.in and city websites. www.cityfinance.in

7. **Size of revenues:** The size of revenues indicates various financial analyses and comparisons. It helps investors, analysts, and stakeholders assess the city's revenues, growth potential, and overall financial health.

    7.1. **Revenue Income:** The total income or revenue generated by the municipal government through various sources to fund public services, infrastructure projects and other operations of a city is known as revenue income. Size of revenue income is a strong indicator of creditworthiness which determines how strong a city is financially.
    - **Data source:** Data for various cities is derived from their income expenditure statement uploaded on cityfinance.in and city websites. www.cityfinance.in

    7.2. **Revenue Expenditure:** Revenue expenses are typically recurring and are necessary for maintaining and managing the city's services and infrastructure. Unlike capital expenditures, they are incurred for the maintenance and regular functioning of the city.
    - **Data source:** Data for various cities is derived from their income expenditure statement uploaded on cityfinance.in and city websites. www.cityfinance.in

    7.3. **Per Capita Revenue Income:** The per capita revenue income of a city indicates the ratio of the total revenue income to the total population of a city. This is to understand how much revenue income a city generates per person.
    - **Data source:** Income Data for various cities is derived from their income expenditure statement uploaded on cityfinance.in and city websites. www.cityfinance.in
    - Population data for cities is derived from Service Level Benchmarks (SLB) available from PAS Project https://pas.org.in/

    7.4. **Per Capita Revenue Expenditure:** The per capita revenue expenditure of a city indicates the ratio of the total revenue expenditure to the total population of a city. This is to understand how much revenue city spends on its regular operations per person.
    - **Data source:** Expenditure Data for various cities is derived from their income expenditure statement uploaded on cityfinance.in and city websites. www.cityfinance.in,
    - Population data for cities is derived from Service Level Benchmarks (SLB) available from PAS Project https://pas.org.in/.

7.5. Per Capita Property Tax Demand: The per capita property tax demand of a city indicates the ratio of the total property tax demand of a city to the total population of a city.

- **Data source:** Service Level Benchmarks (SLB) available from PAS Project https://pas.org.in/.

7.6. Per Capita Property Tax Collection: The per capita property tax collection of a city indicates the ratio of the total property tax collection of a city to the total population of a city.

- **Data source:** Service Level Benchmarks (SLB) available from PAS Project https://pas.org.in/.

7.7. Per Capita Own Tax Collection: The per capita own tax collection of a city indicates the ratio of the total own tax like property tax, water tax etc collection of a city to the total population of a city.

7.8. Growth of Revenue Income: The cumulative growth of revenue income measures the percentage increase in a city's total revenue income over there years and an overall revenue trends in the city.

- **Data source:** Data for various cities is derived from their income expenditure statement uploaded on cityfinance.in and city websites. www.cityfinance.in,
- **Indicator:** CAGR= (Beginning year of Income-Ending year of Income)^Number of Years−1

7.9. Growth of Revenue Expenditure: The cumulative growth of revenue expenditure measures the percentage increase in a city's total revenue expenditure over there years and an overall revenue trend in the city.

- **Data source:** Data for various cities is derived from their income expenditure statement uploaded on cityfinance.in and city websites. www.cityfinance.in,
- **Indicator:** CAGR=(Beginning year of Expenditure-Ending year of Expenditure)^Number of Years−1

Service Level Indicators: These indicators for cities are key metrics used to assess the WASH service level performance like coverage, adequacy, treatment, and quality as well it assesses the WASH financial performance like cost recovery and collection efficiency. It also assesses a city's governance and transparency like accounting quality, human resource adequacy and complaint redressal mechanism. These indicators provide insights into a city's governance responsibility, efficiency, and ability to meet its service level obligations. Here are some common service level indicators for cities.

8. **WASH services:** Access to clean water and sanitation are the necessities for every person in our society, that a city should provide to develop a healthier environment. For successful implementation of WASH service in every city, we need to have strong policy interventions and monitoring system.

   8.1. Coverage of water supply connections at HH level: This indicator captures the extent of the household / individual water supply connections in the city.

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- **Data Source:** Service Level Benchmarks (SLB) available from PAS Project https://pas.org.in/
- **Benchmark:** The Service Level Benchmark is 100%
- **Indicator score** = SLB value / 100

8.2. **Coverage of toilets:** This indicator captures the properties with access to toilets, either individual or community toilets, and assesses the level of sanitation services in the city.
- **Data Source:** Service Level Benchmarks (SLB) available from PAS Project https://pas.org.in/
- **Benchmark:** The Service Level Benchmark is 100%
- **Indicator score** = SLB value / 100

8.3. **Coverage of FSSM/WW network services:** This indicator captures the property level connections to sewage network or septic tank and is significant in estimating the safe sanitation levels of the city.
- **Data Source:** Service Level Benchmarks (SLB) available from PAS Project https://pas.org.in/
- **Benchmark:** The Service Level Benchmark is 100%
- **Indicator score** = SLB value / 100

8.4. **Household level coverage of SWM services:** This indicator captures the door-to-door collection of MSW. This is relevant as it forms a major part in the quantum of waste that can be treated, and scientifically disposed
- **Benchmark:** The Service Level Benchmark is 100%
- **Indicator score** = SLB value / 100
- **Data Source:** Service Level Benchmarks (SLB) available from PAS Project https://pas.org.in/

9. **Sustainable Water Management:** Metering and Non-Revenue Water (NRW) management are essential components of efficient water supply systems. Implementing effective metering practices and addressing NRW contribute to the sustainability of water resources, financial viability of utilities, and the overall resilience of water infrastructure.
- **Indicator Score: %** of Non-Revenue Water
- **Indicator Score:** % of water metering in the city

10. **Adequacy, Treatment and Reuse**
10.1. **Adequacy of water supply:** This indicator captures the amount of water supplied per person in a city.
- **Benchmark:** The Service Level Benchmark is 135 lpcd.
- **Indicator score** = (SLB value / 135)*100
- **Data Source:** Service Level Benchmarks (SLB) available from PAS Project https://pas.org.in/

10.2. **Adequacy of sanitation treatment:** This indicator captures the adequacy of sanitation infrastructure which involves effectively managing and treating wastewater, sewage, sullage and other waste streams.

- **Benchmark:** The Service Level Benchmark is 100%.
- **Indicator score** = (SLB value/100)
- **Data Source:** Service Level Benchmarks (SLB) available from PAS Project https://pas.org.in/

10.3. **Adequacy of treatment of SWM:** This indicator captures the adequacy of solid waste infrastructure which involves effectively managing and treating municipal solid waste by a city.
- **Benchmark:** The Service Level Benchmark is 100%.
- **Indicator score** = (SLB value/100)
- **Data Source:** Service Level Benchmarks (SLB) available from PAS Project https://pas.org.in/

10.4. **Extent of re-use of Wastewater:** This indicator captures the extent of wastewater reuse practices by a city.
- **Benchmark:** The Service Level Benchmark is 20%.
- **Indicator score** = (SLB value/100)
- **Data Source:** Service Level Benchmarks (SLB) available from PAS Project https://pas.org.in/

11. **Financial management of WASH services:**
11.1. **Cost recovery of WASH services:** Cost recovery in the context of Water, Sanitation, and Hygiene (WASH) services refers to the ability of service providers to cover the costs associated with the delivery of these essential services. Achieving cost recovery is crucial for the sustainability and effectiveness of WASH programs.
- **Data Source:** Service Level Benchmarks (SLB) available from PAS Project https://pas.org.in/.

    11.1.1. **Cost recovery of water supply service=** (Total revenue generated through water tax / Total O&M for water supply service in a city)*100

    11.1.2. **Cost recovery of sanitation service=** (Total revenue generated through sanitation tax / Total O&M for sanitation service in a city)*100

    11.1.3. **Cost recovery of sanitation service=** (Total revenue generated through solid waste management tax / Total O&M for SWM service in a city)*100

Note: Weighted average value of three indicators is considered for final calculation.

11.2. **Collection efficiency of WASH services:** The collection efficiency of WASH (Water, Sanitation, and Hygiene) services for a city refers to the effectiveness with which the city is able to collect revenue, typically through user fees, tariffs, or other payment mechanisms, for the delivery of water and sanitation services. A high collection efficiency indicates that a significant portion of the billed amounts is successfully collected, contributing to the financial sustainability of the services.
- **Data Source:** Service Level Benchmarks (SLB) available from PAS Project https://pas.org.in/.

11.2.1. **Collection efficiency of water supply service=** (Total amount collected through water tax)/Total amount billed to users) *100

11.2.2. **Collection efficiency of sanitation service=** (Total amount collected through sanitation tax)/Total amount billed to users) *100**Collection efficiency of SWM service=** (Total amount collected through SWM tax)/Total amount billed to users) *100

Note: Weighted average value of three indicators is considered for final calculation.

11.3.Collection efficiency of property tax: The collection efficiency of property tax for a city refers to the effectiveness with which the city is able to collect its property taxes based on the demand generated from the properties.

- **Data Source:** Service Level Benchmarks (SLB) available from PAS Project https://pas.org.in/.

11.3.1. **Collection efficiency of property tax=** (Total amount collected through current property)/Total current property tax amount billed to users) *100

12. **Accounting Quality and Transparency:** Accounting quality and transparency are essential aspects of financial reporting and governance within the city. Accounting quality of a city refers to accurate and reliable information, consistency, relevance and timeliness of publishing annual financial statements and audit reports as per the Indian National and State Accounting Standards. Transparency implies to clear and understandable financial statements and disclosures in public domain.

12.1. Does the city prepare annual audit reports of cities and publish it in public domain?

12.2. Does the city follow accrual-based accounting?

- **Data Source:** Service Level Benchmarks (SLB) available from PAS Project https://pas.org.in/.Data for various cities is derived from their income expenditure statement uploaded on cityfinance.in and city websites. www.cityfinance.in

13. **Human Resources and Adequacy of Staff:** The adequacy of staff in a city is a critical aspect of human resources management, impacting the city's performance, efficiency, and overall success. This parameter captures staffing levels in relation to service delivery requirements to determine how the city/cities is performing in terms of recruiting and managing human resources, particularly skilled resources.

13.1.Total working staff versus sanctioned in water supply: This indicator assesses the adequacy of staff working in water supply department of a city.

- **Indicator:** Adequacy of staff in water supply department
- **Data Source:** Service Level Benchmarks (SLB) available from PAS Project https://pas.org.in/.

13.2.Total working staff versus sanctioned in sanitation: This indicator assesses the adequacy of staff working in sanitation department of a city.

- **Indicator:** Adequacy of staff in sanitation department
- **Data Source:** Service Level Benchmarks (SLB) available from PAS Project https://pas.org.in/.

13.3. **Total working staff versus sanctioned in solid waste management:** This indicator assesses the adequacy of staff working in SWM department of a city.
- **Indicator:** Adequacy of staff in SWM department
- **Data Source:** Service Level Benchmarks (SLB) available from PAS Project https://pas.org.in/.

14. **Complaint Redressal Mechanisms:** Establishing effective complaint redressal mechanisms is crucial for maintaining trust, ensuring accountability, and fostering a positive governance structure for a city. Redressing complaints within a given time frame is essential for WASH service delivery.

14.1. **Complaint Redressal in water supply-** This indicates how many complaints the water supply department of a city can resolve within 24 hours.
- **Data Source:** Service Level Benchmarks (SLB) available from PAS Project https://pas.org.in/.

14.2. **Complaint Redressal in sanitation-** This indicates how many complaints the sanitation department of a city can resolve within 24 hours.
- **Data Source:** Service Level Benchmarks (SLB) available from PAS Project https://pas.org.in/.

14.3. **Complaint Redressal in Solid Waste Management-** This indicates how many complaints the SWM department of a city can resolve within 24 hours.
- **Data Source:** Service Level Benchmarks (SLB) available from PAS Project https://pas.org.in/.

Qualitative Indicators

15. **Legal and Administrative Framework:** The legal and administrative framework is reviewed in terms of obligatory and discretionary services assigned to the Municipal Corporation as well as its taxation powers and enabling framework to levy user charges and collect other revenues.

16. **Tax-levying powers:** The taxation powers of Indian state governments regarding municipalities are generally defined by the respective state's Municipal Acts. These acts grant the state governments the authority to levy and collect various taxes and fees within the municipal areas under their jurisdiction. The taxation powers vary from state to state, but common sources of revenue include property taxes, professional taxes, entertainment taxes, advertisement taxes, and user charges for services like water supply, sewage, and solid waste management. State governments delegate certain taxation powers to municipal bodies, allowing them to assess, levy, and collect taxes directly. These taxation powers empower the state governments and municipalities to generate revenue for local governance and development initiatives, ensuring the provision of essential services and infrastructure to the citizens residing within the municipal areas.

17. **Borrowing powers and administrative requirements for mobilising funds from the capital market, as specified in the Act:** The municipal body's flexibility to raise funds for projects is assessed. Checks imposed on borrowing are a critical consideration, and include ceiling on debt, provisions available for earmarking revenue, sustaining a sinking fund and the manner in which such funds are maintained.

Annex 2: Creditworthiness Analysis of Cities with Four Million Plus Population

Revenue Profile

Among the universe of cities with population more than four million, Pune MC in Maharashtra has the highest revenue size of INR 9,388 crores followed by Ahmedabad MC with INR 4,977 crores, Surat MC with INR 3,313 crores and Lucknow MC at 1,330 crores.

Figure 1 Revenue income of cities with four million plus population for FY 2021-22 (in INR crores)
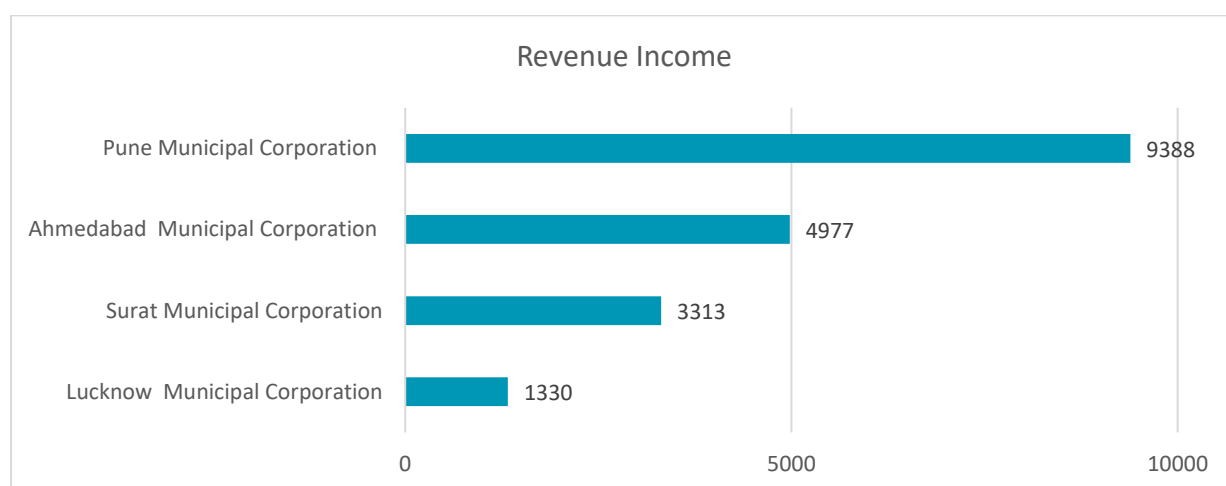
Pune Municipal Corporation collects highest per capita revenue income within the universe of four million plus cities in India.

The amount of revenues and expenditures per capita provide an indication of the importance of the public sector in the economy across the cities. Pune Municipal Corporation collects highest per capita revenue income of INR 20,122 in the financial year 2021-22 through its own tax and non-tax sources as well as revenue grants. The second highest per capita revenue income is of Ahmedabad MC at INR 6,806 followed by Surat MC at 4,395 and Lucknow MC at INR 3,316.

Figure 2 Per Capita Revenue Income for four million plus cities (in INR)
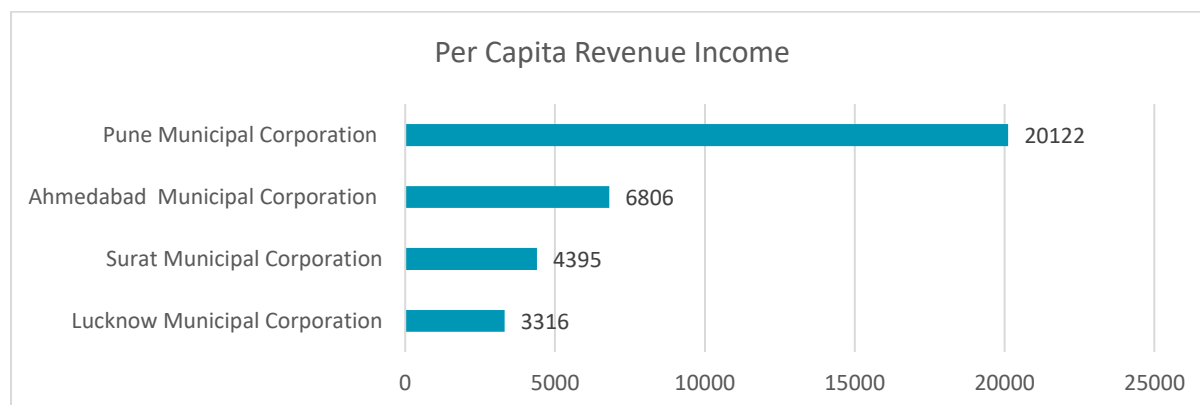
Figure 3 Distribution of revenue income for four million plus cities for FY 2021-22 (in %)
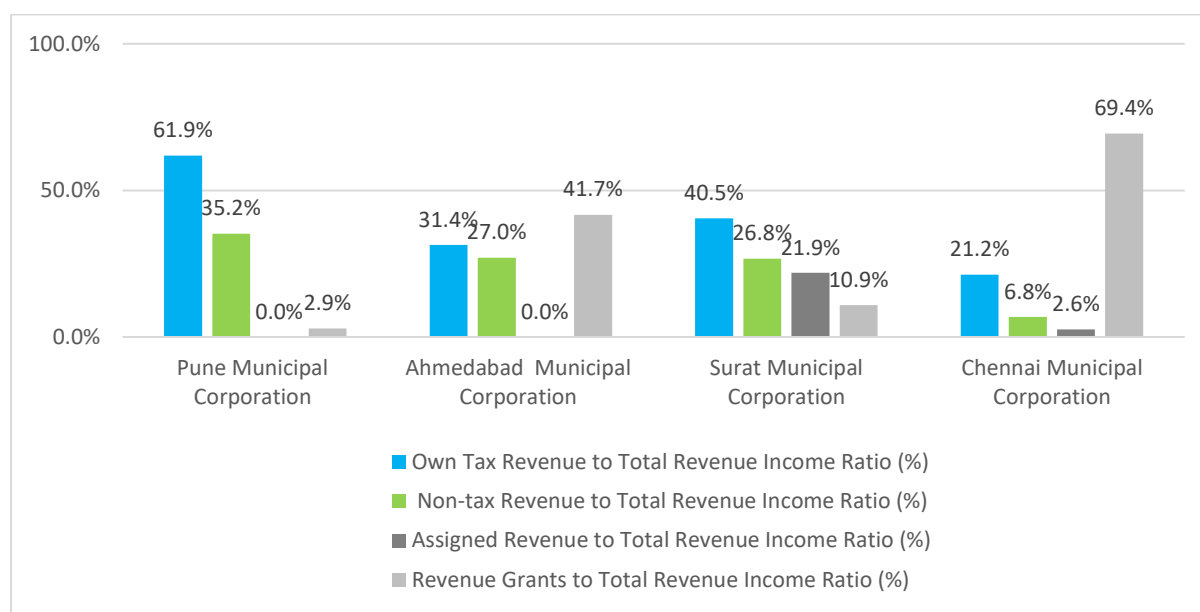
Source: CWAS, CEPT Analysis based on income-expenditure statements of Pune Municipal Corporation (FY 2021-22), Ahmedabad Municipal Corporation (FY 2021-22), Surat Municipal Corporation (FY 2021-22) and Lucknow Municipal Corporation (FY 2021-22) available on cityfinance.in and https://ahmedabadcity.gov.in/portal/jsp/Static_pages/amc_balance_sheet.jsp

Note: Pune MC include their assigned revenues in own tax income.

Table 1 Distribution of revenue income for four million plus cities (FY 2021-22; Values in INR crore)

Distribution of revenue income for four million plus cities (FY 2021-22; Values in INR crore)					
Cities	Own Tax Revenue	Non-Tax Revenue	Assigned Revenues & Compensation	Revenue Grants, Contributions & Subsidies	Total Revenue Income
Pune MC	5810	3304	0	274	9388
Ahmedabad MC	1560	1343	0	2074	4977
Surat MC	1342	1611	724	361	4037
Lucknow MC	282	91	34	922	1329

Expenditure Management

The revenue expenditure profile consists of fixed expenses like establishment expense (salaries and wages), administration expense, operations and maintenance of services, provisions and write-offs and contributions.

Among the universe of cities with four million plus population, Pune MC in Maharashtra has the highest revenue expenditure of INR 7,155 crores followed by Ahmedabad MC with INR 4,361 crores, Surat MC at INR 3,474 crores and Lucknow MC with INR 1,306 crores.

Figure 4 Revenue Expenditure of cities with four million plus population for FY 2021-22 (in INR crores)
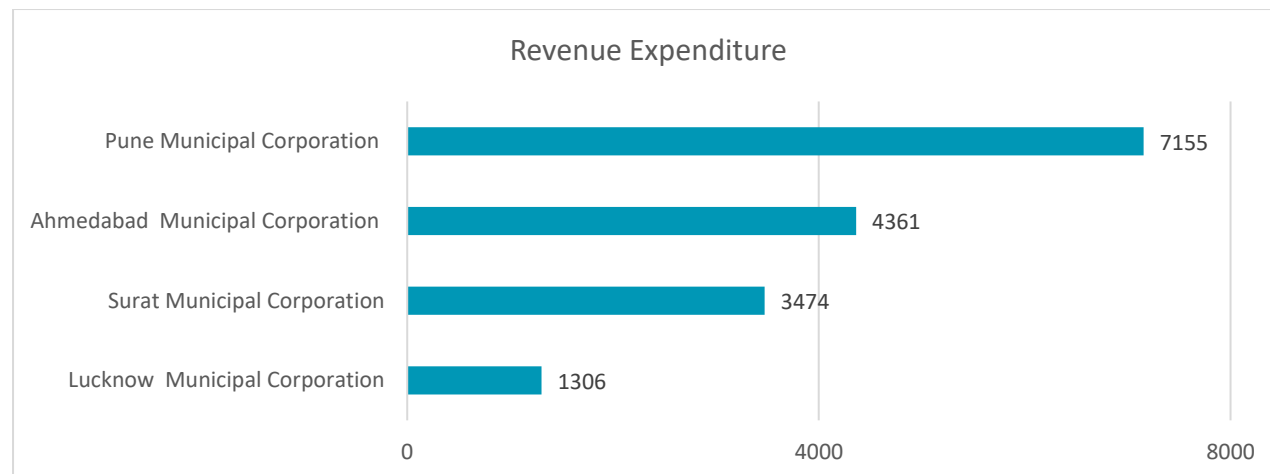
The per capita income of cities translates into the per capita expenditure of the cities as well. Pune has the highest per capita revenue expenditure spending of INR 15,337 in FY 2021-22 followed by Ahmedabad at INR 5,963, Surat at INR 4,608 and Lucknow at INR 3,256.

Figure 5 Per Capita Revenue Expenditure for four million plus cities for FY 2021-22 (in INR)

Per Capita Revenue Expenditure

City	Value
Pune Municipal Corporation	15337
Ahmedabad Municipal Corporation	5963
Surat Municipal Corporation	4608
Lucknow Municipal Corporation	3256
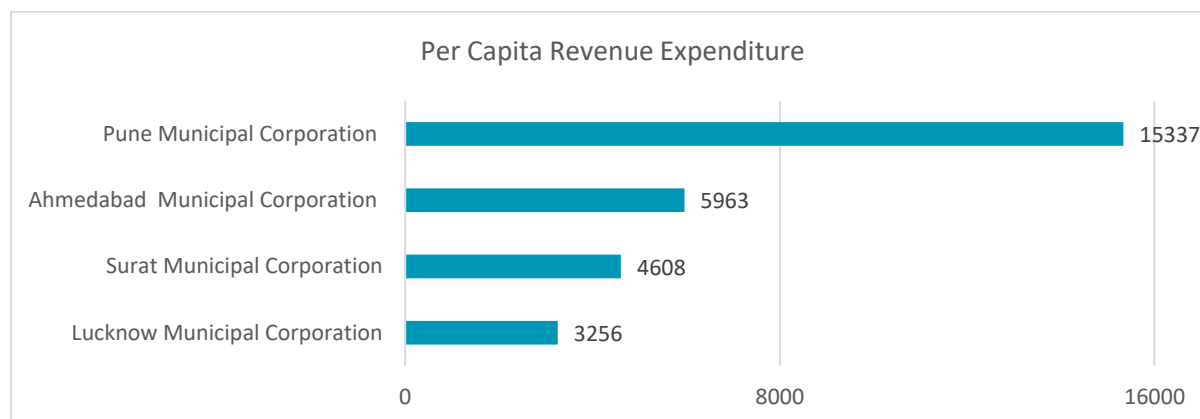
The universe of four million plus cities on an average spend 45% of its total revenue expenditure on fixed establishment and administration whereas 18% on its regular operations and maintenance. The analysis shows that Surat Municipal Corporation spends more than 60% annually on its fixed expenditure. However, the high establishment expenses in Surat has translated to higher performance levels of operational services. Due to its high fixed expenses, SMC spends only 13-16% of its annual on its regular operations and maintenance. Pune, Ahmedabad and Lucknow Municipal Corporation spend less than 50% on its fixed expenses. Lucknow Municipal Corporation spent highest on its regular operations and maintenance from FY 2018-22 at 39-43% which gets translated to its service level score.

Figure 6 Share of fixed revenue expenditure of four million cities for FY 2018-22 (in %)

Fixed expenses= (Establishment + Admin Expense)/Total Revenue Expenditure

	Pune Municipal Corporation				Ahmedabad Municipal Corporation			Surat Municipal Corporation				Lucknow Municipal Corporation			
Year	2018-19	2019-20	2020-21	2021-22	2018-19	2019-20	2020-21	2018-19	2019-20	2020-21	2021-22	2018-19	2019-20	2020-21	2021-22
%	47%	36%	35%	43%	46%	46%	38%	63%	63%	66%	61%	43%	41%	40%	39%
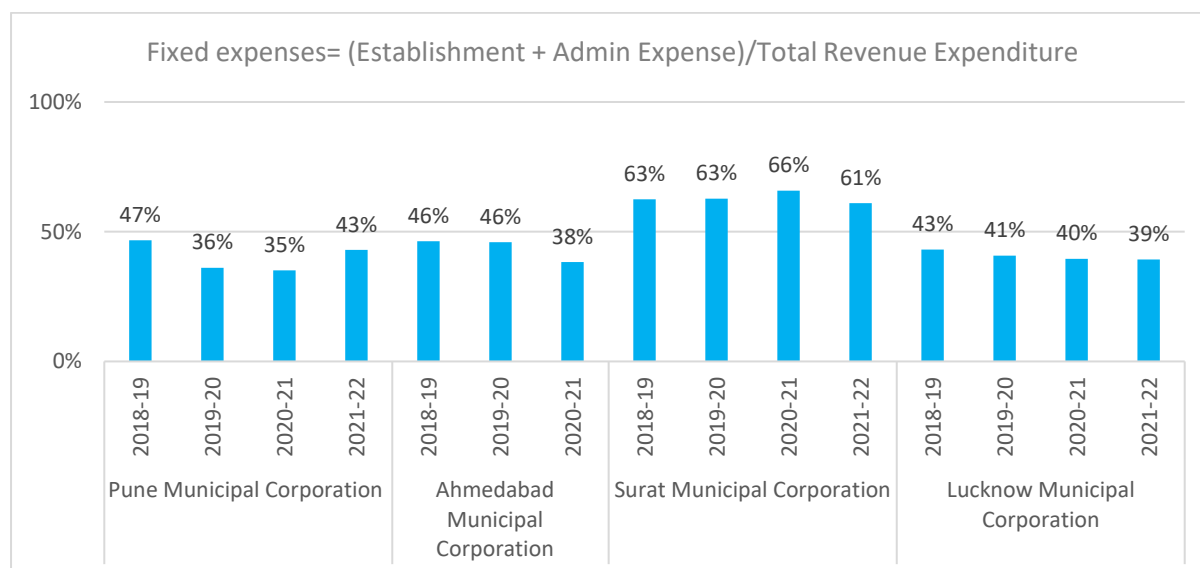
Figure 7 Share of operations and maintenance expenditure of four million plus cities for FY 2018-22
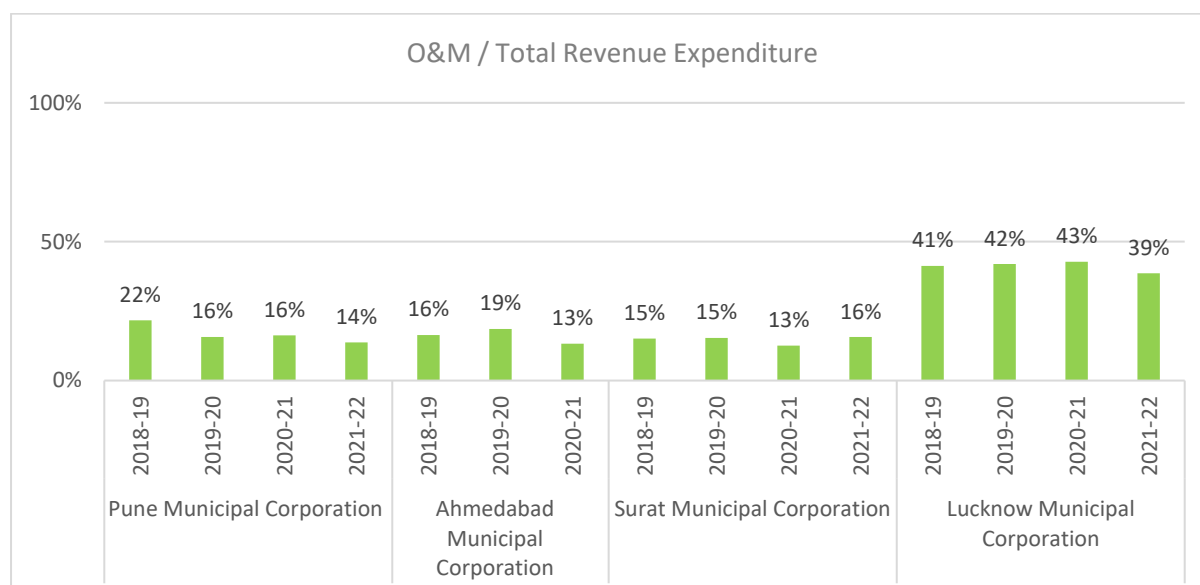
Table 2 Distribution of revenue expenditure of four million plus cities for FY 2021-22 (INR crores)

Distribution of revenue expenditure of four million plus cities for FY 2021-22 in INR crores						
Cities	Establishment Expenses	Administrative Expenses	O&M	Interest & Finance Charges	Depreciation	Others*	Total
Pune	2687	385	985	15	1563	1519	7155
Ahmedabad	1617	236	969	30	151	1509	4512
Surat	1609	510	545	51	643	115	3474
Lucknow	493	20	504	17	124	148	3840

*Note: Others includes program expenses, expenses made on subsidies, provisions and write-offs and miscellaneous expenses.

All four million plus cities have operating surplus prior to depreciation and interest. Pune Municipal Corporation has the maximum surplus.

Within the universe of cities with population of four million plus, all the four cities have operating surplus prior to depreciation and interest for FY 2021-22. Pune MC has the highest operating surplus of INR 3811 crores followed by Ahmedabad MC at INR 798 crores, Surat MC at INR 534 crores and Lucknow MC at 165 crores. Post depreciation and interest, Pune Ahmedabad and Lucknow still have operating surplus of INR 2233 crores, INR 616 crores and INR 24 crores respectively whereas Surat had operating deficit of INR (527) crores.

Figure 8 Operating surplus/ deficit prior to depreciation and interest of four million plus cities (in INR cr)

Operating surplus/ deficit prior to depriciation and interest

Pune Municipal Corporation	3811
Ahmedabad Municipal Corporation	798
Surat Municipal Corporation	534
Lucknow Municipal Corporation	165
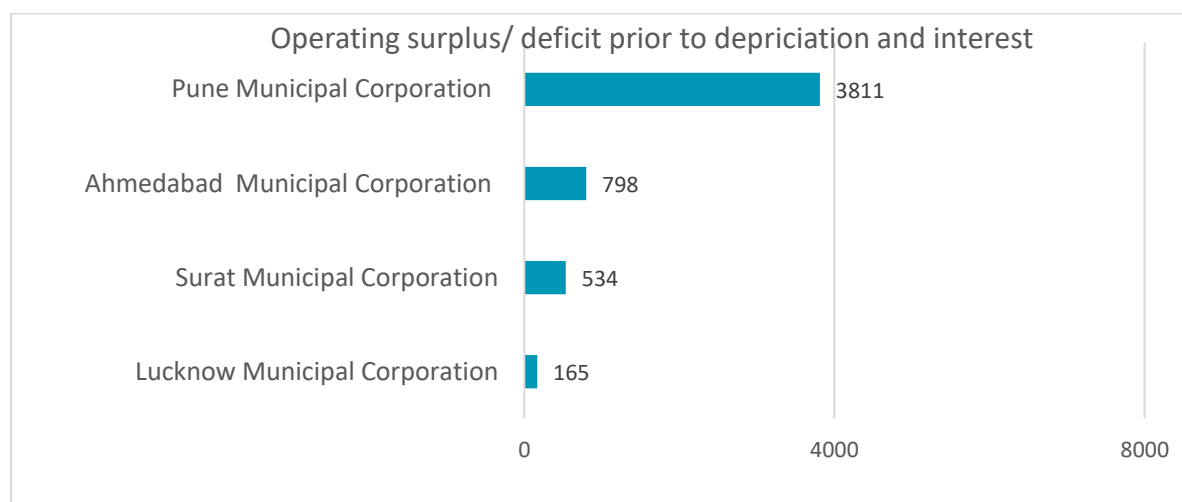
Liquidity profile

Pune, Ahmedabad and Surat Municipal Corporations have strong liquidity profile and adequate cash balance and marketable securities through which they can comfortably meet their future operating expenses atleast for a quarter period.

Pune Municipal Corporation has 0.86 quick ratio prior to depreciation, cash and bank balance of INR 1,365 crores and general fund investments of INR 3,461 crores as dated on March 31st, 2022. This allows PMC to comfortably meet eight months of its operating expenses through existing cash balance and marketable securities. Ahmedabad MC reported a negative cash balance of INR -294 crores as on March 31st, 2022 due to its borrowings from banks. It has adequate investments and marketable securities of INR 1,104 crores in its general fund which can be easily converted to cash. Thus, AMC can comfortably meet its future operating expenses for atleast four months. Surat Municipal Corporation had an adequate cash balance of INR 725 crores reflecting adequate liquidity profile and its comfortable ability to meet its future operating expenses for at least a quarter period. Lucknow MC had cash balance of INR 579 crores as dated on 31st March, 2022 with marketable securities of INR 768 crores. Thus, Lucknow can pay the future debt obligations through improved revenues and cash and bank balance.

Figure 9 Liquidity test through quick ratio of four million plus cities for FY 2021-22
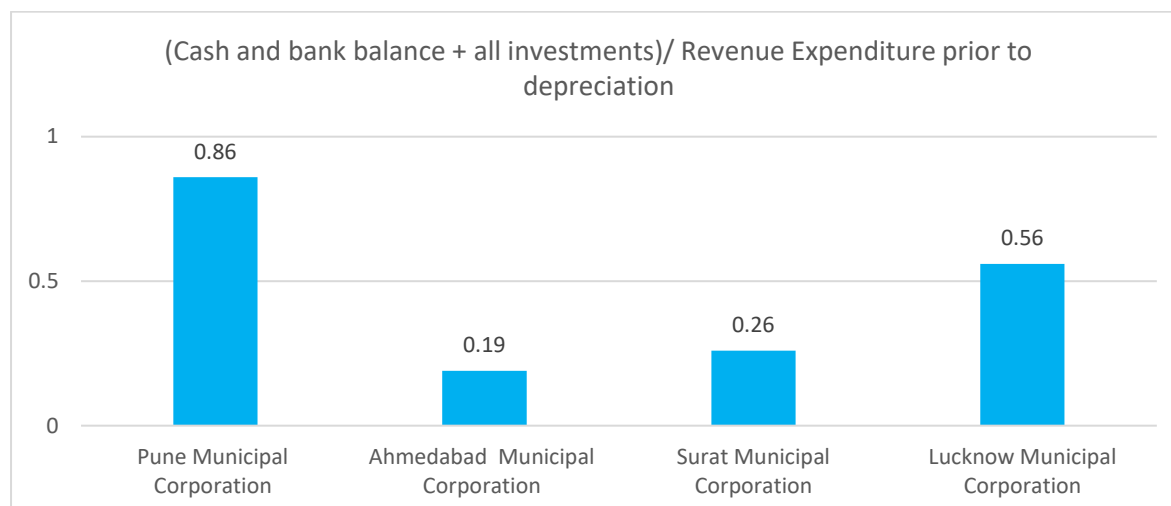
Debt Servicing Ability

Pune, Ahmedabad and Surat Municipal Corporations can comfortably pay for their future debt obligations with their operating surplus and adequate cash balance, Lucknow can pay the debt obligations with its structured escrow mechanisms and assets.

Pune Municipal Corporation has a good ICR due to its high operating surplus, hence, it can comfortably pay for its future debt obligations. Surat Municipal Corporation had a negative ICR due to its operating deficit in FY 2020-21 and 2021-22. The revenue income for SMC grew at 3.3% and the revenue expenditure grew at 8% from FY 2018-19 to FY 2021-22. However, the Corporation had an adequate cash balance of INR 725 crores in FY 2021-22 and adequate liquidity profile. Ahmedabad Municipal Corporation though had a negative cash balance on its balance sheet, it had sufficient revenue surplus of INR 616 crores post depreciation and interest for FY 2021-22 through which AMC can comfortably meet its debt obligations. Lucknow Municipal Corporation had revenue surplus both prior and post depreciation and interest for four consecutive years from FY 2018-22. Apart from municipal bonds of INR 200 crores, Lucknow had an interest-free debt of INR 589 crores from the government of Uttar Pradesh (GoUP), for which the corporation does not have any fixed payment obligation. The repayments are adjusted in the monthly State Finance Commission grants, under a mutual arrangement between LMC and the GoUP. Approximately INR 9 crores is deducted from the grants on a yearly basis as the repayments towards this loan. Due to unanticipated debt levels of Lucknow, the DSCR falls below 2 leading to overborrowing. However, the structured escrow payment mechanism in Lucknow backed by the stability in the performance of its escrowed assets improves its performance. (India Ratings and Research, 2023)

Borrowing Capacity

It is estimated that Pune Municipal Corporation has the highest borrowing capacity of INR 9,527 crores due to its strong operating surplus profile, followed by Ahmedabad at INR 1,994 crores, Surat at INR 1,334 crores whereas Lucknow has INR 165 crores. The borrowing capacity strongly depends on the revenue size of the Corporation as well its operating surplus prior to depreciation and interest. PMC borrowed INR 200 crores in the form of municipal bonds from the market which is only 2% of its estimated borrowing capacity. Ahmedabad MC has total borrowings of INR 453 crores in the form of secured loan from World Bank and market borrowings through municipal bonds which is 23% of its estimated borrowing capacity. Surat MC borrowed from the market worth INR 200 crores in the form of municipal bonds which is 15% of its estimated borrowing capacity. Lucknow MC borrowed INR 799 crores in the form municipal bonds, secured and non-secured loans which is 194% of its existing borrowing capacity at INR 412 crores.

Figure 10 Estimated borrowing capacity vs current borrowings based on FY 2021-22 (in INR crores)
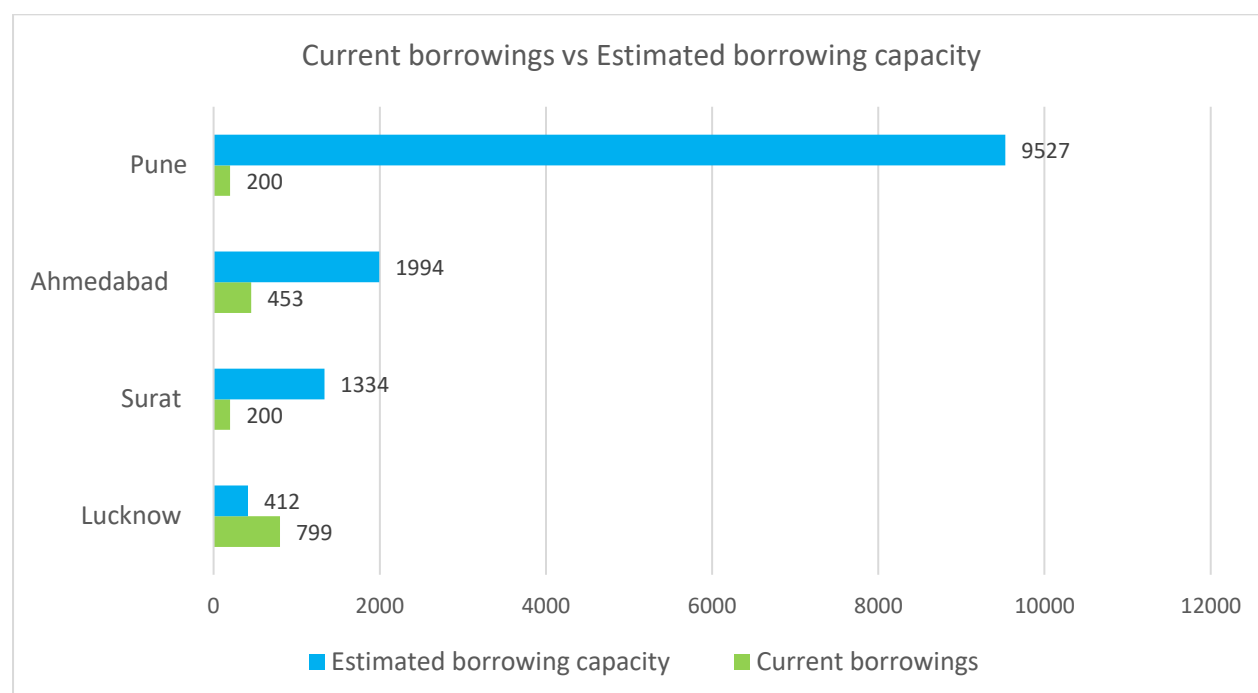
Water Sanitation Services (WSS)

Ahmedabad, Pune, Surat have good WSS service levels with more than 75%

The service levels of the cities are assessed based on the service level benchmarks defined by the Ministry of Housing and Urban Affairs (MoHUA) for water supply, sanitation and SWM services. Service level PAS data was available from FY 2018-19 to FY 2021-22 for Ahmedabad and Surat, from FY 2019-20 to 2020-21 for Pune and for FY 2018-19 and 2021-22 for Lucknow

Ahmedabad, Surat and Pune had very high levels of water supply, sanitation coverage and SWM coverage (more than 90%). Lucknow's water supply coverage was 73%, sanitation coverage was 57%. SWM coverage was more than 80% in all four cities.

Figure 11 Water and Sanitation Service Coverage for four million plus cities for FY 2019-20 (in %)
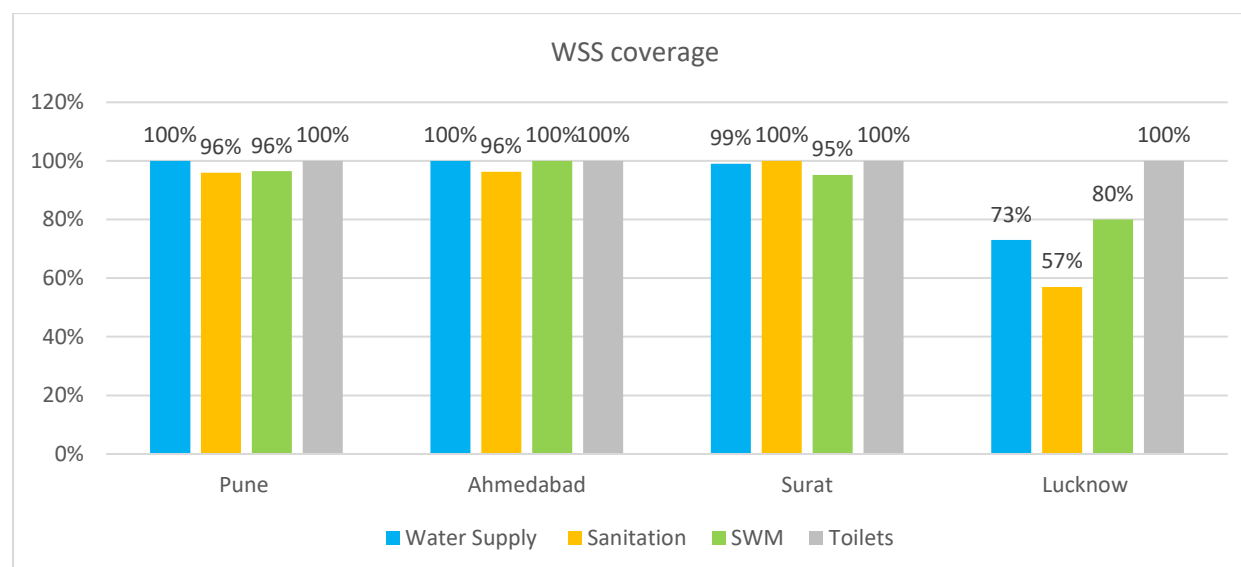
Table 3 WSS Coverage in four million plus cities (in %)

Municipal Corporation	Year of PAS Data	Coverage			
		Water Supply	Sanitation	SWM	Toilets
Pune	2019-20	100%	96%	96%	100%
	2020-21	100%	96%	96%	100%
Ahmedabad	2018-19	98%	96%	100%	100%
	2019-20	100%	96%	100%	100%
	2020-21	99%	94%	99%	100%
	2021-22	100%	100%	100%	100%
Surat	2018-19	98%	100%	100%	100%
	2019-20	99%	100%	95%	100%
	2020-21	100%	100%	92%	100%
	2021-22	93%	100%	95%	100%
Lucknow	2021-22	73%	57%	80%	100%

Water Supply Service Levels

The service level benchmark for coverage of water supply connections is 100%. Ahmedabad, Surat and Pune had very high levels of water supply coverage (more than 90%), Lucknow has decent water supply coverage at 73%. The non-revenue water was 24% for Lucknow, Pune's non-revenue water was in the range of 30-38% which is much higher compared to the benchmark and the other three cities. On the other hand, Pune outperformed the other cities in the extent of metered water connection. PMC increased metered connections from 11% in 2019-20 to 42% in 2021-22. Surat achieved about 13% metering as of 2021-22 and

Ahmedabad and Lucknow had not achieved any metering. Ahmedabad, Surat, Pune and Lucknow's per capita water supply was in the range of 140-170 lpcd which is higher than the 135 lpcd benchmark. The benchmark for complaint redressal in water supply service is 80%. Surat and Lucknow's complaint redressal was consistently above the benchmark (80-100%). Ahmedabad achieved 96% complaint redressal in 2018-19 but its performance slipped below the benchmark in subsequent years (75-78%). Pune's complaint redressal efficiency was very low (30-33%).

Figure 12 Non-revenue water for four million plus cities for FY 2019-20 (in %)
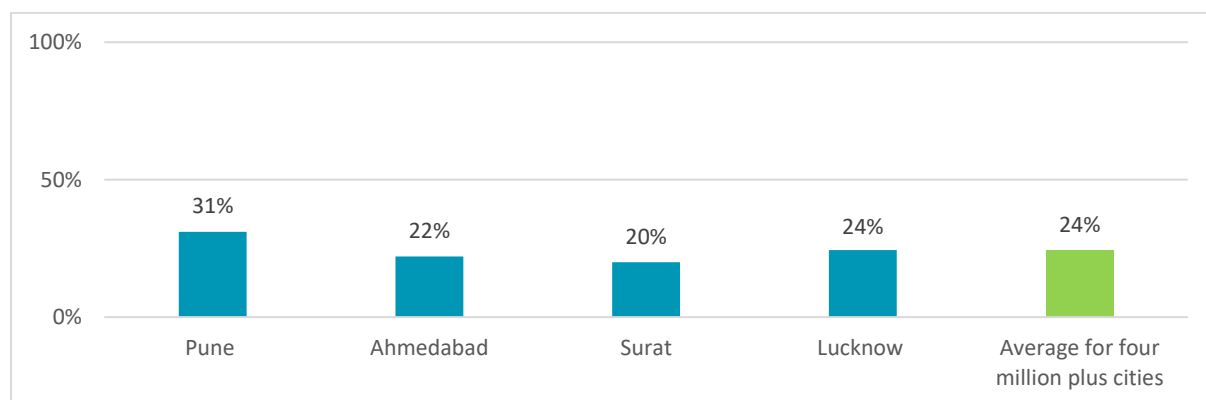
Sanitation Service Levels

All the four million plus cities have reported 100% coverage of toilets and these cities are served by underground sewer systems. Ahmedabad, Surat and Pune had more than 90% sewerage coverage whereas Lucknow was found to be lagging behind at just 57% against the benchmark of 100%. The sewage treatment capacity in FY 2021-22 is more than adequate in all the cities : 171% in Surat, 123% in Ahmedabad, 96% in Pune and 93% in Lucknow . Ahmedabad and Pune reported the highest levels of wastewater reuse in 2019-20 (53%) against the 20% benchmark. However, Ahmedabad's wastewater reuse level declined to 33% in 2021-22 and Pune's level declined to 16% in 2020-21. In both of these cities, a large portion of the treated wastewater is reused in irrigation as per the requirement (CPHEEO, 2021, pp. 4, 73). Surat increased its extent of reuse from 4% in 2018-19 to 35% in 2021-22 due to rising industrial demand (CPHEEO, 2021, p. 79). Lucknow did not report any reuse practice. Ahmedabad, Surat and Lucknow have good complaint redressal systems and the cities with more than 80% redressals. Pune's complaint redressal was low in sanitation services but it showed an increase from 48% in 2019-20 to 61% in 2020-21.

Solid waste management Service Levels

In all the four cities, SWM coverage was more than 80% in all four cities against the benchmark of 100%. The ratio of solid waste treatment capacity to total waste generated was the highest in Pune (125% in 2020-21) followed by Ahmedabad (101% in 2020-21) , Surat (82%

in 2020-21) and 70% in Lucknow (2021-22). In 2021-22, the performance of Ahmedabad and Surat fell slightly to 93% and 77% respectively. Lucknow, Surat and Ahmedabad had a highly efficient complaint redressal mechanism (97-100%) with the exception of Ahmedabad's figure dipping to 65% in 2019-20 against the benchmark of 80%. Pune's complaint redressal efficiency improved from 74% in 2019-20 to 90% in 2020-21.

Collection Efficiency of property and WSS taxes

Surat has good property tax and WSS collection efficiency among four million plus cities.

Generally, very few municipal corporations have a high collection efficiency for their taxes, user charges and non-tax revenues. The current property tax collection efficiency of Surat MC stands out at 90%. The water tax collections are 86% and sanitation and SWM tax collections are 82%. Such improved collections are due to GIS mapping of properties which has resulted in additional tax base. Lucknow MC has an average property tax collection efficiency at 67% and good WSS collection efficiency at 92%. The water tax is collected by the Jal Kal Vibhag, a separate department in LMC. Lucknow uses geographic information system surveys to bring unassessed properties under the tax net and it has also launched an e-payment system that acts as a one-stop solution for easy property tax collection. The self-assessment of property tax collection has helped LMC increase the property tax collection. (India Ratings and Research, 2023) Pune has an average property tax collection efficiency at 53% in the FY 2020-21. PMC should plan to improve its water tax collections which are extremely less at 25%. Ahmedabad Municipal Corporation is able to maintain 71% collection efficiency in its sanitation and SWM sector. The current property tax collection efficiency was 62% in year 2021 against collections of 68% in 2020. The water and sewerage tax collections are 61% in 2021. AMC collects common water and sewerage charges which is a part of its property tax bill. One of the reasons of average collection efficiencies of these cities is due to COVID-19. The cities have bounced back in improving their property tax collections in the coming years.

Figure 13 Collection Efficiency of WSS taxes and property tax for four million plus cities for FY 2021-22 (in %)
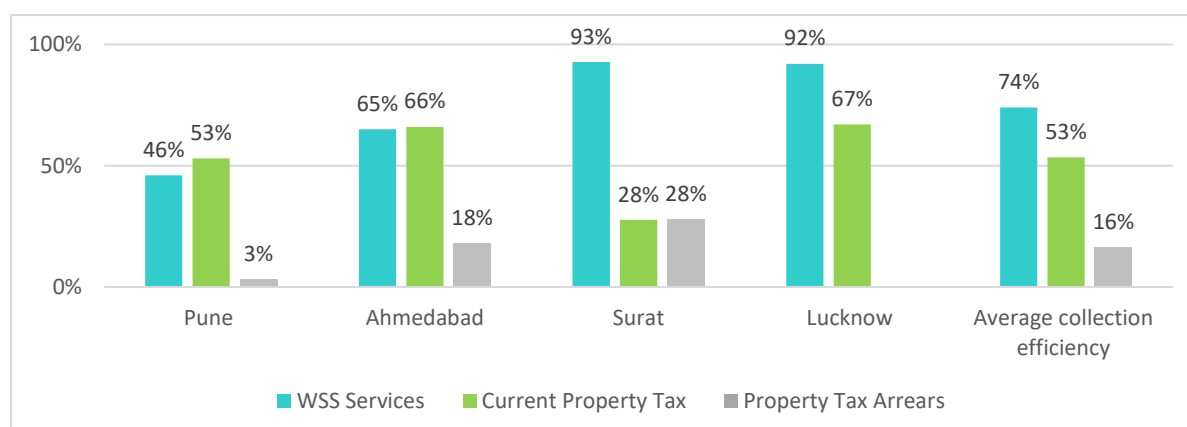
Table 4 Collection efficiency and cost recovery of property tax and WSS taxes of four million plus cities (in %)

| Municipal Corporation | Year of PAS Data | Collection Efficiency | | | Cost Recovery |
		WSS Services	Current Property Tax	Property Tax Arrears	WSS Services
Pune	2019-20	51%	40%	6%	143%
	2020-21	46%	53%	3%	141%
Ahmedabad	2018-19	67%	68%	14%	45%
	2019-20	66%	68%	15%	43%
	2020-21	61%	62%	16%	44%
	2021-22	65%	66%	18%	55%
Surat	2019-20	86%	93%	28%	137%
	2020-21	86%	89%	20%	133%
	2021-22	83%	93%	31%	138%
Lucknow	2021-22	92%	67%	ND	82%

Cost Recovery of WSS Services

Pune and Surat Municipal Corporations are able to achieve more than 100% cost recovery in WSS services.

According to MoHUA's SLB, urban local bodies should achieve 100% cost recovery in water, sanitation and solid waste management services. The consolidated cost recovery of WSS services was well above the benchmark in Pune (141-143%) and Surat (133-140%). Cost recovery was good in Lucknow (82%) and low in Ahmedabad (43-55%). The average cost recovery of these four million plus cities is 104%.

Figure 14 Cost Recovery of WSS Services of four million plus cities for FY 2019-20 (in %)
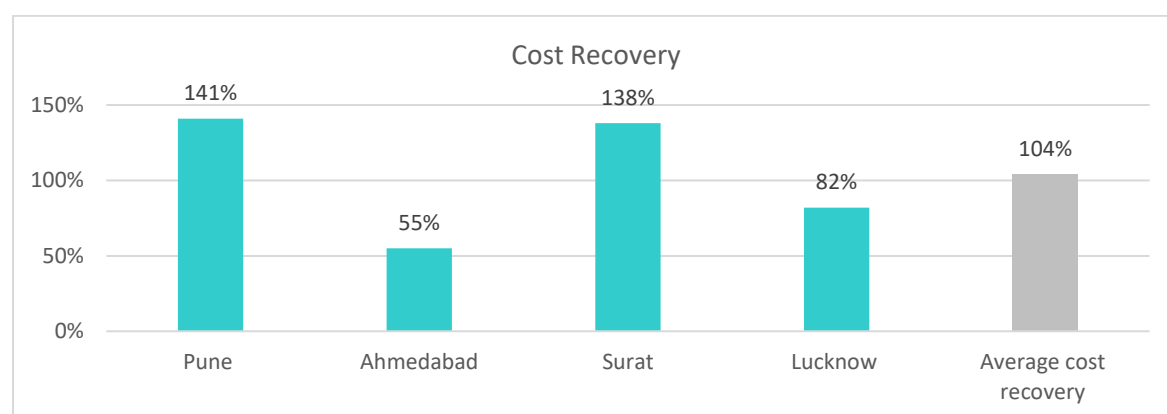
Annex 3: Creditworthiness Analysis of Other Cities

3.1 Creditworthiness analysis for cities with one-four million population

The universe of one-four million population cities covers Vadodara Municipal Corporation (73), Rajkot Municipal Corporation (61.4), Pimpari Chinchwad Municipal Corporation (77.3), Aurangabad Municipal Corporation (59.6) , Indore Municipal Corporation (71.6), Dhanbad Municipal Corporation (51.4), Raipur Municipal Corporation (61.6), Ranchi Municipal Corporation (57.2), Warangal Municipal Corporation(58.7), Agra Municipal Corporation (57.6), Bareilly Municipal Corporation(45.9), Moradabad Municipal Corporation(60), Allahabad Municipal Corporation(49.4), Madurai Municipal Corporation(52.6), Vishakhapatnam Municipal Corporation(69.7), Vijayawada Municipal Corporation (68.1).

Revenue Profile

PCMC has the highest revenue income in terms of size and per capita revenue income followed by Indore, Vadodara and Vishakhapatnam in the universe of cities with population from one-four million.

Among the universe of cities with population of cities with one-four million, PCMC in Maharashtra has the highest revenue size of INR 4130 crores followed by Indore MC with INR 1565 crores, Vadodara MC with INR 1425 crores and Vishakhapatnam MC at 974 crores. The lowest revenue size is of Dhanbad MC at INR 87 crores.

Figure 15 Revenue income of cities with population one to four million for FY 2021-22 (in INR crores)

Total Revenue Income (in INR crores)

City	Value
Pimpari Chinchwad Municipal Corporation	4130
Indore Municipal Corporation*	1565
Vadodara Municipal Corporation	1425
Visakhapatnam Municipal Corporation	974
Rajkot Municipal Corporation	716
Aurangabad Municipal Corporation*	636
Raipur Municipal Corporation*	558
Prayagraj (Allahabad) Municipal Corporation	502
Madurai Municipal Corporation	400
Agra Municipal Corporation	325
Bareilly Municipal Corporation	312
Vijaywada Municipal Corporation	299
Moradabad Municipal Corporation	212
Ranchi Municipal Corporation	190
Warangal Municipal Corporation	144
Dhanbad Municipal Corporation	87

Source: Analysis based on income-expenditure statement of one-four million plus cities available on City Finance Portal, 2022

Pimpari Chinchwad Municipal Corporation (PCMC) in Maharashtra has highest per capita revenue income of INR 17,863 which is four times higher than the average of peer cities with of one-four million population. The major reason of high per capita revenue income is strong economic base of the city which is translated into its revenue base. PCMC is the third fastest growing city in India and has strong automotive, information technology and manufacturing industries. (Times of India, 2018) The average per capita revenue income of one-four million cities is INR 3,979 considered from the pool of peer cities. Only four cities (PCMC, Vadodara, Indore and Vishakhapatnam) out of the universe of 16, have higher than average per capita revenue income. The lowest per capita revenue income is of Dhanbad Municipal Corporation (DMC) which is INR 541 in FY 2021-22. One of the reasons being low tax collections due to COVID-19 situation. Even if the city bounces back to improving collection efficiency, the per capita income remains low due to its low revenue size.

Figure 16 Per Capita Revenue Income: One-Four Million Cities for FY 2021-22 (in INR)

Per Capita Revenue Income (in INR)

City	Value
Pimpari Chinchwad Municipal Corporation	17863
Vadodara Municipal Corporation	5567
Indore Municipal Corporation	5426
Visakhapatnam Municipal Corporation	4296
Aurangabad Municipal Corporation	3923
Average of one-four million plus cities	3881
Raipur Municipal Corporation	3524
Rajkot Municipal Corporation	3500
Prayagraj (Allahabad) Municipal Corporation	3215
Bareilly Municipal Corporation	3038
Madurai Municipal Corporation	2543
Vijaywada Municipal Corporation	2158
Moradabad Municipal Corporation	2010
Agra Municipal Corporation	1694
Warangal Municipal Corporation	1411
Ranchi Municipal Corporation	1389
Dhanbad Municipal Corporation	541

Source: Analysis based on income-expenditure statement of one-four million plus cities available on City Finance Portal, 2022

Note: The average value of per capita revenue is calculated based on the database of universe of 16 cities.

The average contribution ratio of own tax revenues is 31%, non-tax is 24%, assigned revenues and compensations are 11% and revenue grants is 33% within the universe of one-four million plus cities. The own tax revenues of the cites comprise of property tax, water tax, solid waste management tax, sewerage charges/ sanitation tax, tree tax etc. whereas the non-tax revenues include development fees, user charges, rental income, income from sales and interest. Aurangabad Municipal Corporation had highest own tax contribution at 71% (INR 45,081 lakhs) for FY 2020-21 whereas Moradabad Municipal Corporation is lowest at 11% (INR 2346 lakhs) for FY 2021-22. Agra Municipal Corporation has the highest share of assigned

25

revenues and compensations at 73%. Warangal has the highest non-tax distribution at 62%. The share of revenue grant is highest for cities of Uttar Pradesh as compared to other Indian cities with Moradabad at 84%, Prayagraj at 81% and Bareilly at 78%.

Among the universe of one-four million cities, PCMC had the highest own tax revenue income in terms of size at INR 896 crore for FY 2021-22 whereas Moradabad Municipal Corporation had lowest own tax revenue income at INR 23 crore. PCMC had the highest non-tax revenue income in terms of size at INR 1249 crore whereas lowest was for Moradabad Municipal Corporation at INR 10 crore for FY 2021-22. PCMC received the highest share of revenue grant from the state government of Maharashtra in terms of size at INR 198 crore whereas Warangal received the lowest revenue grant from the state at INR 0.5 crore for FY 2021-22. One of the reasons might be COVID-19 pandemic effect, however, it is important to note that states like Maharashtra and Gujarat have strong finances and support ULBs by assigning revenue grants, subsidies and compensations.

Table 5 Distribution of revenue income of one-four million plus cities for FY 2021-22(in INR crore)

Distribution of revenue income of one-four million plus cites (in INR crore)					
Cities	Own Tax Revenue	Non-Tax Revenue	Assigned Revenues & Compensation	Revenue Grants, Contributions & Subsidies	Total revenue income
Aurangabad	451	120	0	65	636
Pimpari Chinchwad	896	1249	0	1984	4130
Vadodara	438	523	58	465	1483
Rajkot	241	410	134	65	850
Warangal	54	90	0	0	144
Raipur	140	118	62	299	620
Ranchi	55	46	0	89	190
Dhanbad	35	19	0	33	87
Indore	488	807	554	270	2119
Agra	73	252	237	0	562
Prayagraj (Allahabad)	74	22	0	405	502
Bareilly	52	17	0	243	312
Moradabad	23	10	0	178	213
Madurai	131	141	18	129	418
Visakhapatnam	391	582	152	0	1126
Vijaywada	129	168	48	1	347

Source: Analysis based on income-expenditure statement of one-four million plus cities available on City Finance Portal, 2022

Figure 17 Distribution of revenue income of one-four million plus cities for FY 2020-21 (in %)

Distribution of own tax, non-tax and revenue grants of one to four million plus cities (%)

City	Own-tax	Non-tax	Assigned	Revenue Grants
Average of one to four million plus cities	31%	24%	11.2%	33.2%
Vijaywada Municipal Corporation	43.3%	40.2%	16.2%	0.3%
Visakhapatnam Municipal Corporation	40%	44%	15.6%	0%
Madurai Municipal Corporation	33%	31%	4.4%	32%
Moradabad Municipal Corporation	11%	5%		84%
Bareilly Municipal Corporation	17%	6%		78%
Prayagraj (Allahabad) Municipal Corporation	15%	4%	0%	81%
Agra Municipal Corporation	22%	5%	72.9%	
Indore Municipal Corporation	31%	16%	35.4%	17%
Dhanbad Municipal Corporation	40%	22%		38%
Ranchi Municipal Corporation	29%	24%		47%
Raipur Municipal Corporation	25%	10%	11.1%	54%
Warangal Municipal Corporation	37%	62%		
Rajkot Municipal Corporation	34%	39%	18.7%	9%
Vadodara Municipal Corporation	31%	32%	4.1%	33%
Pimpari Chinchwad Municipal Corporation	22%	30%		48%
Aurangabad Municipal Corporation	71%	19%		10%

■ Own-tax Revenue to Total Revenue Income Ratio (%)
■ Non-tax Revenue to Total Revenue Income Ratio (%)
■ Assigned Revenue to Total Revenue Income Ratio (%)
■ Revenue Grants to Total Revenue Income Ratio (%)

Source: Analysis based on income-expenditure statement of one-four million plus cities available on City Finance Portal, 2022

Expenditure Management

PCMC has the highest revenue expenditure in terms of size and per capita expenditure followed by Indore, Vadodara and Rajkot in the universe of cities with population from one-four million.

Among the universe of cities with one-four million plus population, PCMC in Maharashtra has the highest revenue expenditure of INR 4002 crores followed by Indore MC with INR 1225 crores, Vadodara MC with INR 1076 crores and Rajkot MC at INR 792 crores.

Figure 18 Revenue Expenditure of cities with one- four million population for FY 2021-22 (in INR cr)

Total Revenue Expenditure (in INR crores)

City	Value
Pimpari Chinchwad Municipal Corporation	4002
Indore Municipal Corporation*	1225
Vadodara Municipal Corporation	1076
Rajkot Municipal Corporation	792
Aurangabad Municipal Corporation	673
Visakhapatnam Municipal Corporation	609
Raipur Municipal Corporation*	556
Prayagraj (Allahabad) Municipal Corporation	505
Madurai Municipal Corporation	366
Bareilly Municipal Corporation	343
Agra Municipal Corporation	304
Moradabad Municipal Corporation	209
Ranchi Municipal Corporation	194
Vijaywada Municipal Corporation	192
Warangal Municipal Corporation	159
Dhanbad Municipal Corporation	115

Source: Analysis based on income-expenditure statement of one-four million plus cities available on City Finance Portal, 2022

Per Capita Revenue Expenditure: The highest per capita revenue income of PCMC is translated into its highest per capita revenue expenditure at INR 17,311 among the average of peer cities of INR 3,764 in FY 2021-22. Dhanbad had lowest per capita expenditure at INR 791. Dhanbad had a revenue deficit prior to depreciation and interest in the last four assessment years (2018-2022) indicating weak revenue profile. One of the reasons being low property tax collections in Dhanbad which are extremely less at 29% FY 2019-20, 49% in FY

2020-21 and 36% in FY 2021-22. Also the cities in Jharkhand do not receive any GST compensations from the state whereas states like Maharashtra gives GST transfers to the ULBs.

Figure 19 Per Capita Revenue Expenditure: One-Four Million Cities for FY 2021-22 (in INR)
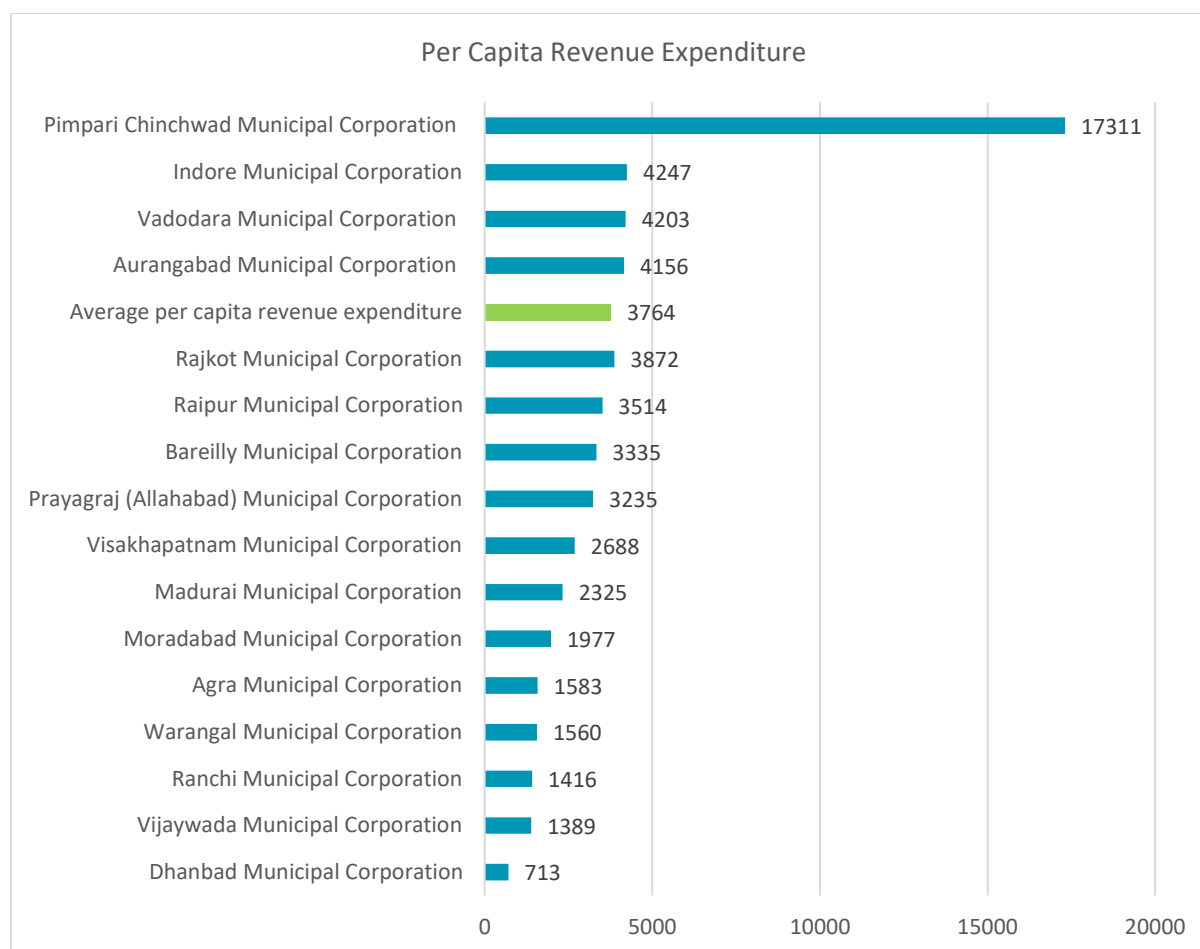
Source: Analysis based on income-expenditure statement of one-four million plus cities available on City Finance Portal, 2022

Note: The average value of per capita revenue is calculated based on the database of universe of 16 cities.

The universe of one to four million cities on an average spend 45% of its total revenue expenditure on fixed establishment and administration whereas 28% on its regular operations and maintenance. The analysis indicates Madurai Municipal Corporation spends the highest at 88% annually on its fixed expenditure (establishment +administrative expense) whereas Vishakhapatnam Municipal Corporation spends the lowest at 7% mainly because the state government pays for the salaries of permanent staff members. Agra, Prayagraj, Vadodara, Moradabad and Aurangabad spend more than 50% on their fixed expenses. Rajkot, Indore and Raipur spend higher on O&M than the average, whereas other cities within the universe spend less than the average on O&M of the city. This analysis has huge reflection in the overall WSS services offered by the cities.

Figure 20 Share of fixed (establishment + admin) and operations and maintenance expenditure of one to four million population ULBs for FY 2021-22 (in %)

Madurai Municipal Corporation — 12% / 88%
Agra Municipal Corporation — 19% / 74%
Prayagraj (Allahabad) Municipal Corporation — 18% / 66%
Vadodara Municipal Corporation — 20% / 61%
Aurangabad Municipal Corporation — 16% / 55%
Moradabad Municipal Corporation — 25% / 51%
Warangal Municipal Corporation — 45% / 47%
Bareilly Municipal Corporation — 23% / 46%
Average of one to four million plus cities — 28% / 45%
Rajkot Municipal Corporation — 34% / 41%
Indore Municipal Corporation — 32% / 39%
Raipur Municipal Corporation — 26% / 37%
Pimpari Chinchwad Municipal Corporation — 6% / 36%
Ranchi Municipal Corporation — 17% / 29%
Vijaywada Municipal Corporation — 64% / 24%
Dhanbad Municipal Corporation — 2% / 21%
Visakhapatnam Municipal Corporation — 85% / 7%

■ O&M/ Total revenue expenditure   ■ Fixed charge=(Establishment + Admin Int.)/ Revenue Expenditure (%)

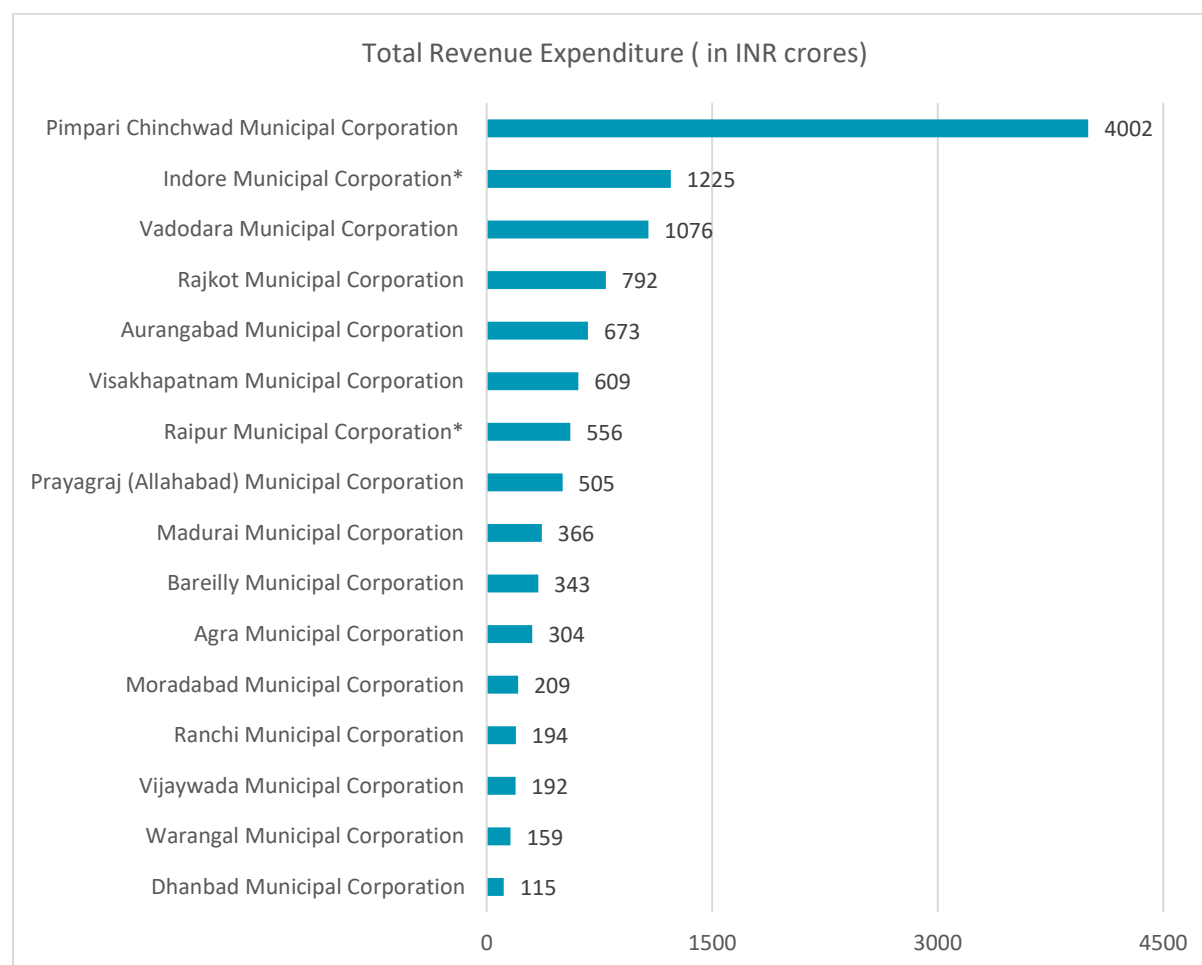*Source: Analysis based on income-expenditure statement of one-four million plus cities available on City Finance Portal, 2022*

Table 6 Distribution of revenue expenditure of one-four million plus cites for FY 2021-22 in INR crore

| Distribution of revenue expenditure of one-four million plus cites for FY 2021-22 (in INR crore)						
Cities	Establishment Expenses	Admin Expenses	O&M	Interest & Finance Charges	Depreciation	Other	Total revenue expenditure
Aurangabad	306	62	105	8	2	190	673
Pimpari Chinchwad	1248	173	254	12	949	1367	4002
Vadodara	640	13	220	7	274	202	1357
Rajkot	314	14	273	0	73	119	792
Warangal	67	8	71	0	57	12	216
Raipur	132	74	146	0	193	205	749
Ranchi	49	8	32	6	75	24	194
Dhanbad	21	2	2	2	18	69	115
Indore	417	63	390	32	250	72	1225
Agra	219	6	59	0	19	1	304
Prayagraj (Allahabad)	328	5	93	0	73	0	499
Bareilly	141	17	78	0	5	102	343
Moradabad	104	2	52	0	43	7	209
Madurai	318	6	45	3	0	1	372
Visakhapatnam	11	31	520	28	211	19	820
Vijayawada	38	9	123	12	30	10	222

Source: Analysis based on income-expenditure statement of one-four million plus cities available on City Finance Portal, 2022

Operating surplus and deficit

All the one to four million plus cities had operating surplus prior to depreciation and interest in FY 2021-22. PCMC had the highest operating surplus of INR 1857 crores followed by Vadodara MC at INR 719 crores and Vishakhapatnam at INR 630 crores which is reflected in their overall service level performance. Dhanbad MC had the lowest operating surplus prior to depreciation and interest in INR 55 crores.

Figure 21 Operating surplus/deficit prior to depreciation and interest for FY 2021-22 (in INR crores)

Operating surplus prior to depriciation and interest

City	Value
Pimpari Chinchwad Municipal Corporation	1089
Vadodara Municipal Corporation	630
Indore Municipal Corporation*	622
Visakhapatnam Municipal Corporation	603
Raipur Municipal Corporation*	194
Vijaywada Municipal Corporation	149
Ranchi Municipal Corporation	78
Prayagraj (Allahabad) Municipal Corporation	70
Moradabad Municipal Corporation	46
Warangal Municipal Corporation	42
Agra Municipal Corporation	40
Madurai Municipal Corporation	37
Rajkot Municipal Corporation	-3
Dhanbad Municipal Corporation	-7
Aurangabad Municipal Corporation	-11
Bareilly Municipal Corporation	-25

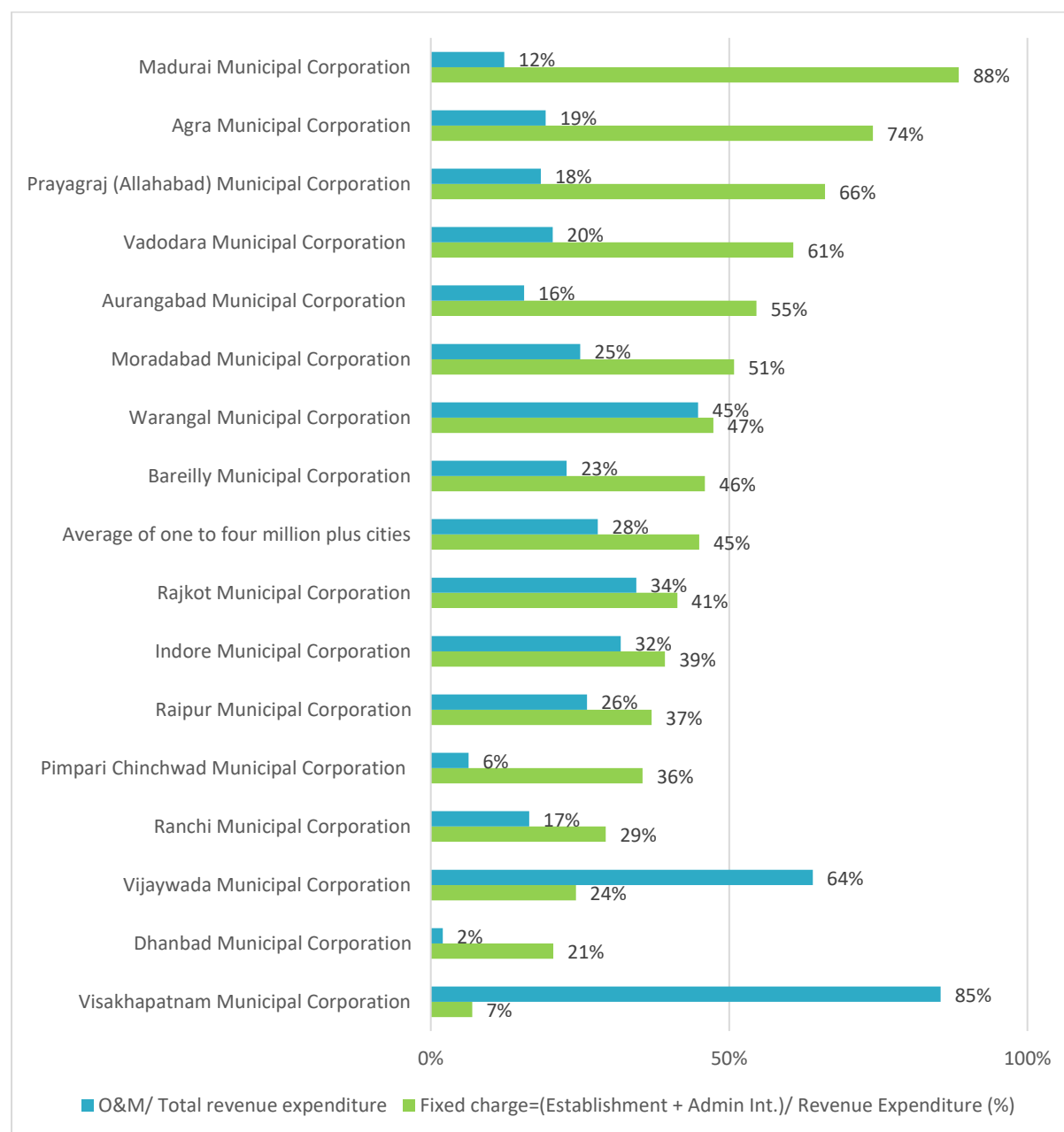*Source: Analysis based on income-expenditure statement of one-four million plus cities available on City Finance Portal, 2022*

*Note: Analysis for Aurangabad, Raipur and Indore MC is done based on FY 2020-21 due to data availability.

Liquidity profile

All the one to four million plus cities have a positive liquidity ratio prior to depreciation, indicating adequate liquidity profile, adequate cash balance and marketable securities as dated on March 31st, 2022; through which they can comfortably meet their future operating expenses.

Dhanbad Municipal Corporation has the highest quick ratio among the peers in the group of one-four million plus cities-prior to depreciation, cash and bank balance of INR 46,664 lakhs and general fund investments of INR 2357 lakhs as dated on March 31st, 2021. This is only because Dhanbad spends less than other cities from the peer group. This will allow DMC to

comfortably meet six years of its operating expenses through existing cash balance and marketable securities. Other municipal corporations like Ranchi, Aurangabad, Vijayawada, Vishakhapatnam, PCMC, Raipur and Warangal Municipal Corporations have a higher quick ratio, indicating an adequate liquidity profile, cash balance and investments which will help the cities in meeting their future operating expense for atleast two years. All the one-four million plus cities have a positive quick ratio post depreciation and interest.

Figure 22 Liquidity test through quick ratio of one to four million plus cities for FY 2021-22

(Cash and bank balance + investments)/ Revenue Expenditure prior to depreciation

City	Value
Dhanbad Municipal Corporation	6.4
Ranchi Municipal Corporation	5.9
Aurangabad Municipal Corporation	2.5
Vijaywada Municipal Corporation	2.4
Visakhapatnam Municipal Corporation	2.2
Pimpari Chinchwad Municipal Corporation	2.1
Raipur Municipal Corporation	1.3
Warangal Municipal Corporation	1.3
Vadodara Municipal Corporation	0.9
Moradabad Municipal Corporation	0.8
Agra Municipal Corporation	0.8
Indore Municipal Corporation	0.7
Rajkot Municipal Corporation	0.7
Madurai Municipal Corporation	0.3
Prayagraj (Allahabad) Municipal Corporation	0.2
Bareilly Municipal Corporation	0.2

Source: Analysis based on income-expenditure statement of one-four million plus cities available on City Finance Portal, 2022

Debt Servicing Ability

Most of the Corporations from the universe of one to four million plus cities have a positive Interest Coverage Ratio (ICR) and can comfortably pay for their future debt obligations from their operating surplus prior to depreciation and interest.

Warangal Municipal Corporation has the highest ICR within the pool of cities due to null interest charges, other cities like PCMC, Vadodara, Rajkot, Raipur, Ranchi and Indore have high ICR indicating their capability to meet future debt obligations through their operating surplus (prior to depreciation and interest). Vijayawada Municipal Corporation has the highest leverage percentage of 71% followed by Madurai MC at 25%, Ranchi at 19%. Aurangabad, Dhanbad and Madurai have a negative ICR indicating challenges in being creditworthy and paying for future debt obligations.

Figure 23 Leverage ratio of one-four million size cities for FY 2021-22

Total borrowings/ (Reserves + municipal fund)

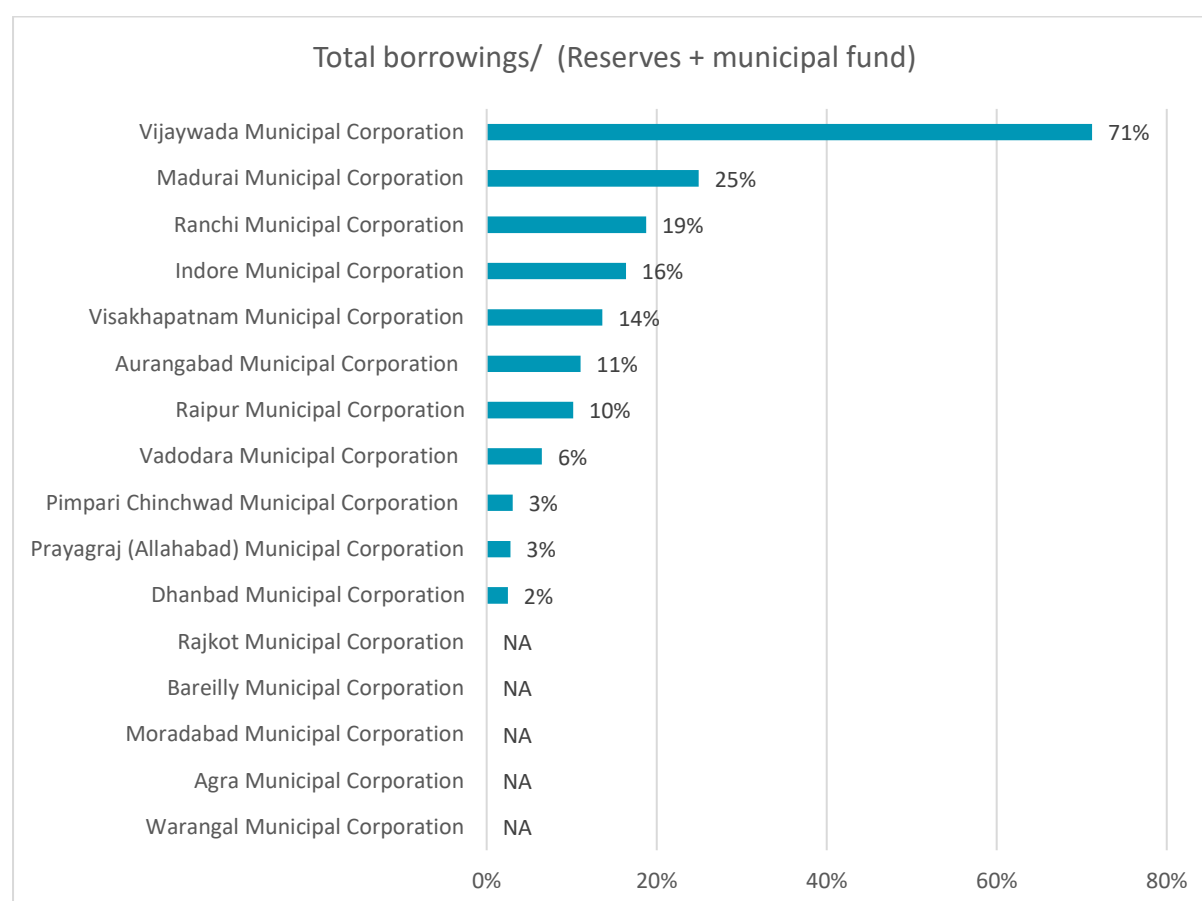| City	Leverage
Vijaywada Municipal Corporation	71%
Madurai Municipal Corporation	25%
Ranchi Municipal Corporation	19%
Indore Municipal Corporation	16%
Visakhapatnam Municipal Corporation	14%
Aurangabad Municipal Corporation	11%
Raipur Municipal Corporation	10%
Vadodara Municipal Corporation	6%
Pimpari Chinchwad Municipal Corporation	3%
Prayagraj (Allahabad) Municipal Corporation	3%
Dhanbad Municipal Corporation	2%
Rajkot Municipal Corporation	NA
Bareilly Municipal Corporation	NA
Moradabad Municipal Corporation	NA
Agra Municipal Corporation	NA
Warangal Municipal Corporation	NA

Source: Analysis based on income-expenditure statement of one-four million plus cities available on City Finance Portal, 2022

Note: Rajkot, Bareilly, Moradabad, Agra and Warangal Municipal Corporations have not reported any form of borrowings in FY 2020-21 and 2021-22.

Borrowing Capacity of cities with one-four million population

Pimpri Chinchwad Municipal Corporation has the highest borrowing capacity of INR 2722 crores due to its strong operating surplus profile, followed by Vadodara at INR 1576 crores, Indore at INR 1555 crores, Vishakhapatnam at INR 1509 crores and Raipur at INR 486 crores. This is estimated based on calculating prior to depreciation and interest for FY 2021-22. Currently, PCMC has only borrowed INR 196 crores which indicates it has only borrowed 7% of its total capacity. Cities like Warangal, Agra, Moradabad and Bareilly did not report any borrowings for FY 2021-22; however, these cities have a capacity from INR 100 crores to INR 116 crores. Cities like Rajkot, Dhanbad, Aurangabad and Bareilly had operating deficit prior to depreciation and interest, hence, these cities did not have any borrowing capacity. If these cities improved their revenue income and translated their operating deficit to surplus, they will improve their borrowing capacity.

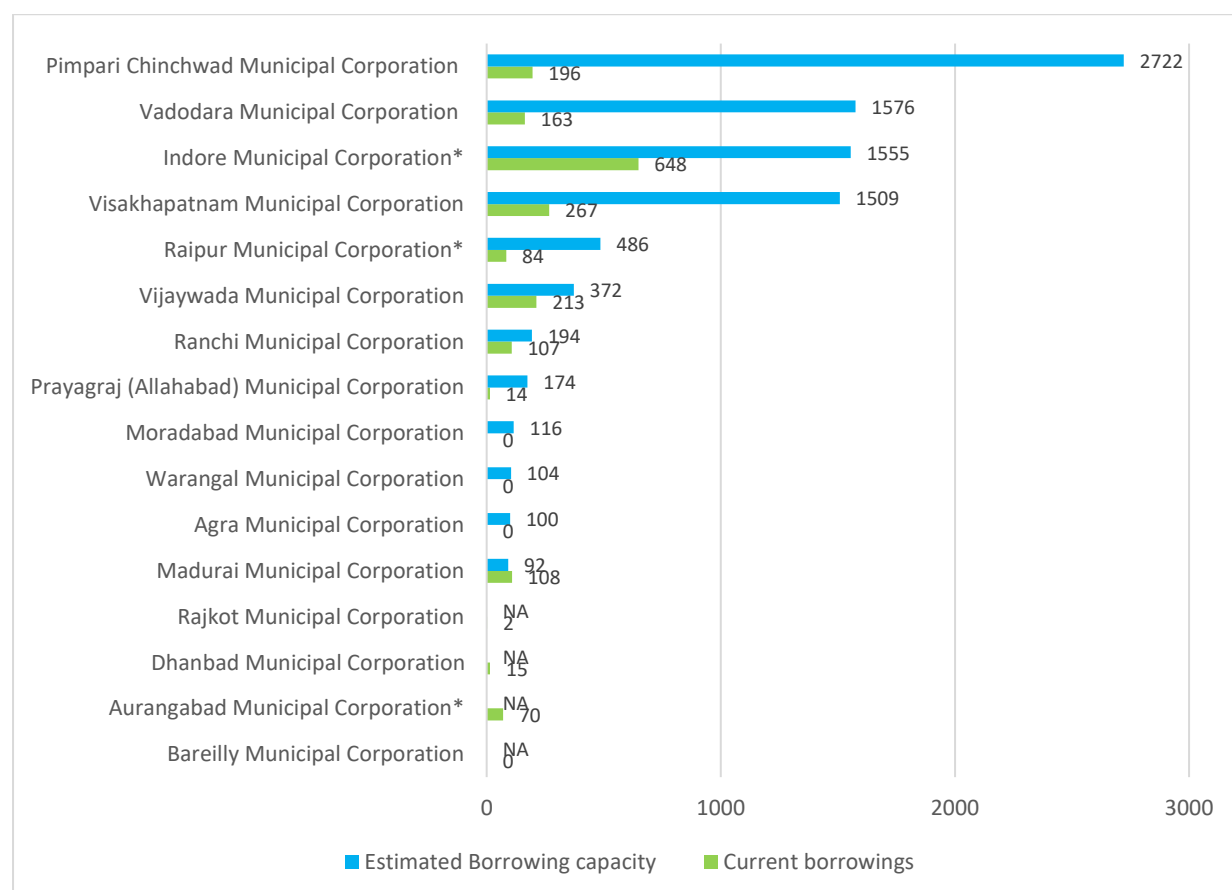Figure 24 Estimated borrowing capacity vs current borrowings of one-four million plus cities based on FY 2021-22 (in INR crores)

Source: Analysis based on income-expenditure statement of one-four million plus cities available on City Finance Portal, 2022

*Note: Analysis for Aurangabad, Raipur and Indore MC is done based on FY 2020-21 due to data availability.

WSS Service levels of one-four million cities

This section analyses the service level benchmarks of the municipal corporations with a population of 1-4 million.

Water supply

The service level benchmark for coverage of water supply connections is 100%. In 2019-20, Vadodara had the highest coverage (99%) followed by Pimpri Chinchwad and Vijayawada (>90%). Warangal, Madurai and Ranchi had very low levels of coverage (40-50%) and Dhanbad was the lowest at just 13%. Moradabad reported the best performance in reducing non-revenue water (15%) and Vijayawada, Rajkot, Warangal and Agra are also within the 20% benchmark. Pimpri Chinchwad, Raipur and Ranchi had very high levels of NRW (40-50%) and Dhanbad had the poorest performance at 54%. Only six out of the 16 cities had implemented at least some extent of water metering. Pimpri Chinchwad had the highest extent of water metering (92%) followed by Vishakhapatnam (31%) and Ranchi (19%). Moradabad had the highest per capita water supply (177 lpcd) followed by Agra (170), Vadodara (166) and Prayagraj (156). Dhanbad, Ranchi and Aurangabad had the lowest per capita water supply (<75 lpcd). Thus, the cities of Uttar Pradesh perform exceptionally well and the cities of Jharkhand report the poorest performance in per capita water supply.

Figure 25 Water Supply Service Coverage for one-four million cities for FY 2019-20 (in %)
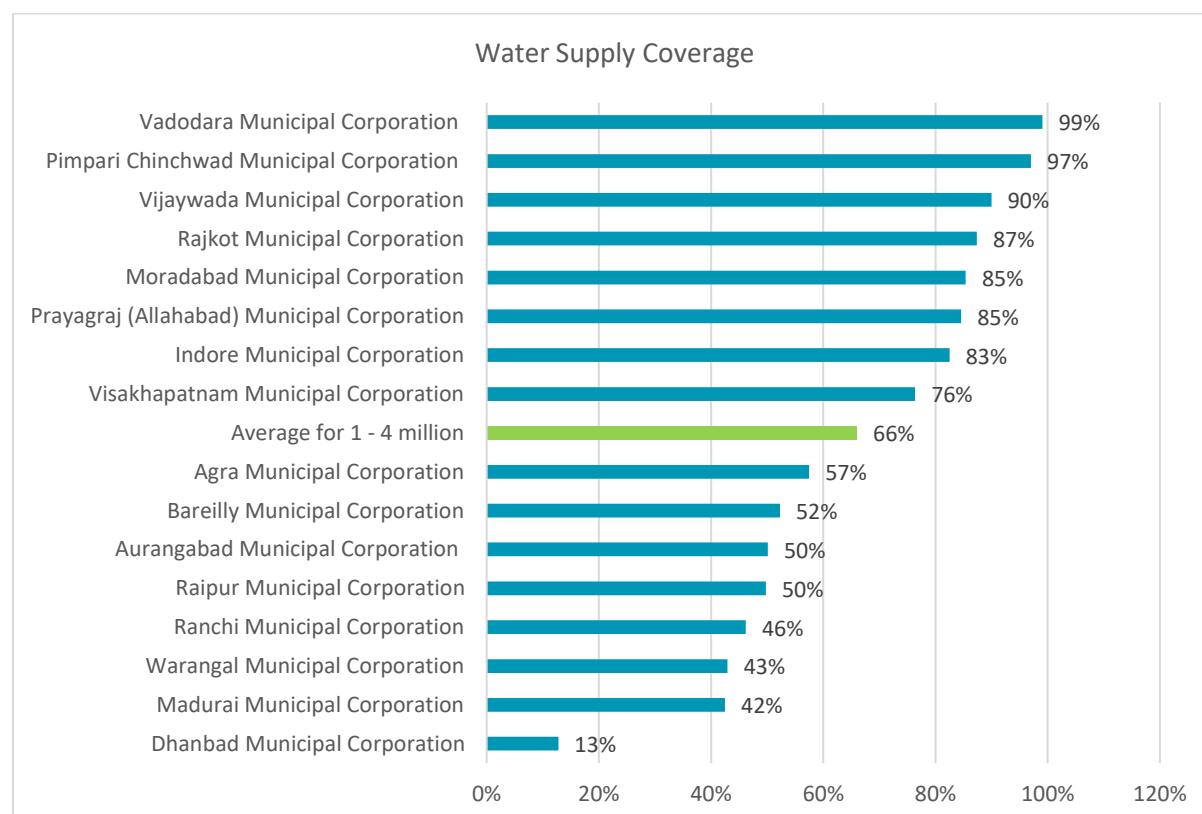
Source: Analysis based on Center for Water and Sanitation-PAS SLB Data for cities, 2020

Figure 26 Non-revenue water and water metering for one-four million cities for FY 2019-20 (in %)

Non-Revenue Water

City	%
Dhanbad Municipal Corporation	54%
Raipur Municipal Corporation	48%
Ranchi Municipal Corporation	46%
Pimpari Chinchwad Municipal Corporation	44%
Visakhapatnam Municipal Corporation	35%
Indore Municipal Corporation	31%
Aurangabad Municipal Corporation	31%
Average of one-four million	30%
Vadodara Municipal Corporation	27%
Prayagraj (Allahabad) Municipal Corporation	25%
Bareilly Municipal Corporation	22%
Warangal Municipal Corporation	20%
Agra Municipal Corporation	20%
Rajkot Municipal Corporation	19%
Vijaywada Municipal Corporation	16%
Moradabad Municipal Corporation	15%

Source: Analysis based on Center for Water and Sanitation-PAS SLB Data for cities, 2020

Metering of water connections

City	%
Pimpari Chinchwad Municipal Corporation	92%
Visakhapatnam Municipal Corporation	31%
Ranchi Municipal Corporation	19%
Average for 1 - 4 million	15%
Raipur Municipal Corporation	11%
Vijaywada Municipal Corporation	9%
Vadodara Municipal Corporation	7%
Dhanbad Municipal Corporation	4%
Warangal Municipal Corporation	1%
Indore Municipal Corporation	1%
Agra Municipal Corporation	0%
Bareilly Municipal Corporation	0%
Rajkot Municipal Corporation	0%
Madurai Municipal Corporation	0%
Moradabad Municipal Corporation	0%
Prayagraj (Allahabad) Municipal Corporation	0%
Aurangabad Municipal Corporation	0%

Source: Analysis based on Center for Water and Sanitation-PAS SLB Data for cities, 2020

37

Sanitation

Vadodara, Rajkot, Pimpri Chinchwad, Aurangabad and Allahabad have predominantly off-site sanitation systems. Agra, Bareilly, Indore and Vishakhapatnam have a combination of on-site and off-site sanitation. Moradabad, Raipur, Ranchi, Warangal, Dhanbad and Vijayawada rely mostly on on-site sanitation solutions. Vadodara, Indore, Aurangabad, Ranchi and Raipur had nearly total sanitation coverage. Toilet coverage is 100% for all the one-four million plus cities except Vijayawada at 93%. Warangal and Agra had the lowest coverage (~30%). Aurangabad and Vishakhapatnam had exceptionally high treatment capacity for sanitation (>200%) followed by Rajkot, Raipur, Madurai, Indore and Pimpri Chinchwad. Dhanbad and Treatment capacity was very low in Dhanbad (40%) and Warangal (31%) and lowest in Bareilly (13%). The extent of treated wastewater reuse was exceptionally high in Aurangabad and Madurai (93%) and above the 20% benchmark in Agra (35%) and Indore (30%).

Figure 27 Sanitation (FSSM/wastewater) coverage for one-four million cities for FY 2019-20 (in %)

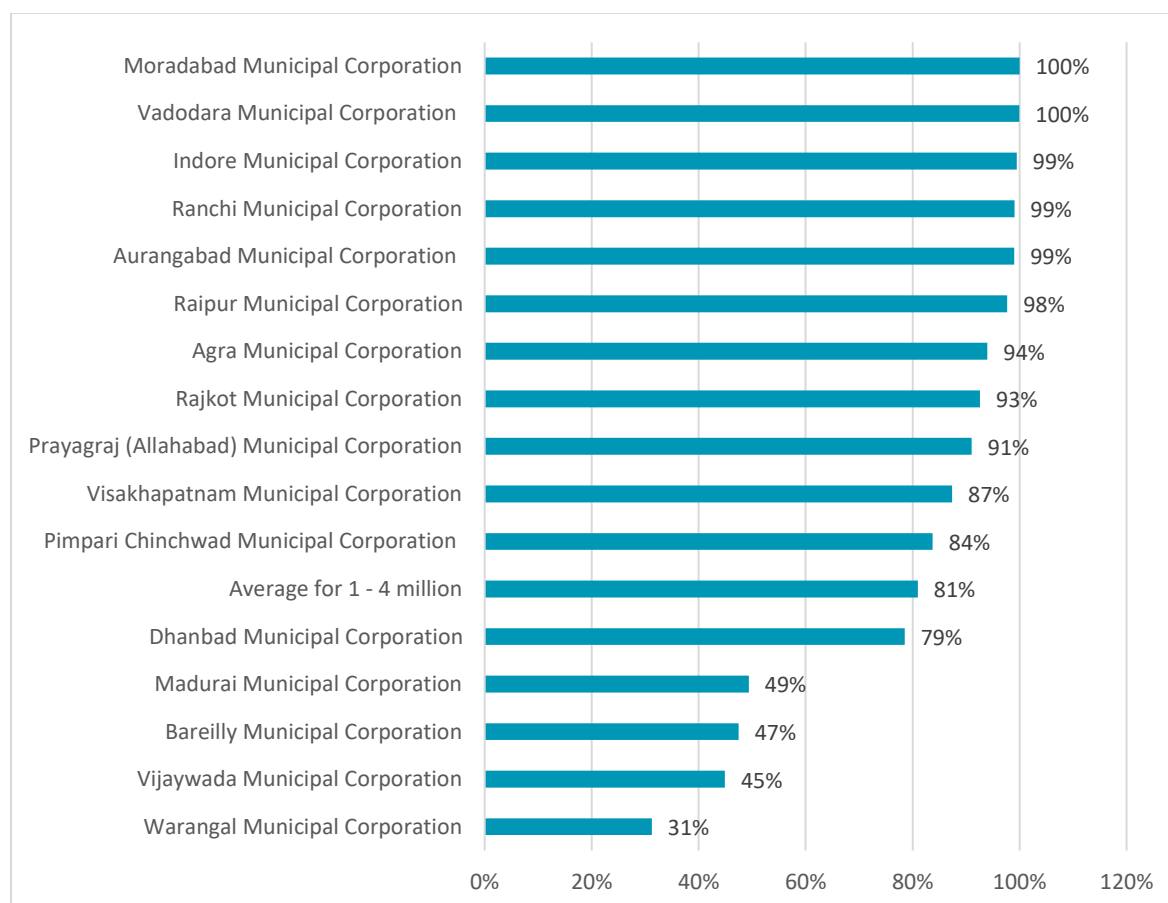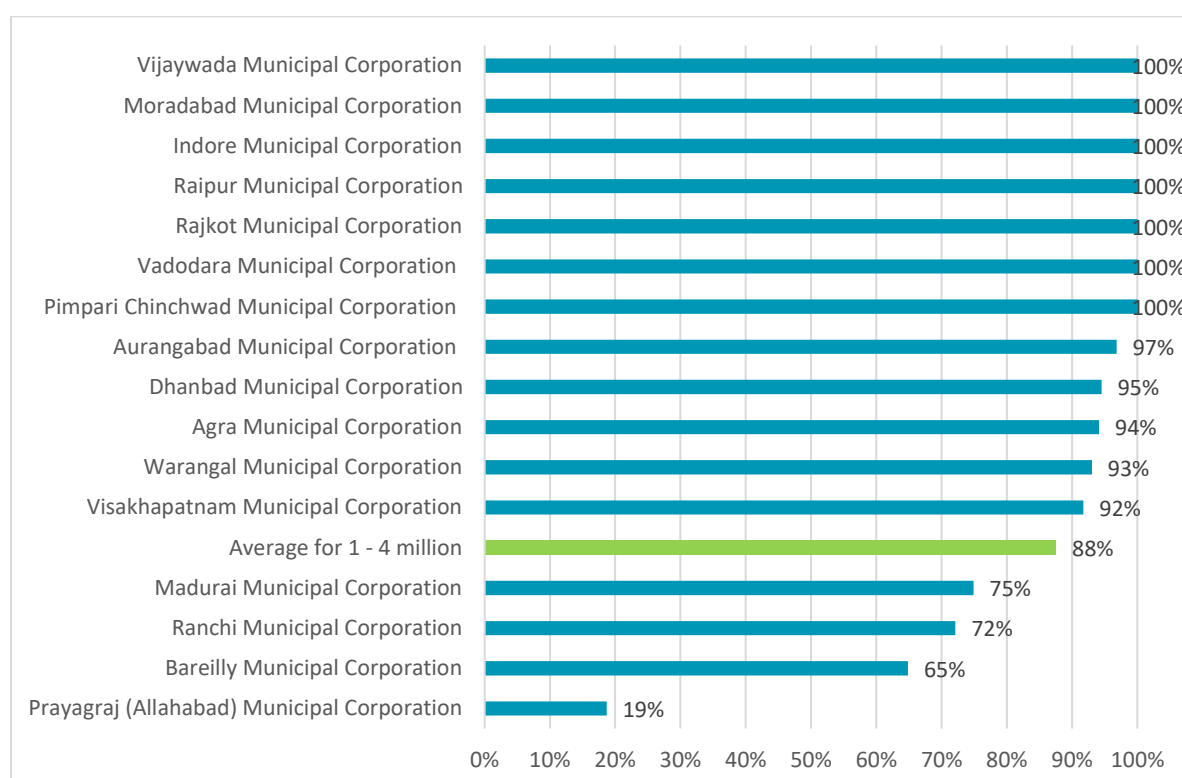*Source: Analysis based on Center for Water and Sanitation-PAS SLB Data for cities, 2020*

Solid Waste Management

Out of the 16 cities studied, 12 had very high levels of SWM coverage (>90%). Coverage was moderate in Ranchi, Bareilly and Madurai (65-75%) and exceptionally low in Prayagraj (19%). The treatment capacity of solid waste was exceptionally high in Raipur (220%). Indore, Aurangabad, Rajkot, Bareilly and Moradabad also performed well (100-150%). Vijayawada (45%) and Vishakhapatnam (39%), both cities of Andhra Pradesh, had low treatment capacity. Agra's treatment capacity was the lowest at just 16% which is stark different from the other three cities of Uttar Pradesh covered in this study.

Figure 28 SWM Coverage for one-four million cities for FY 2019-20 (in %)

City	Coverage
Vijaywada Municipal Corporation	100%
Moradabad Municipal Corporation	100%
Indore Municipal Corporation	100%
Raipur Municipal Corporation	100%
Rajkot Municipal Corporation	100%
Vadodara Municipal Corporation	100%
Pimpari Chinchwad Municipal Corporation	100%
Aurangabad Municipal Corporation	97%
Dhanbad Municipal Corporation	95%
Agra Municipal Corporation	94%
Warangal Municipal Corporation	93%
Visakhapatnam Municipal Corporation	92%
Average for 1 - 4 million	88%
Madurai Municipal Corporation	75%
Ranchi Municipal Corporation	72%
Bareilly Municipal Corporation	65%
Prayagraj (Allahabad) Municipal Corporation	19%

Source: Analysis based on Center for Water and Sanitation-PAS SLB Data for cities, 2020

Collection Efficiency of property and WSS taxes

Generally, very few municipal corporations have a high collection efficiency for their own taxes and non-tax revenues. Also, tax and non-tax revenue collections were negatively impacted by the COVID-19 pandemic in FY 2019-20. The average collection efficiency of WSS taxes was 53%. The collection efficiency of WSS taxes and charges was highest in Vadodara (89%) followed Vijayawada (81%) and lowest in Warangal (19%) and Aurangabad (18%). Within the universe of one-four million cities, ten cities had their WSS collection efficiencies higher than the average, whereas six cities had lower than the average.

Figure 29 Collection Efficiency of WSS taxes for one-four million cities for FY 2019-20 (in %)

City	Collection Efficiency
Vadodara Municipal Corporation	89%
Vijaywada Municipal Corporation	81%
Raipur Municipal Corporation	69%
Moradabad Municipal Corporation	65%
Madurai Municipal Corporation	65%
Bareilly Municipal Corporation	64%
Dhanbad Municipal Corporation	62%
Visakhapatnam Municipal Corporation	61%
Pimpari Chinchwad Municipal Corporation	59%
Ranchi Municipal Corporation	54%
Average for 1 - 4 million	53%
Rajkot Municipal Corporation	40%
Agra Municipal Corporation	35%
Indore Municipal Corporation	32%
Prayagraj (Allahabad) Municipal Corporation	29%
Warangal Municipal Corporation	19%
Aurangabad Municipal Corporation	18%

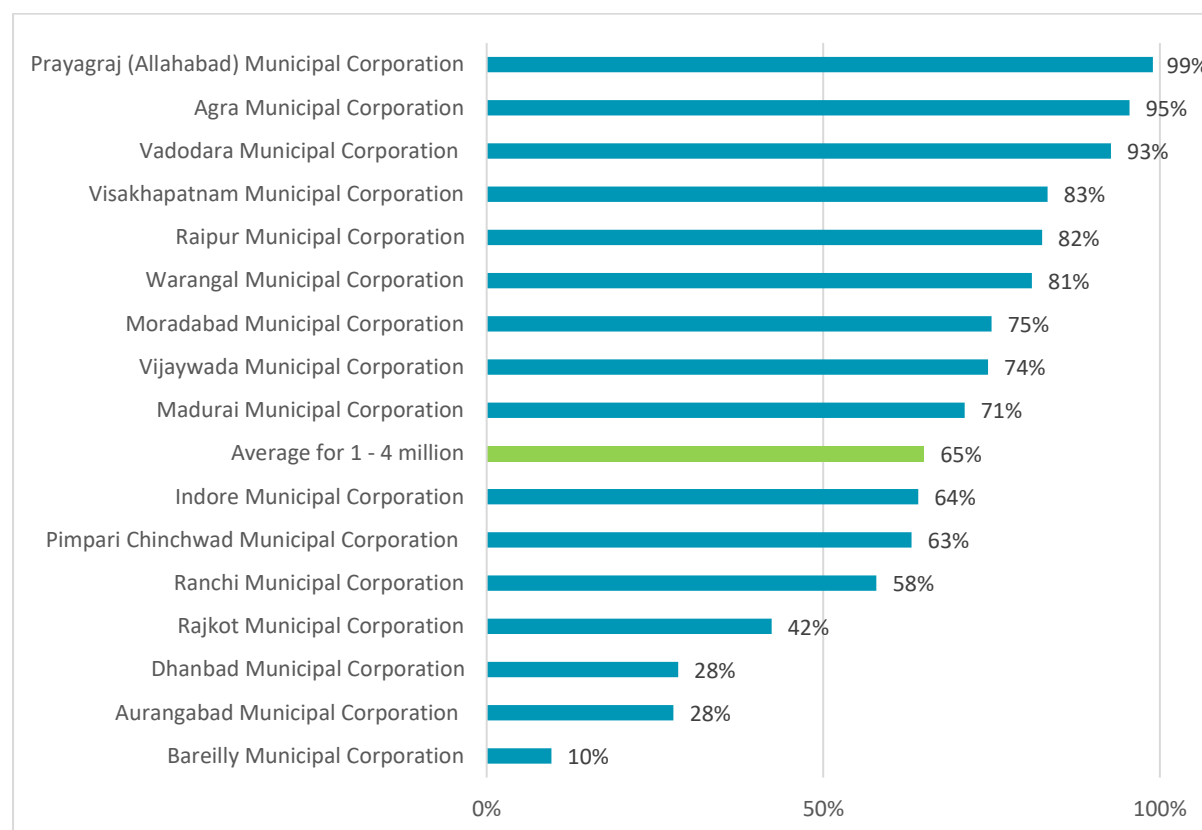*Source: Analysis based on Center for Water and Sanitation-PAS SLB Data for cities, 2020*

The current property tax collection efficiency was highest in Prayagraj (99%) followed closely by Agra (95%) and Vadodara (93%). It was quite low in Aurangabad (28%) and lowest in Bareilly (10%). The average collection efficiency of current property tax was 65% for one-four million cities. Out of this, nine cities had above average collection efficiency whereas seven cities had their collection efficiency below average. Collection efficiency of property tax arrears was highest in Moradabad (100%) followed by Raipur (94%) and very low in Aurangabad (10%) and Rajkot (8%). The collection in Bareilly and Prayagraj was negligible.

Figure 30 Collection Efficiency of property taxes for one-four million cities for FY 2019-20 (in %)


City	%
Prayagraj (Allahabad) Municipal Corporation	99%
Agra Municipal Corporation	95%
Vadodara Municipal Corporation	93%
Visakhapatnam Municipal Corporation	83%
Raipur Municipal Corporation	82%
Warangal Municipal Corporation	81%
Moradabad Municipal Corporation	75%
Vijaywada Municipal Corporation	74%
Madurai Municipal Corporation	71%
Average for 1 - 4 million	65%
Indore Municipal Corporation	64%
Pimpari Chinchwad Municipal Corporation	63%
Ranchi Municipal Corporation	58%
Rajkot Municipal Corporation	42%
Dhanbad Municipal Corporation	28%
Aurangabad Municipal Corporation	28%
Bareilly Municipal Corporation	10%

Source: Analysis based on Center for Water and Sanitation-PAS SLB Data for cities, 2020

Cost Recovery of WSS services

According to MoHUA's SLB, urban local bodies should achieve 100% cost recovery in water, sanitation and solid waste management services. The average cost recovery for WSS services in FY 2019-20 was highest in Indore (93%) followed by Vadodara (75%) and lowest in Rajkot(18%), Moradabad (18%) and Ranchi (15%). The average cost recovery of WSS services of the universe of one-four million cities was 52% out of which eight cities achieved above average whereas other eight achieved below average.

Figure 31 Cost Recovery of WSS Services of one-four million cities for FY 2019-20 (in %)
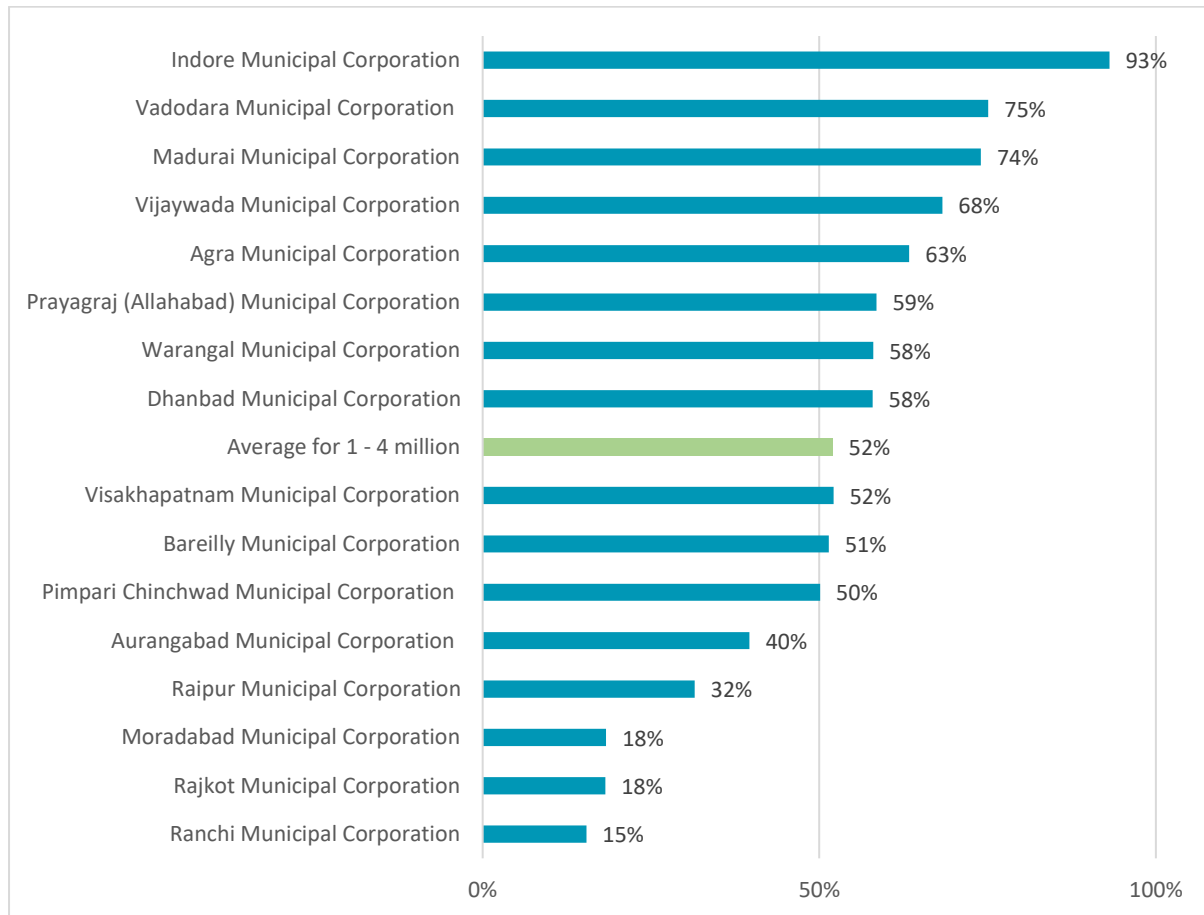
Source: Analysis based on Center for Water and Sanitation-PAS SLB Data for cities, 2020

3.2 Creditworthiness analysis of cities with less than a million population

The universe of less than one million population cities covers Jalgaon Municipal Corporation (62), Chas Municipal Corporation (60), Satna Municipal Corporation, Saharanpur Municipal Corporation, Nizamabad Municipal Corporation (53), Jamnagar Municipal Corporation (64), Erode Municipal Corporation (51), Bhilai Municipal Corporation (62), Bilaspur Municipal Corporation (53), Tumakuru Municipal Corporation (60).

Revenue Profile

Revenue size: Revenue Income and Expenditure :

Among the universe of cities with population less than a million, Jamnagar MC in Gujarat has the highest revenue size of INR 336 crores followed by Jalgaon MC with INR 268 crores and Tumakuru MC with INR 198 crores. Chas MC had the lowest revenue size of INR 19 crores The average revenue size of all the MC from this universe is INR 152 crores. Six MCs Jamnagar, Jalgaon, Tumakuru, Saharanpur, Bhilai, Erode had their revenue size higher than the average size whereas four cities- Satna, Nizamabad, Bilaspur and Chas had lower than the average.
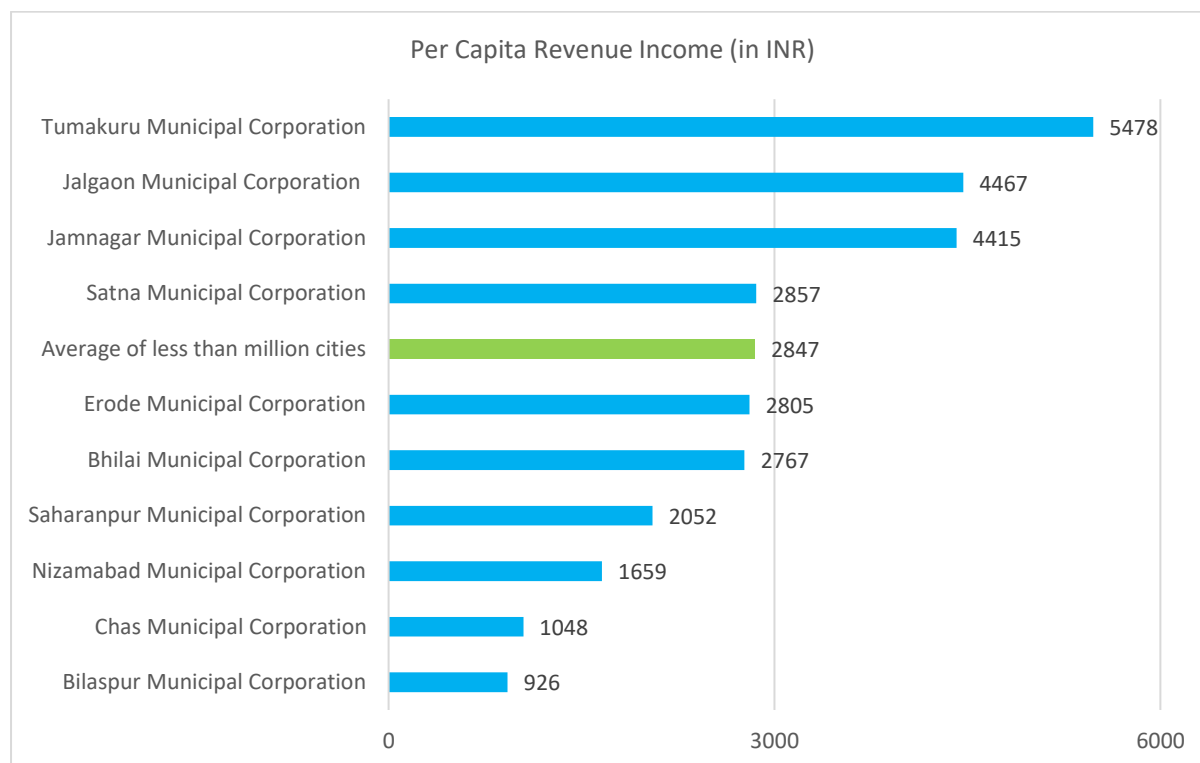
Figure 32 Revenue size of cities with less than one million population FY 2021-22 (in INR crores)
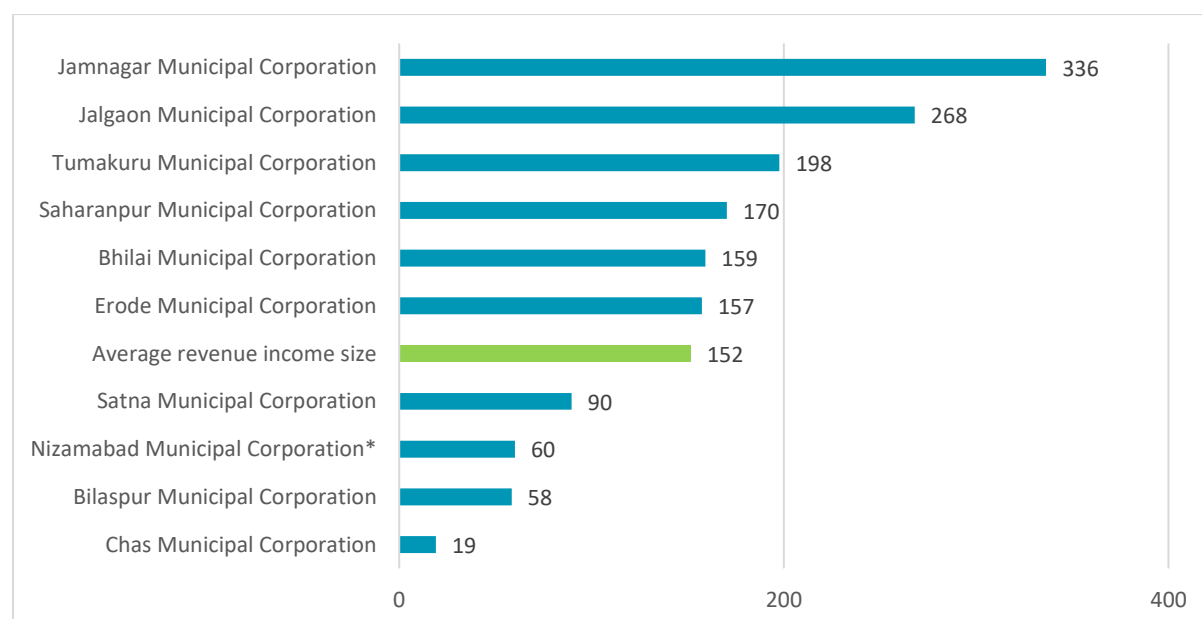
Source: Analysis based on income-expenditure statement of cities with less than a million-population available on City Finance Portal, 2022

*Note: Latest data for Nizamabad is considered from FY 2020-21 based on its availability.

Figure 33 Per Capita Revenue Income for less than one million plus cities (in INR)

Per Capita Revenue Income (in INR)

City	Value
Tumakuru Municipal Corporation	5478
Jalgaon Municipal Corporation	4467
Jamnagar Municipal Corporation	4415
Satna Municipal Corporation	2857
Average of less than million cities	2847
Erode Municipal Corporation	2805
Bhilai Municipal Corporation	2767
Saharanpur Municipal Corporation	2052
Nizamabad Municipal Corporation	1659
Chas Municipal Corporation	1048
Bilaspur Municipal Corporation	926

Source: Analysis based on income-expenditure statement of cities with less than a million population available on City Finance Portal, 2022

The highest per capita revenue income of Tumakuru MC is INR 5,478 for FY 2021-22. The average per capita revenue income of the universe of less than one million population cities is INR 2847. Tumakuru, Jalgaon, Jamnagar and Satna MCs have their per capita revenue income higher than the average revenue income. Bilaspur MC has the lowest per capita revenue income in the universe at INR 926.

Figure 34 Share of revenue income for less than a million cities (in %)
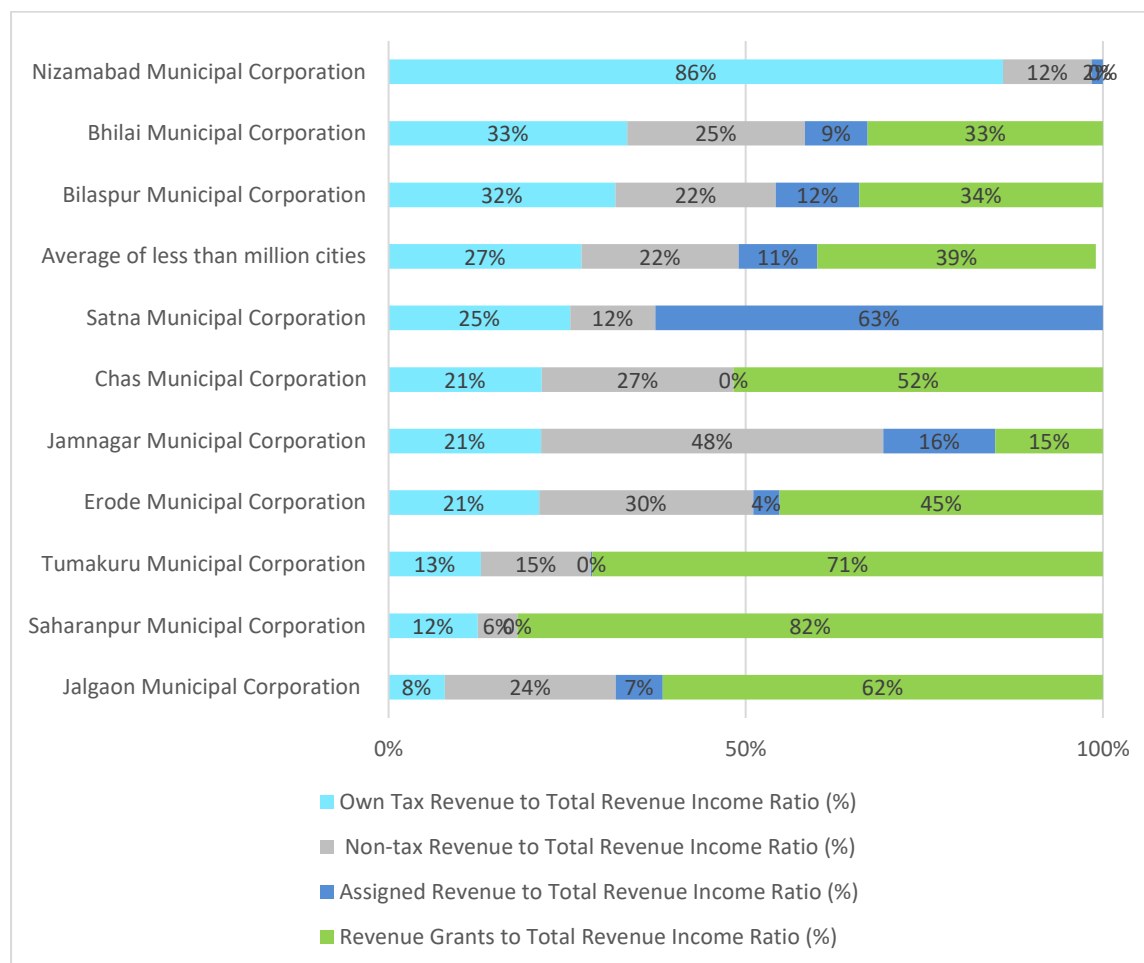
Source: Analysis based on income-expenditure statement of cities with less than a million population available on City Finance Portal, 2022

The average contribution ratio of own tax revenues is 27%, non-tax is 22%, assigned revenues and compensations are 11% and revenue grants is 39% within the universe of less than one million plus cities. The own tax revenues of the cites comprise of property tax, water tax, solid waste management tax, sewerage charges/ sanitation tax, tree tax etc. whereas the non-tax revenues include development fees, user charges, rental income, income from sales and interest. Nizamabad MC has the highest own tax contribution at 86% for FY 2021-22 whereas Jalgaon Municipal Corporation has lowest share at 8%. Jamnagar has the highest non-tax distribution at 62%. Satna Municipal Corporation reports the highest share of assigned revenues and compensations partly which is revenue grants at 63% respectively. The share of revenue grant is highest for cities of Uttar Pradesh as compared to other Indian cities with Saharanpur at 82% whereas Tumakuru has second highest share of revenue grants at 71%.

Table 7 Distribution of revenue income of less than a million cities for FY 2021-22 in INR crore

Distribution of revenue income of less than a million cities for FY 2021-22 in INR crore				
Cities	Own Tax Revenue	Non-Tax Revenue	Assigned Revenues & Compensation	Revenue Grants, Contributions & Subsidies	Total revenue income
Jalgaon	21	82	18	165	286
Nizamabad	53	8	1	0	61
Chas	4	5	0	10	19
Satna	23	67	56	0	146
Tumakuru	26	31	0	141	198
Saharanpur	21	9	0	140	170
Erode	33	53	6	71	163
Jamnagar	72	214	53	51	389
Bhilai	53	54	14	52	173
Bilaspur	0	58	33	0	92

Source: Analysis based on income-expenditure statement of cities with less than a million population available on City Finance Portal, 2022

Expenditure Management

Expenditure management includes fixed establishment expenses, administration, operations and maintenance and interest expense. Among the universe of cities with population less than a million, Jamnagar MC in Gujarat had the highest revenue expenditure of INR 288 crores followed by Erode MC with INR 244 crores and Saharanpur MC with INR 225 crores. Chas MC had the lowest revenue expenditure of INR 20 crores. The average revenue expenditure of all the MC from this universe is INR 157 crore. Five MCs Jamnagar, Erode, Saharanpur, Jalgaon and Bhilai spent higher than the average expenditure whereas five cities- Bilaspur, Satna, Tumakuru, Nizamabad and Chas spent lower than the average.
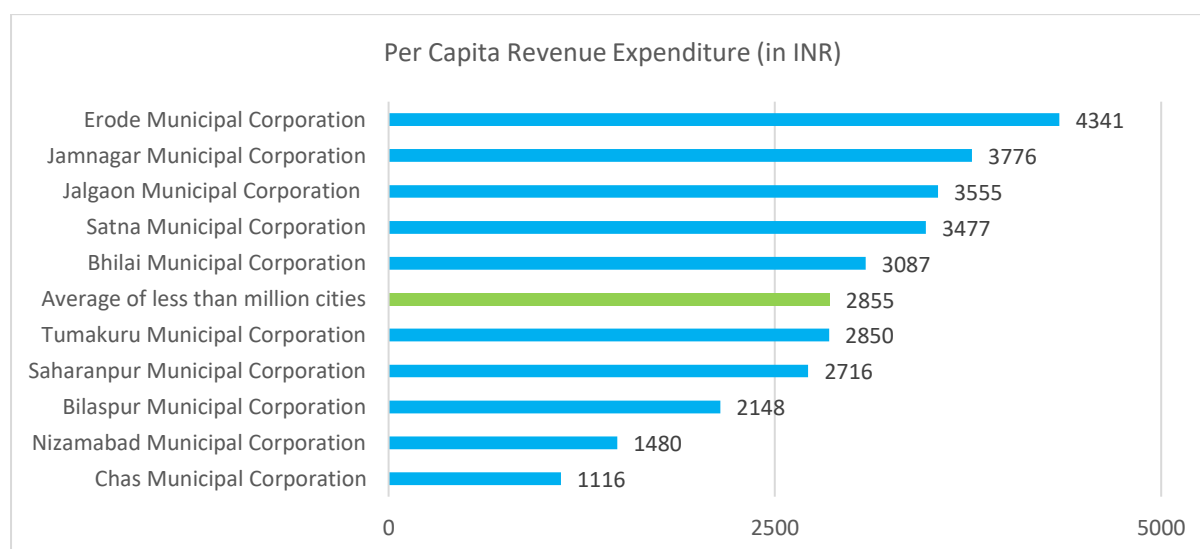
Figure 35 Revenue expenditure of cities with less than one million population FY 2021-22 (in INR crores)
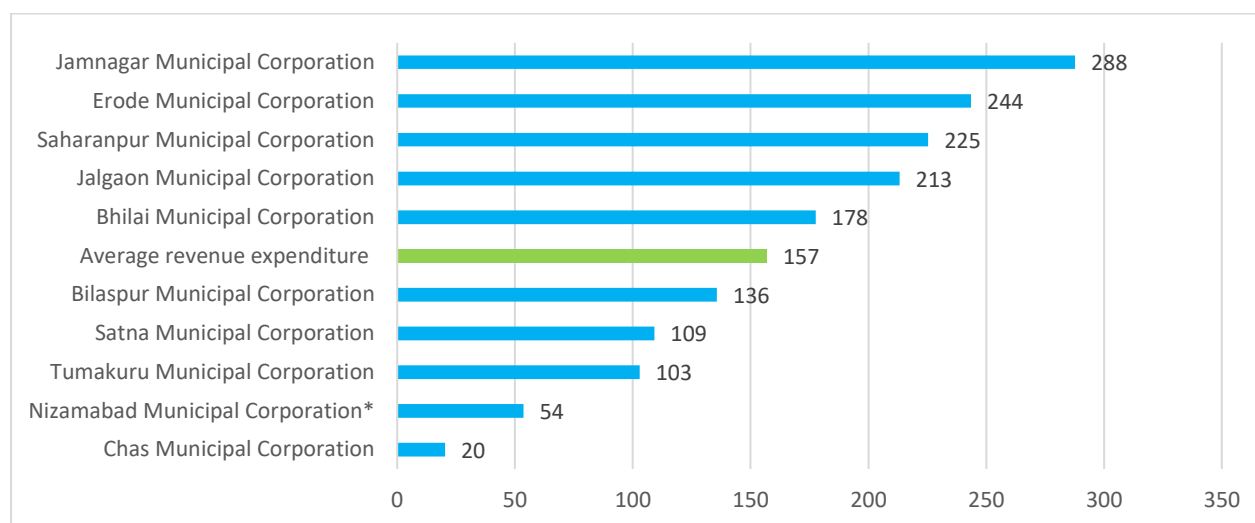
Source: Analysis based on income-expenditure statement of cities with less than a million population available on City Finance Portal, 2022

The average per capita revenue expenditure of less than one million population cities is INR 2,915. Erode MC has the highest per capita revenue expenditure at INR 4,341 and Chas MC has the lowest per capita revenue expenditure at INR 1,116. Erode, Jamnagar, Jalgaon, Satna and Bhilai have per capita revenue expenditure higher than the average revenue expenditure whereas cities like Tumakuru, Saharanpur, Bilaspur, Nizamabad and Chas MC have per capita revenue expenditure lower than the average of less than one million cities.

Figure 36 Per Capita Revenue Expenditure for less than one million plus cities (in INR)

Source: Analysis based on income-expenditure statement of cities with less than a million population available on City Finance Portal, 2022
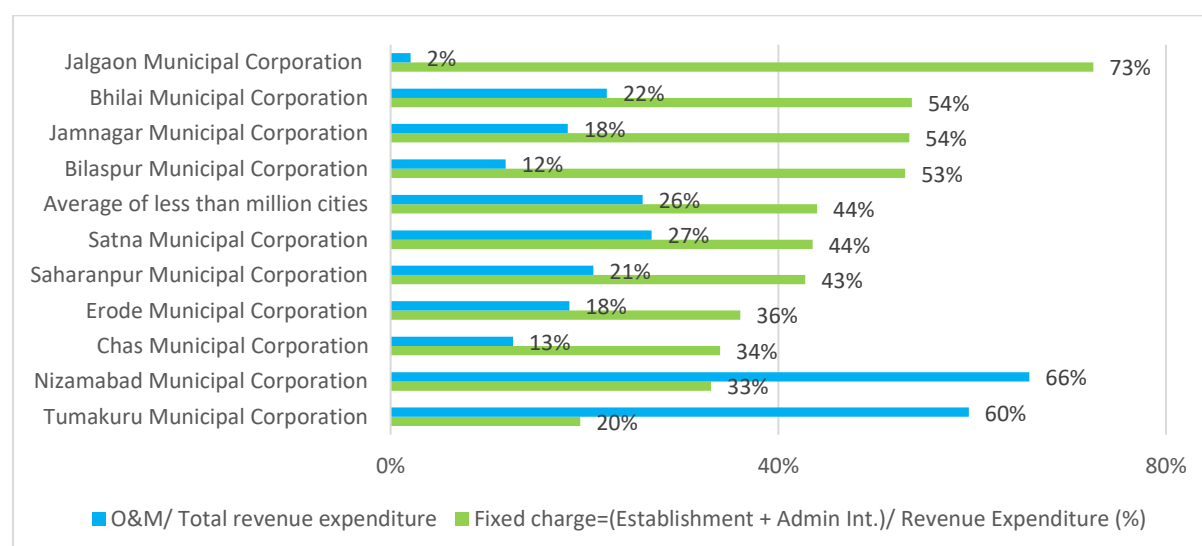
In the universe of less than one million cities, the average fixed expenses is 44% whereas the average operations and maintenance expense is 26%. The analysis indicates Jalgaon MCspent the highest of 73% annually on its fixed expenditure for FY 2021-22 and only 2% on its O&M whereas Tumakuru MC spent the lowest at 20% on fixed establishment and administrative expenses and 60% on O&M.

Table 8 Distribution of revenue expenditure of less than a million cities for FY 2021-22 (in INR crore)

Distribution of revenue expenditure of less than a million cities for FY 2021-22 in INR crore						
Cities	Establishment Expense	Admin Expense	O&M	Interest & Finance Charges	Depreciation	Others	Total revenue expenditure
Jalgaon	123	31	4	0	42	12	213
Nizamabad	16	2	35	0	12	1	66
Chas	6	1	3	0	7	4	20
Satna	43	5	29	0	32	0	109
Tumakuru	18	3	61	18	29	3	132
Saharanpur	94	3	47	0	79	3	225
Erode	85	3	45	11	92	12	247
Jamnagar	152	2	53	2	0	66	274
Bhilai	56	39	40	0	53	38	227
Bilaspur	63	9	16	0	0	48	136

Source: Analysis based on income-expenditure statement of cities with less than a million population available on City Finance Portal, 2022

Figure 37 Share of fixed (establishment + admin) and operations and maintenance expenditure of less than million population cities
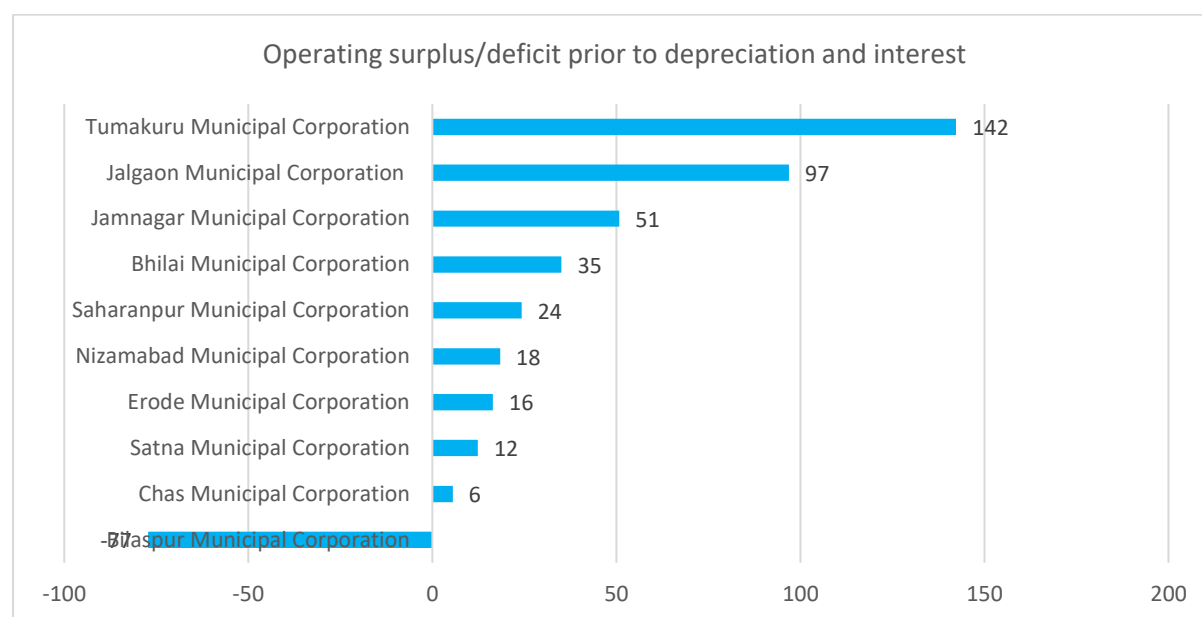

Source: Analysis based on income-expenditure statement of cities with less than a million population available on City Finance Portal, 2022

Operating Surplus and Deficit

Within the universe of cities with population less than one million, nine corporations have operating surplus prior to depreciation and interest and only Bilaspur MC faced operating deficit prior to depreciation and interest for FY 2021-22. Tumakuru MC had the highest operating surplus of INR 142 crores followed by Jalgaon MC at INR 97 crores.

Figure 38 Operating surplus/ deficit prior to depreciation and interest for less than one million cities for FY 2021-22 (in INR crores)
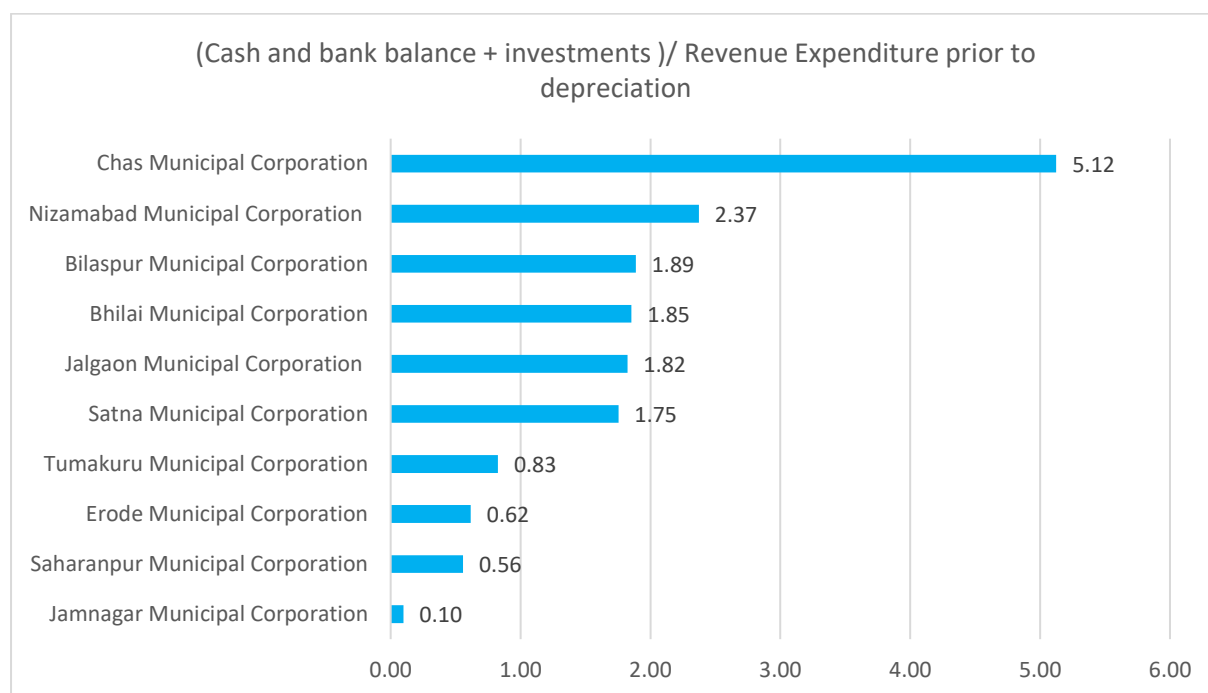

Source: Analysis based on income-expenditure statement of cities with less than a million population available on City Finance Portal, 2022

Liquidity profile

All the less than one million plus cities have a positive liquidity ratio prior to depreciation, indicating adequate liquidity profile, adequate cash balance and marketable securities as dated on March 31st, 2022 except Bilaspur MC; through which they can comfortably meet their future operating expenses.

Chas MC the highest quick ratio among the peers in the group of less than one million cities- prior to depreciation, as dated on March 31st, 2022. This will allow CMC to comfortably meet five years of its operating expenses through existing cash balance and marketable securities. Other municipal corporations like Nizamabad, Bilaspur, Bhilai, Jalgaon and Satna Municipal Corporations have a quick ratio ranging from 1-2, indicating adequate liquidity profile, cash balance and investments which will help the cities in meeting their future operating expense for one-two years. Bilaspur MC has a negative Interest Coverage Ratio which indicates its weak liquidity profile.

Figure 39 Liquidity test through quick ratio of one to four million plus cities

Source: Analysis based on income-expenditure statement of cities with less than a million population available on City Finance Portal, 2022

Table 9 Interest coverage ratio of less than a million cities

Cities	(Cash and bank balance + investments)/ Revenue Expenditure prior to depreciation	Interest Coverage Ratio (Operating Surplus-Depreciation/ Interest)
Jalgaon MC	1.82	6548
Chas MC	5.12	1684
Satna MC	1.75	156
Tumakuru MC	0.83	8
Saharanpur MC	0.56	2423
Erode MC	0.62	2
Jamnagar MC	0.10	24
Bhilai MC	1.85	113
Bilaspur MC	1.89	-17162
Nizamabad MC	2.37	2140

Source: Analysis based on income-expenditure statement of cities with less than a million population available on City Finance Portal, 2022
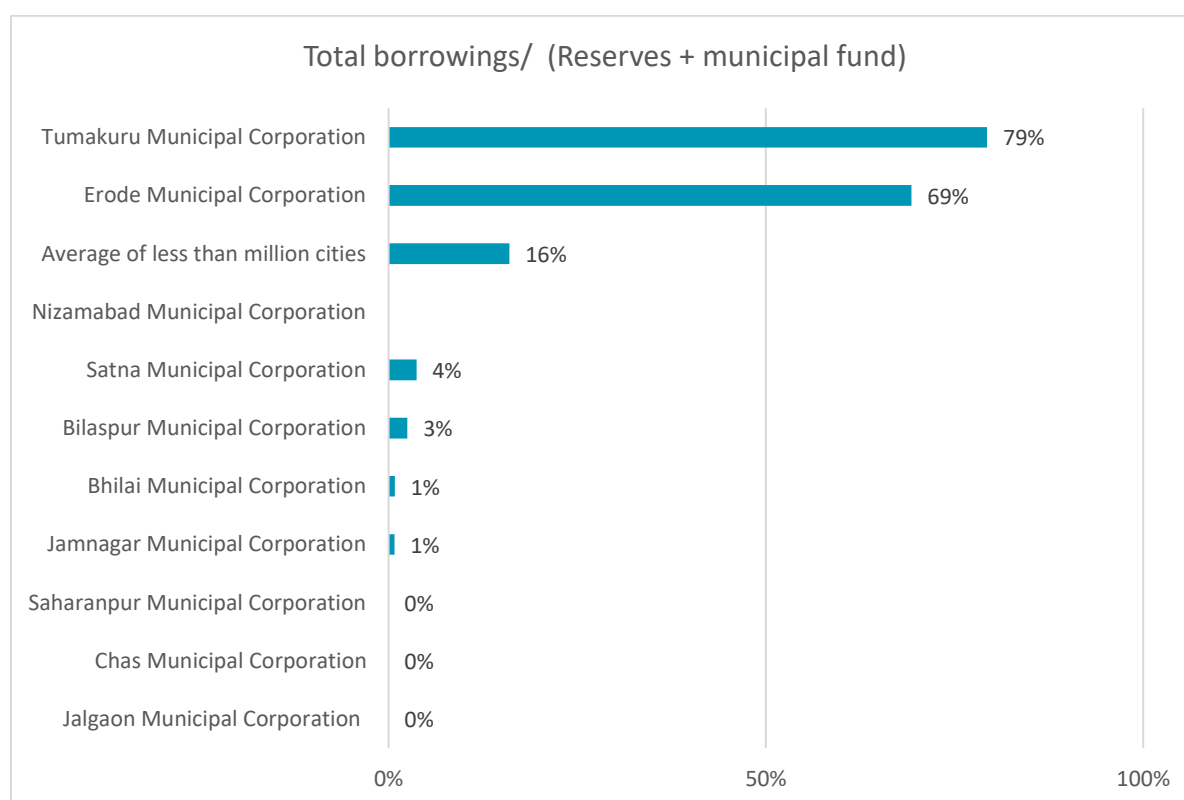
Debt Servicing Ability

All the Corporations from the universe of less than million population have a positive Interest Coverage Ratio (ICR) except for Bilaspur MC and can comfortably pay for their future debt obligations from their operating surplus prior to depreciation and interest.

All Municipal Corporations except Bilaspur MC have a positive ICR and adequate liquidity with cash and bank balance and investments which will be sufficient to meet the future operating expenses. These MC sufficient surplus, cash reserves and marketable securities to meet future debt obligations.

Tumakuru MC the highest leverage percentage of 79% followed by Erode at 69%. Bilaspur has a negative ICR indicating challenges in being creditworthy and paying for future debt obligations. Saharanpur, Chas and Jalgaon MC have not reported any borrowings in FY 2022-23 which leads to a null leverage ratio.

Figure 40 Leverage percentage of less than million cities as per FY 2021-22

Total borrowings/ (Reserves + municipal fund)

City	Leverage
Tumakuru Municipal Corporation	79%
Erode Municipal Corporation	69%
Average of less than million cities	16%
Nizamabad Municipal Corporation	
Satna Municipal Corporation	4%
Bilaspur Municipal Corporation	3%
Bhilai Municipal Corporation	1%
Jamnagar Municipal Corporation	1%
Saharanpur Municipal Corporation	0%
Chas Municipal Corporation	0%
Jalgaon Municipal Corporation	0%

Source: Analysis based on income-expenditure statement of cities with less than a million population available on City Finance Portal, 2022

Borrowing Capacity

The borrowing capacity is considered for the FY 2021-22. Tumakaru MC the highest borrowing capacity of INR 356 crores due to its strong operating surplus prior depreciation and interest, followed by Jalgaon MC at INR 242 crores and Jamnagar MC at INR 127 crores. The average borrowing capacity of less than million cities is estimated to be INR 97 crores for FY 2021-22. Bilaspur MC had revenue deficit in FY 2021-22, indicating poor borrowing capacity the city will first require converting their deficit into surplus and sustain for regular operations.

Assessing the borrowing capacity with the actual borrowings that cities have undertaken, Tumakuru, Jalgaon, Jamnagar, Bhilai, Saharanpur, Satna and Chas have higher borrowing capacity as compared to their current borrowings in the form of secured and unsecured loans. This indicates that these cities can safely borrow additionally from the market. For example, Tumkuru has a borrowing capacity of INR 355 crores, however, the city has only borrowed 50% than its existing borrowing capacity. Cities like Nizamabad, Erode and Bilaspur have borrowed more than their capacity. If the cities have over borrowed than their capacity, they must be dependent on the state guarantee for security.

Water Sanitation Services (WSS)

Water supply

The service level benchmark for coverage of water supply connections is 100%. Against this benchmark, the water supply coverage in all the ten less than one million populated cities was in the range of low to moderate (<80%). The highest coverage is in Jamnagar (75%) followed by Saharanpur (68%). Rest were in the range of 40-60% and Chas was the lowest at just 20%. Erode reported the best performance in reducing non-revenue water (8%). Jamnagar and Nizamabad were also below the 20% benchmark. NRW was highest in Satna at 41%. Out of the ten cities, only four had some extent of water metering. Erode was exceptionally high at 98% followed by Bhilai and Tumakuru at 50% and Chas was at 8%. None of the cities achieved the 135 lpcd SLB for per capital water supply. The highest was Saharanpur at 132 lpcd and the lowest were Bilaspur and Chas at about 80 lpcd. Cities in Uttar Pradesh and Jharkhand are water stressed and are facing water scarcity challenges in India. Cities in Gujarat like Jamnagar do not face water scarcity challenges.

Figure 41 Water Supply coverage for one-four million cities for FY 2019-20 (in %)
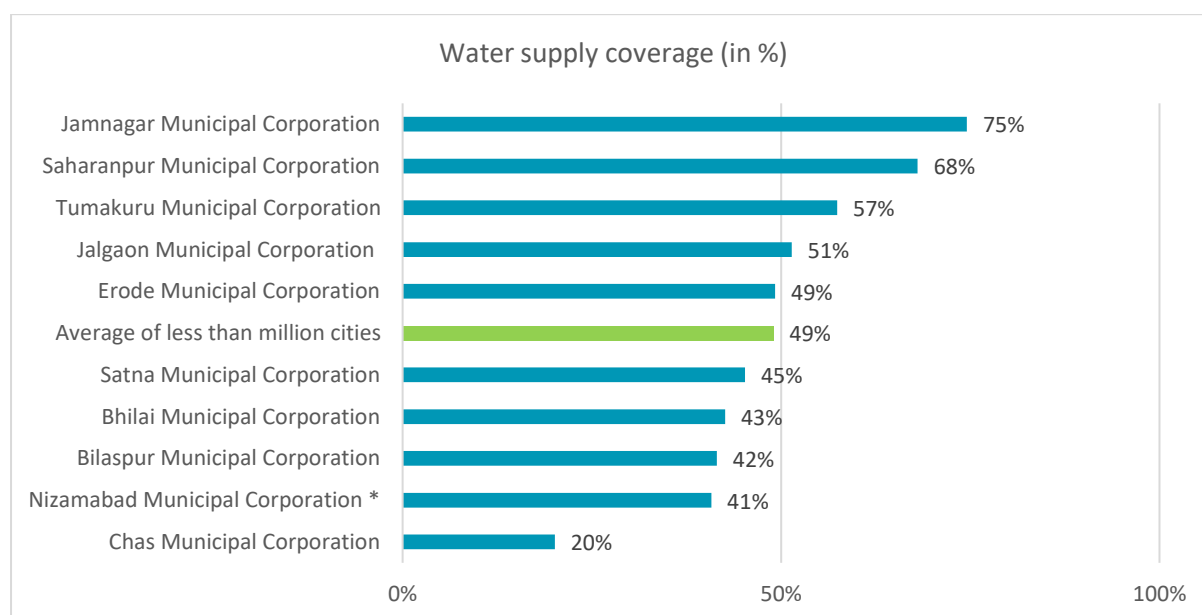
52

Source: Analysis based on Center for Water and Sanitation-PAS SLB Data for cities, 2020

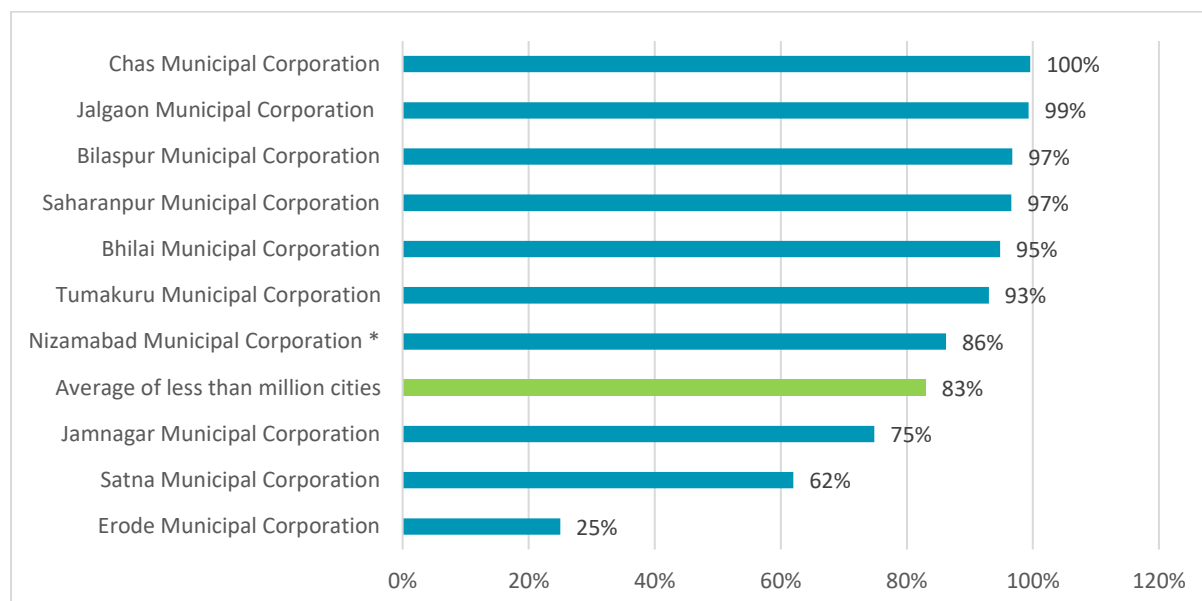Figure 42 Non-revenue water for one-four million cities for FY 2019-20 (in %)
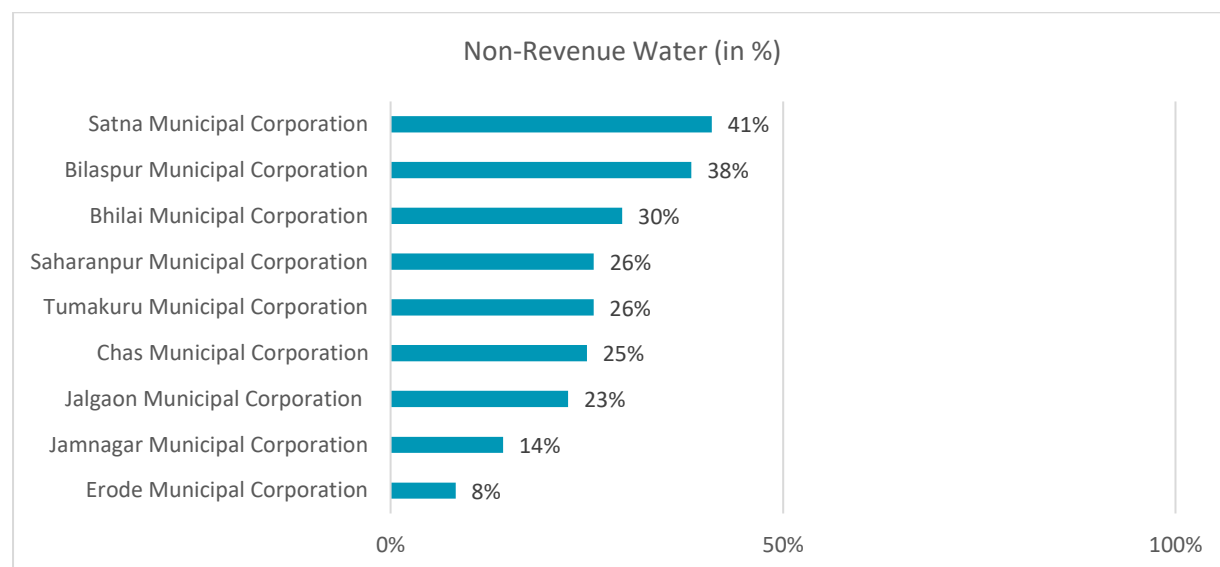
Source: Analysis based on Center for Water and Sanitation-PAS SLB Data for cities, 2020

Note: Data for Nizamabad was not available.

Sanitation

All the ten cities except Jamnagar predominantly rely on on-site sanitation solutions. In Jamnagar, majority of households are connected to underground sewerage. Chas, Jalgaon, Bilaspur, Bhilai and Saharanpur had very high levels of sanitation coverage (95-100%) whereas Satna had the lowest coverage at 62%. The sanitation treatment capacity was exceptionally high in Bilaspur (221%) and also above the benchmark in Erode (106%). It was moderate in Jalgaon, Chas, Jamnagar, Bhilai (40-60%) and there was no treatment capacity in Satna and Saharanpur. There was no treated wastewater reuse reported in any of the cities.

Figure 43 Sanitation (FSSM/wastewater) coverage for one-four million cities for FY 2019-20 (in %)

Source: Analysis based on Center for Water and Sanitation-PAS SLB Data for cities, 2020

Solid Waste Management

Chas, Jamnagar, Bhilai, Saharanpur, Tumakuru and Jalgaon had very high SWM coverage (95-100%). Coverage was lowest in Chas (76%) and Nizamabad (73%). The solid waste treatment capacity was very high in Satna, Bilaspur, Jamnagar, Bhilai and Saharanpur (≥100%). Chas reported very low treatment capacity (12%) and Jalgaon and Nizamabad reported none.

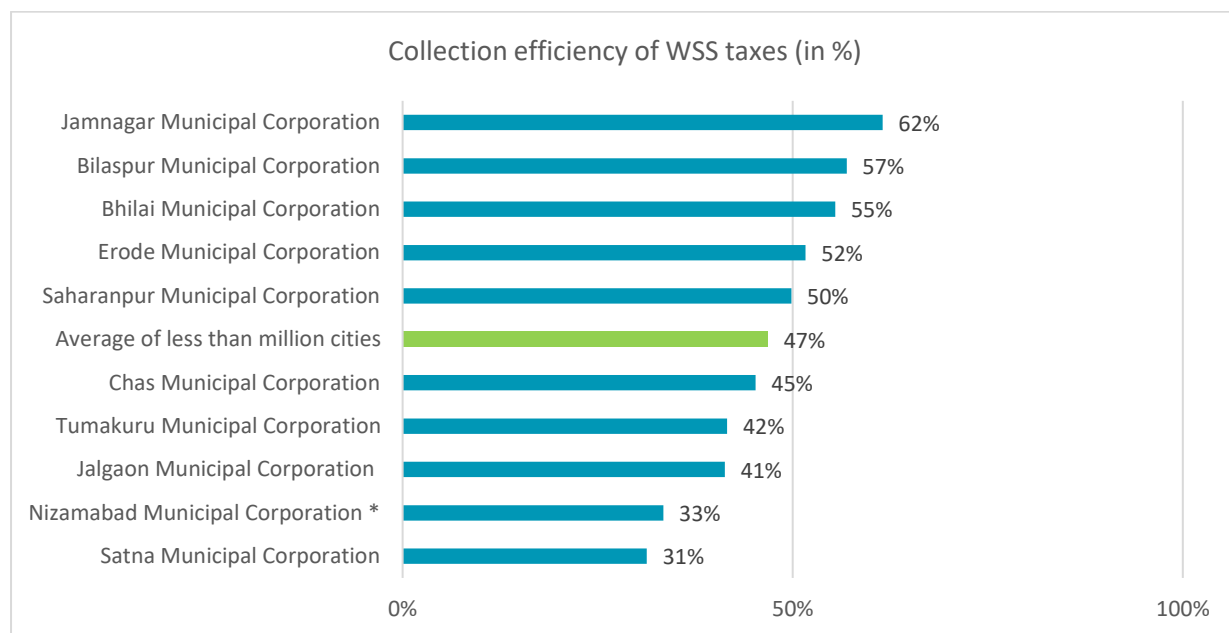Figure 44 SWM coverage for one-four million cities for FY 2019-20 (in %)
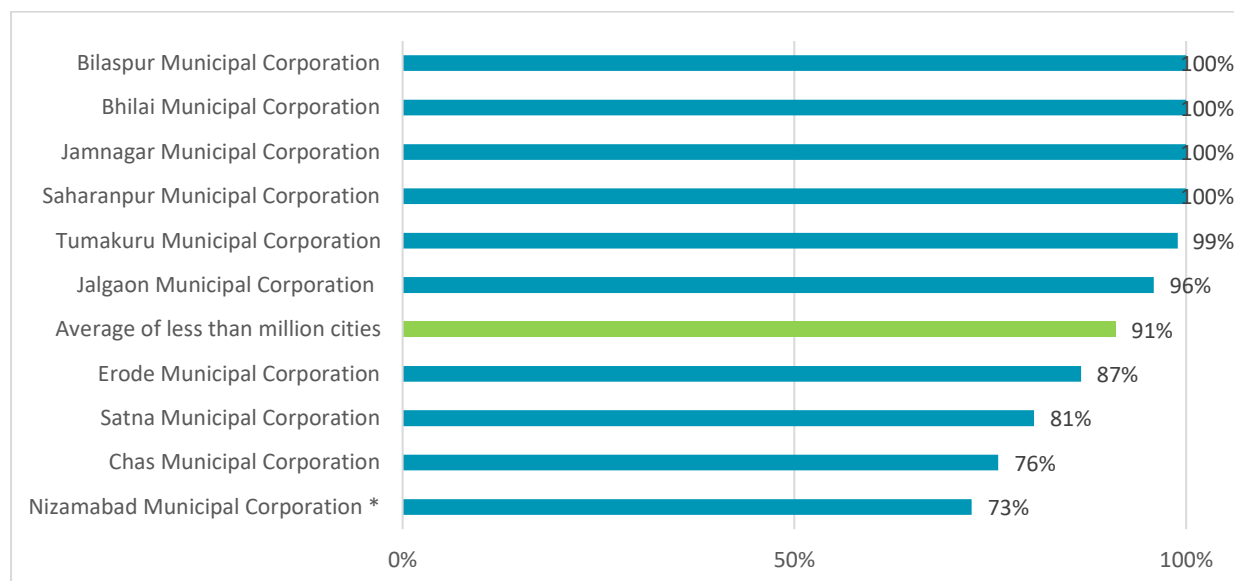
Source: Analysis based on Center for Water and Sanitation-PAS SLB Data for cities, 2020

Collection Efficiency of WSS taxes and property taxes

Generally, very few municipal corporations have a high collection efficiency for their own taxes and non-tax revenues. In many cases, it may have also been affected negatively by COVID in FY 2019-20. The collection efficiency of WSS related taxes and charges of the ten cities was in the range of moderate to low against the 100% benchmark. It was highest in Jamnagar at 62% and lowest in Satna at 31%. The average collection efficiency of WSS taxes of less than a million populated cities is only 47%. Jamnagar, Bilaspur, Bhilai, Erode and Saharanpur MCs have WSS taxes higher than the average whereas Chas, Tumakuru, Jalgaon, Nizamabad and Satna MCs have lower than the average. The average collection efficiency of WSS taxes of less than a million cities is less than the average of four million plus and one-four million plus cities at 69% and 53%.

Figure 45 Collection efficiency of WSS taxes for cities less than a million population (in %)


Collection efficiency of WSS taxes (in %)

City	%
Jamnagar Municipal Corporation	62%
Bilaspur Municipal Corporation	57%
Bhilai Municipal Corporation	55%
Erode Municipal Corporation	52%
Saharanpur Municipal Corporation	50%
Average of less than million cities	47%
Chas Municipal Corporation	45%
Tumakuru Municipal Corporation	42%
Jalgaon Municipal Corporation	41%
Nizamabad Municipal Corporation *	33%
Satna Municipal Corporation	31%

Source: Analysis based on Center for Water and Sanitation-PAS SLB Data for cities, 2020

*Note: For Nizamabad MC, WSS tax collection data for FY 2018-19 was available in public domain and is considered for analysis.

The average collection efficiency of current property tax is 68% for less than a million cities. Out of the universe of ten cities, seven cities namely Bhilai, Bilaspur, Jalgaon, Tumakuru, Chas, Saharanpur and Erode have property tax collections higher than the average, whereas three cities- Nizamabad, Jamnagar and Satna MCs have lower than the average. The property tax collection is highest for Bhilai MC at 78% and lowest for Satna MC at 41%. The collection efficiency of property tax arrears was highest in Bhilai (100%) and lowest in Jamnagar (8%). The other cities performed in the range of 30-60%.

Figure 46 Collection efficiency of property taxes for cities less than a million population (in %)
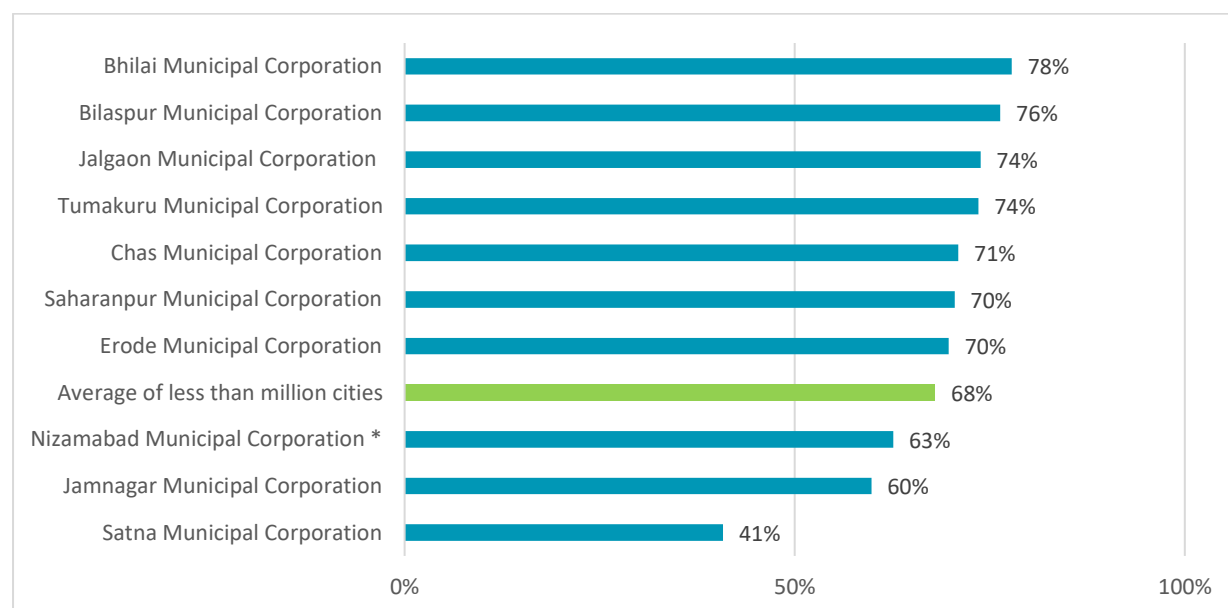
Source: Analysis based on Center for Water and Sanitation-PAS SLB Data for cities, 2020

Cost Recovery of WSS services

The WSS cost recovery of these ten cities were moderate to low against the 100% benchmark. The average cost recovery in WSS services for less than a million population cities is 35%. Out of the universe of ten cities, four cities-Jalgaon, Tumakuru, Jamnagar and Erode reported cost recovery higher than the average whereas, six cities- Chas, Bhilai, Bilaspur, Nizamabad, Satna and Saharanpur MCs reported below the average. The cost recovery is highest in Jalgaon at 76% followed by Tumakuru (66%) and lowest in Satna (11%) and Saharanpur (10%). The average cost recovery of less than a million cities is less than cities with four million plus and one-four million plus population at 100% and 52%.

Figure 47 Cost recovery of WSS services for less than a million cities (in %)

Jalgaon Municipal Corporation 76%
Tumakuru Municipal Corporation 66%
Jamnagar Municipal Corporation 54%
Erode Municipal Corporation 35%
Average of less than million cities 35%
Chas Municipal Corporation 34%
Bhilai Municipal Corporation 26%
Bilaspur Municipal Corporation 20%
Nizamabad Municipal Corporation * 15%
Satna Municipal Corporation 11%
Saharanpur Municipal Corporation 10%
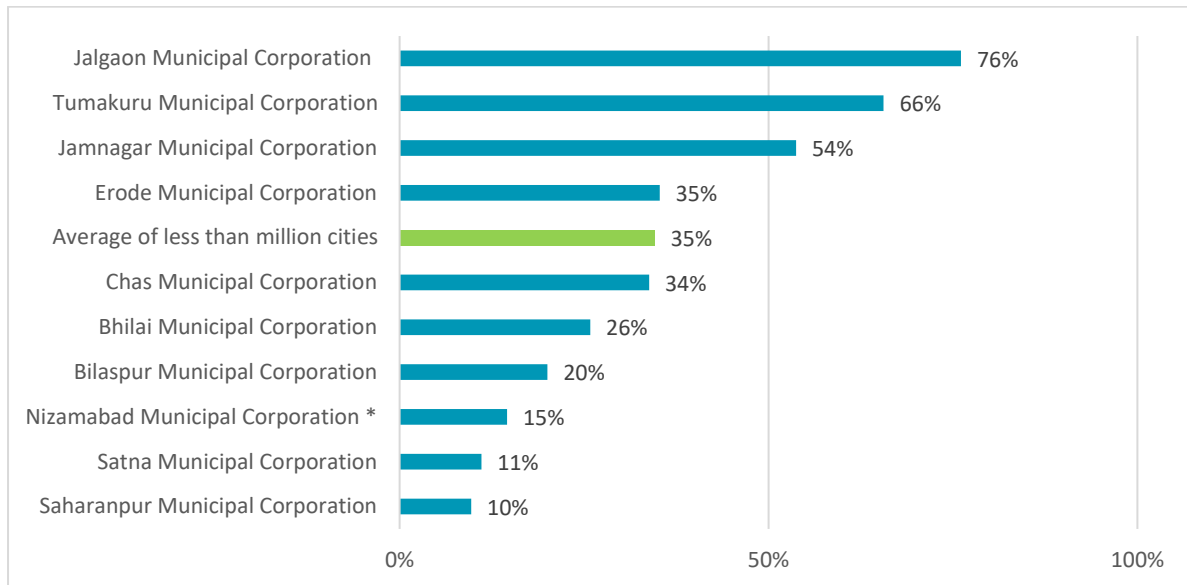
Source: Analysis based on Center for Water and Sanitation-PAS SLB Data for cities, 2020

Annex 4:

4.1 Operating Performance Indicators Scoring Rationale

	Parameters	Service level operating ratios	Weight age	4	3	2	1
1	Coverage	Water supply coverage	4	>90%	70-90%	50-70%	<50%
2		FSSM / Wastewater/ sewerage Coverage	4	>90%	70-90%	50-70%	<50%
3		SWM Coverage	4	>90%	70-90%	50-70%	<50%
4		Toilet coverage	4	>90%	70-90%	50-70%	<50%
5	Collection efficiency	Collection efficiency of water tax	2	>90%	70-90%	50-70%	<50%
6		Collection efficiency of sanitation tax/ sewerage charges	2	>90%	70-90%	50-70%	<50%
7		Collection efficiency of SWM charges	2	>90%	70-90%	50-70%	<50%
8		Collection efficiency of property tax	4	>90%	70-90%	50-70%	<50%
9	Cost Recovery	Cost Recovery in Water Services	4	>90%	70-90%	50-70%	<50%
10		Cost Recovery in SWM Services	4	>90%	70-90%	50-70%	<50%
11		Cost Recovery in Sanitation services	4	>90%	70-90%	50-70%	<50%
12	Metering and NRW	Non-Revenue Water	4	<20%	20-30%	30-40%	40-50%
13		Metering of water connections	4	>80%	60-80%	40-60%	20-40%
14	Treatment, quality, reuse	Adequacy of water supply (lpcd)	4	135	125-135	115-125	85-125
15		Adequacy of sanitation treatment	4	>90%	70-90%	50-70%	10-50%
16		Adequacy of SWM treatment	4	>90%	70-90%	50-70%	10-50%
17		Extent of re-use of Wastewater	2	>20%	10-20%	5-10%	0-5%
18	Accounting and transparency	Does the city prepare annual audit reports of cities and publish it in public domain?	4	If Yes=4, if No=0			
19		Does the city follow accrual-based accounting?	4	If Yes=4, if No=0			
20	Human Resource Adequacy	Total working staff versus sanctioned in water supply	2	>90%	70-90%	50-70%	<50%
21		Total working staff versus sanctioned in sanitation	2	>90%	70-90%	50-70%	<50%
22		Total working staff versus sanctioned in SWM	2	>90%	70-90%	50-70%	<50%

			Score				
23	Complaint Redressal	Complain Redressal in water supply	2	>90%	70-90%	50-70%	<50%
24		Complain Redressal in sanitation	2	>90%	70-90%	50-70%	<50%
25		Complain Redressal in SWM	2	>90%	70-90%	50-70%	<50%

4.2 Financial Indicators Scoring Rationale

	Income Ratios	Rationale for Rating	Score	4	3	2	1
1	Own Tax Revenue to Total Revenue Income Ratio (%)		4.00	>30%	20-30%	10-20%	0-10%
2	Non-tax Revenue to Total Revenue Income Ratio (%)		4.00	>30%	20-30%	10-20%	50-60%
3	Revenue Grants to Total Revenue Income Ratio (%)	include property tax as % of own revenue	4.00	<30%	30-40%	40-50%	0-10%
4	Property tax demand as a % of revenue		4.00	>25%	15-25%	5-15%	0-5%
5	Property tax collection as a % of revenue		4.00	>20%	10-20%	1-10%	>0%
	Expenses Ratios						
6	Establishment Expenses to Total Revenue Income Ratio (%)	lower the better	2.00	<40%	40-50%	50-60%	>60%
7	Fixed charge=(Establishment + Admin Int.)/ Revenue Income (%)	lower the better	4.00	<40%	40-50%	50-60%	>60%
8	O&M / revenue income (%)	lower the better	4.00	<30%	30-40%	40-50%	>50%
9	Establishment Expenses to Total Revenue Expenditure Ratio (%)	lower the better	2.00	<40%	40-50%	50-60%	>60%
10	Fixed charge=(Establishment + Admin Int.)/ Revenue Expenditure (%)	lower the better	2.00	<40%	40-50%	50-60%	>60%
11	O&M / revenue expenditure (%)	lower the better	2.00	<30%	30-40%	40-50%	>50%
	Operating Ratios						
12	Surplus / Deficit to Total Income prior to depreciation / interest Ratio (%)	greater than 20% 10-20% less than 10%	8.00	>30%	20-30%	10-20%	0-10%
	Surplus / Deficit to Total Income post depreciation / interest Ratio (%)						

	Debt Servicing Ratios						
13	Interest Service Coverage Ratio (Operating Surplus-Depreciation/ Interest)	ideal DSCR is 2 -any DSCR is greater than 2 is very good -below 1is not acceptable 0-1 not acceptable 1-2 still acceptable	4.00	>2	1.5-2	1-1.5	0-1
	Leverage Ratios						
14	Total borrowings/ Total revenue income (should not exceed 50%)	should not exceed 50%	4.00	0-10%	10-20%	20-30%	30-50%
	Liquidity Ratios						
15	(Cash and bank balance + all investments)/ Revenue Expenditure		4.00	>1	0.5-1	0.3-0.2	0-0.2
	Revenue Size						
16	Revenue Income		8.00	>50000	10000-20000	1000-10000	<1000
	Revenue Expenditure			>500000	400000-500000	300000-400000	0-100000
17	Per Capita Revenue Income		4.00	>20000	10000-20000	1000-10000	<1000
18	Per Capita Revenue Expenditure	per capita O&M exp.	4.00	>10000	5000-10000		<1000
19	Per Capita Property Tax Demand		4.00				
20	Per Capita Own Tax Revenue (Per capita revenue)		4.00				
	Growth of Revenue Income (CAGR)			>=5%	3-5%	1-3%	0-1%
	Growth of Revenue Expenditure (CAGR)	growth of income > growth of expenditure		>=5%	3-5%	1-3%	0-1%

Annex 5: Credit rating and credit assessments: Issuer rating and rating for debt instruments

	City	Rating based on creditworthiness assessment (2023)	Rating through a CRA/ year (status)	Type of rating	Debt security value	CRA
1	**Pune**	PAS AA	AA+ /2023	Municipal bonds	200 cr	CARE
			AA+ /2022	Municipal bonds	200 cr	CARE
			AA+ /2021	Municipal bonds	200 cr	CARE
			AA+ /2017	Municipal bonds	200 cr	India Ratings
			AA-/2015	Credit assessment under AMRUT		Fitch Ratings
2	**PCMC**	PAS AA	AA+/2023	Municipal bonds	200 cr	CRISIL
			AA/2023	Municipal bonds	200 cr	CARE
			AA/2022	Municipal bonds	200 cr	CARE
			AA/2021	Municipal bonds	200 cr	CRISIL
			AA/2020	Municipal bonds	200 cr	CRISIL
			AA/2018	Municipal bonds	200 cr	CRISIL
3	**Surat**	PAS AA	Provisional AA+/2024	Green bonds	200 cr	CRISIL
			AA+/2023	Municipal bonds	200 cr	CRISIL
			AA+/2022	Municipal bonds	200 cr	CRISIL
			AA+ /2021	Municipal bonds	200 cr	CRISIL
			AA+/2020	Municipal bonds	200 cr	CRISIL
			AA+/2019	Municipal bonds	200 cr	India Ratings
			AA-/2008	Credit assessment under JNNurm		CRISIL
4	**Vadodara**	PAS AA	AA/2023	Municipal bond	100 cr	CRISIL
			AA+/2022	Municipal bond	100 cr	India Ratings
			AA/2021	Municipal bond	100 cr	CRISIL
			A+/2016	Credit assessment under AMRUT		CRISIL
5	**Indore**	PAS AA	AA+/2023	Green bonds	244 cr	India Ratings
				Municipal bonds	139 cr	India Ratings
			AA/2022	NCD	250 cr	CARE
			AA/2021	Bank Loan	316 cr	Brickworks
			AA/2019	NCD	170 crs	Brickworks
			A+/2018	Credit assessment under AMRUT		CARE
			A+/2017	Credit assessment under AMRUT		CARE
6	**Ahmedabad**	PAS AA	AA+/2024	Green bonds	200 cr	India Ratings
			AA+/2023	Municipal bonds	200 cr	CRISIL
			AA+ /2022	Municipal bonds	200 cr	CRISIL
			AA+ /2021	Municipal bonds	200 cr	CRISIL

			AA+/2019	Municipal bonds	200 cr	CRISIL
			AA/2018	Credit assessment under AMRUT		CRISIL
7	**Vishakhapatnam**	PAS AA	AA/2023	Municipal bonds	100 cr	CARE
			AA/2022	Municipal bonds	100 cr	CARE
			AA/2021	Municipal bonds	100 cr	India Ratings
			AA/2020	Municipal bonds	100 cr	India Ratings
			AA/2017	Credit assessment under AMRUT		CARE
8	**Vijayawada**	PAS A	BB+/2021 (rating has dropped down)	Unallocated	22 cr	ICRA
			A-/2020	Term loans	154 cr	ICRA
			A-/2018 (withdrawn)	Issuer rating		ICRA
9	**Lucknow**	PAS A	AA/2023	Municipal bonds	200 cr	India Ratings
			AA/2022	Municipal bonds	200 cr	Brickworks
			AA/2021	Municipal bonds	200 cr	Brickworks
			AA/2020	Municipal bonds	200 cr	India Ratings
			AA (SO).2019	Municipal bonds	200 cr	Acuite
			A-/2018	Credit assessment under AMRUT		Brickworks
10	**Jamnagar**	PAS A	BBB+/ 2017	Credit assessment under AMRUT		Not known
11	**Bhilai**	PAS A	BBB+/2017 (withdrawn)			ICRA
12	**Jalgaon**	PAS A	BB+/2017			Brickworks
13	**Raipur**	PAS A	BBB+/2017 (withdrawn)	Credit assessment under AMRUT		ICRA
			BBB/2010	General creditworthiness not an instrument		CARE
14	**Rajkot**	PAS A	AA/2023	NCD	100 cr	CRISIL
			AA-/2022	NCD	150 cr	CRISIL
			AA/2022	NCD	150 cr	India Ratings
			A-/ unknown	Credit assessment under AMRUT (withdrawn)		CRISIL
15	**Chas**	PAS A	BB-/2017 (outstanding)	Credit assessment under AMRUT		Brickworks
16	**Moradabad**	PAS A	BBB-/2017	Issuer rating		Brickworks
17	**Aurangabad**	PAS A	BB+/2022	Issuer rating (Issuer not co-operating since rating declined)		ICRA
			BBB+/2021			ICRA
18	**Tumkuru**	PAS BBB	Not available			
19	**Warangal**	PAS A	A-/2021 (withdrawn)	Issuer rating		CARE
			A-/2020	Issuer rating		CARE

			A-/2019	Issuer rating		CARE
			A/2018	Credit assessment under AMRUT		CARE
20	**Agra**	PAS A	BBB/2017	Credit assessment under AMRUT		CRISIL
			BB-/2011 (no longer in use)	Issuer rating under JNNURM		CARE
21	**Ranchi**	PAS A	BB-/2016 (withdrawn)			CRISIL
			BB-/2008	Issuer rating under JNNURM		CRISIL
22	**Nizamabad**	PAS BBB	B+/2023 (issuer not co-operating as rating is downgraded)	Issuer Rating		ICRA
			BB+/2022 (issuer not co-operating as rating is downgraded)	Issuer Rating		ICRA
			BBB/2021	Issuer Rating		ICRA
			BBB-/2017 (withdrawn)			India Ratings
23	**Saharanpur**	PAS BBB	BB+/2016	Credit assessment under AMRUT		CRISIL
24	**Bilaspur**	PAS BBB	BBB/2017 (withdrawn)	Credit assessment under AMRUT		ICRA
25	**Madurai**	PAS BBB	A-/2017 (withdrawn)	Credit assessment under AMRUT		ICRA
26	**Satna**	PAS BBB	Not available			-
27	**Dhanbad**	PAS BB	BB/2017	Credit assessment under AMRUT (Issuer Rating)		Brickworks
28	**Erode**	PAS BB	BB+/2019	Credit assessment under AMRUT (Issuer Rating)		Brickworks
			BB+/2017 (withdrawn)			Brickworks
29	**Prayagraj (Allahabad)**	PAS BB	B+/2011 (no longer in use)			CARE
30	**Bareilly**	PAS BB	BB+/2017	Credit assessment under AMRUT (Issuer Rating)		Brickworks

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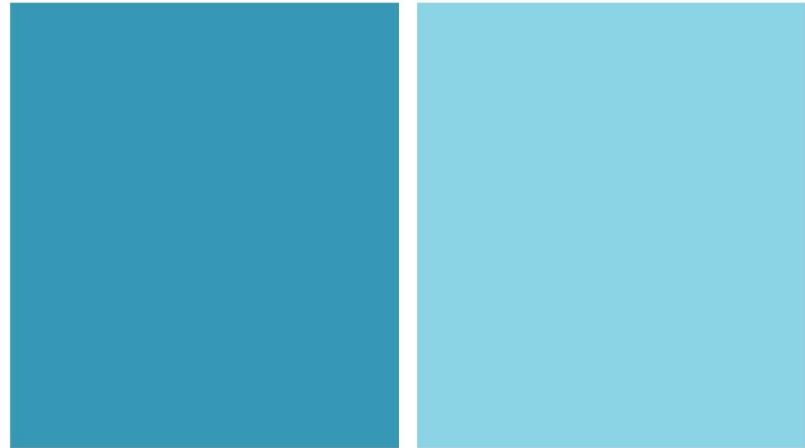Mr. Dhruv Bhavsar, Senior Program Lead, CWAS-CRDF-CEPT University

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Citation Suggestion

Center for Water and Sanitation – CRDF – CEPT University. "Creditworthiness Assessment - An Approach for Indian Cities". 2024

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