# Creditworthiness Assessment – An Approach for Indian Cities

## CWAS-CRDF-CEPT University

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## Part I

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# Acknowledgements

Urban infrastructure projects tend to be capital intensive and not only require upfront capital investment but also annually recurring operations and maintenance expenditures. Recent estimates from the World Bank show that less than 20% of the largest 500 cities in developing countries are deemed creditworthy in their local context, severely constricting their capacity to finance investments in public infrastructure. Enabling cities to become creditworthy is an essential first step in gaining access to more substantial, long-term, sustainable investments. The creditworthiness of a city is a vital component of its ability to finance urban infrastructure projects, particularly in terms of attracting investment and issuing bonds.

In this context, this study of a creditworthiness framework for Indian cities was carried out by the Center for Water and sanitation, CRDF. The research team included Ms. Sujatha Srikumar, Ms. Saubiya Sareshwala, Dr. Meera Mehta, Dr. Dinesh Mehta, Mr. Dhruv Bhavsar and Ms. Aashini Sheth.

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# List of Acronyms

| | |
|---|---|
| **ADB** | Asian Development Bank |
| **CARE** | Credit Analysis & Research Ltd |
| **CRA** | Credit Rating Agency |
| **CWAS** | Center for Water and Sanitation |
| **CRDF** | CEPT Research and Development Foundation |
| **CEPT** | Center for Environmental Planning and Technology |
| **CSR** | Corporate Social Responsibility |
| **CRISIL** | Credit Rating Information Services of India Limited |
| **DPR** | Detailed Project Report |
| **FIRE (D)** | Financial Institutions Reform and Expansion Project - Debt Market Component |
| **GST** | Goods and Service Tax |
| **KPI** | Key Performance Indicator |
| **HPEC** | High Powered Expert Committee |
| **IBNET** | International Benchmarking Network |
| **ICRA** | Investment Information and Credit Rating Agency |
| **INR** | Indian National Rupee |
| **MoHUA** | Ministry of Housing and Urban Affairs |
| **MDB** | Multilateral Development Bank |
| **MBS** | Mortgage based Securities |
| **NA** | Not Applicable |
| **NIUA** | National Institute of Urban Affairs |
| **NGO** | Non-Governmental Organization |
| **NRW** | Non-Revenue Water |
| **ODA** | Official Development Assistance |
| **O&M** | Operation and Maintenance |
| **OECD** | Organization for Economic Cooperation and Development |
| **PAS** | Performance Assessment System |
| **PPIAF** | Public-Private Infrastructure Advisory Facility |

| | |
|---|---|
| **PMC** | Pune Municipal Corporation |
| **PCMC** | Pimpari Chinchwad Municipal Corporation |
| **SEBI** | Security Exchange Board of India |
| **SWM** | Solid Waste Management |
| **RBI** | Reserve Bank of India |
| **ULB** | Urban Local Body |
| **USAID** | United States Agency for International Development |
| **WASH** | Water, Sanitation and Hygiene |
| **WASREB** | Water Services Regulatory Board |
| **WSP** | Water Service Provider |

# Executive Summary

There is an increased recognition that addressing financing gaps for urban infrastructure requires a focus on mobilizing domestic resources beyond our intergovernmental transfers. In this context, the past experience in accessing debt through municipal bonds in India assumes importance. Creditworthiness of cities is critical for unlocking domestic resources from the private sector and markets. In this context, regular assessment of creditworthiness of urban local bodies (ULBs) assumes importance.

Over the years, many formal credit rating exercises have been carried out in India for municipal bond issues and issuer credit assessments of ULBs. These activities are often time-consuming and require considerable human and financial resources with no assurance of to an investment grade rating, the starting point for fund raising. Regular creditworthiness assessments of a city can be an important indicator of its ability to finance urban infrastructure, particularly by attracting private investment, mobilizing funds through municipal bonds or by borrowing from commercial banks. Cities with low creditworthiness will struggle to raise such funds. On the other hand, an investment grade credit rating can be the first step in a ULB's journey to unlock a wide range of funds. This suggests the need for a regular assessment of creditworthiness of ULBs. It can both provide ULBs with an initial assessment as well as suggest ways to improve. To address this need, we have developed the PAS Creditworthiness Assessment Framework, which relies on publicly available information. It will help guide cities to carry out their own assessments and identify improved measures.

## PAS Creditworthiness Assessment Framework

The PAS Creditworthiness Assessment Framework has been developed on the basis of rating approaches used by different rating agencies in India, as well as similar efforts done in other countries. It includes both financial and operational parameters. The financial parameters include revenue base represented by revenue size and financial performance, expenditure management, liquidity profile and leverage ratios. The non-financial operational parameters of service performance for water supply, sanitation and wastewater management and solid waste management. These include coverage, treatment adequacy, human resource adequacy, grievance redressal mechanisms, cost recovery, collection efficiency, accounting quality and transparency.

PAS Creditworthiness assessment has been initially tested for 30 municipal corporations across ten states in India. Table 1 shows the selection of cities. Their selection is based on availability of data in public domain as well as population size. The population of these cities ranged from a. Four million plus b. One-four million and c. Less than a million

**Table 1: Cities selected for testing creditworthiness assessment framework**

| Population Size | Cities |
|---|---|
| **4 million plus** | Ahmedabad, Surat, Pune, Lucknow |
| **1- 4 million** | Aurangabad, Pimpri Chinchwad, Vadodara, Rajkot, Warangal, Ranchi, Raipur, Indore, Dhanbad, Agra, Bareilly, Moradabad, Prayagraj, Madurai, Vishakhapatnam, Vijayawada |
| **Less than 1 million** | Jalgaon, Chas, Satna, Saharanpur, Nizamabad, Jamnagar, Erode, Bhilai, Bilaspur, Tumakuru |

## Our analysis shows that out of 30 cities, 27 cities have investment grade rating.

From the universe of 30 cities, seven cities (23%) with a creditworthiness assessment score ranging from 71-90 have high quality of creditworthiness. Pune has the highest level of creditworthiness with a AA rating within the universe of cities. It is followed by PCMC, Surat, Vadodara, Ahmedabad and Indore. All four million plus cities have high level of creditworthiness.

**Table 2 Results of Creditworthiness Assessment of 30 cities in India**

| Creditworthiness Score | Rating | Cities | Creditworthiness assessment | Grade of investment |
|---|---|---|---|---|
| Above 90 | PAS AAA | | Highest level of creditworthiness | Investment Grade |
| 71-90 | PAS AA | Pune, PCMC, Surat, Vadodara, Indore, Ahmedabad, Vishakhapatnam | High level of creditworthiness | |
| 61-70 | PAS A | Vijayawada, Jamnagar, Jalgaon, Bhilai, Raipur, Lucknow | Adequate level of creditworthiness | |
| 51-60 | PAS BBB | Rajkot, Chas, Aurangabad, Moradabad, Tumakuru, Warangal, Agra, Ranchi, Bilaspur, Madurai, Satna,Prayagraj, Saharanpur, Nizamabad | Moderate level of creditworthiness | |
| 41-50 | PAS BB | Dhanbad, Erode, Bareilly | High level of credit risk | Below Investment Grade |
| 31-40 | PAS B | | Higher level of credit risk | |
| 21-30 | PAS C | | Highest level of credit risk | |
| Less than 20 | PAS D | | Not creditworthy | |

## Potential Borrowing by ULBs

The Ministry of Housing and Urban Affairs (MoHUA) has developed an enabling framework and environment for borrowing for Indian cities. From the 30 cities in our sample, 26 cities (86%) have the ability to borrow from the market. The borrowing capacity of a city is dependent on its annual operating surplus prior to depreciation and interest.

**Based on prevailing norms in the market for interest rates and tenor for municipal bonds, a thumb rule for assessing the borrowing capacity of the municipal corporation can be considered as 2.5 times the operating surplus prior to depreciation and interest.**

Some of the larger cities with higher revenue size, including Pune, PCMC, Ahmedabad, Vadodara, Indore and Surat have already issued municipal bonds worth INR 100-200 crore each for infrastructure projects. These cities have a much higher ability to borrow from the market and other sources as compared to their current level of borrowing.

For smaller cities such as Jalgaon, Raipur, Ranchi and Warangal, borrowing capacity ranges from INR 100-500 crore. However, none of these cities have so far issued municipal bonds, despite their ability to borrow from the market. Other smaller cities such as Chas, Satna, Erode, Saharanpur, Warangal, Jamnagar, Ranchi, Jalgaon and Tumakuru have lower borrowing capacity ranging from INR 13 to 33 crore.

A few cities had operating deficit prior to depreciation and interest. These cities have existing borrowings in the form of secured and unsecured loans. Such cities will have to improve their revenue streams to sustain regular operations as well as achieve a revenue surplus in order to improve their creditworthiness score to investment grade.

## Way Forward

Creditworthiness assessment is a useful and almost a no-cost approach for a city to understand its own creditworthiness and to identify areas where it needs to take improvement actions before considering any borrowing and a formal credit rating. This assessment relies on indicators derived from past financial performance of the city and a review of its operational parameters. It does not include qualitative parameters such as quality of urban management, reform orientation etc. and other factors often used by rating agencies to assign the final credit rating. The proposed framework provides a creditworthiness score for a city which can be close to an actual credit assessment.

CWAS has prepared a “Do-it-Yourself” toolkit for creditworthiness assessment by ULBs themselves. Any ULB can use this tool to easily assess its creditworthiness. The main benefit that for cities, that want to explore issuing municipal bonds or raise other forms of debt, can get an indication of their creditworthiness score and likely credit rating. The assessment can also be used as a tool to evaluate ULBs financial and operational performance, as improvements in credit scores over the years under this model would indicate improvements

in operational and financial parameters. Thus, ULBs can use the creditworthiness framework and tool to assess their current financial and operational performance and identify areas for improvement prior to going for a formal credit rating for a bond issue.

Thus, the ratings provided by using this approach and toolkit can be used as a pre-cursor to actual credit ratings. Detailed creditworthiness reports generated for a city can suggest improvement actions. It will help cities to assess their borrowing capacity and in improving their credit quality before undertaking an actual credit rating process.

The Creditworthiness Assessment tool will also be useful for cities and states, for the recent Capital Investment Scheme for special assistance to states by the Government of India. It aims at improving creditworthiness of cities and making them ready to issue municipal bonds. Thus, the creditworthiness assessment framework can be scaled across other Indian cities of various sizes and population and other Indian states. It will help to assess city performance, and to identify the improvements needed in financial and operational performance to make ULBs creditworthy to issue municipal bonds and to participate in the debt market.

# 1 Introduction

Over the years, many assessments have been made of investment requirements to meet the gaps in urban infrastructure to meet local standards for urban services as well as related Sustainable Development Goals (SDGs). One of the early reports by Rakesh Mohan Committee in 1996, and later the Report of the High-Powered Expert Committee (HPEC) in 2011, both had also identified such requirements. (The Rakesh Mohan Committee, 1996; HPEC, March 2011) Based on these early reports, a recent World Bank report estimated that India's cities require investments equivalent to 1.2% of estimated Gross Domestic Product (GDP) over the next 15 years. Over half of these investment needs, about USD 450 billion, are in the basic municipal services (i.e., water supply, sewerage, municipal solid waste management (SWM), storm water drainage, urban roads and streetlighting). These are largely the responsibility of Municipal Governments in India. (Athar et. al 2022).

These needs are significantly higher than the current levels of investment in urban infrastructure in India. Total capital expenditure for urban infrastructure averaged only 0.6% of GDP in the past decade (2011-18) or USD 26 in per capita terms which, despite the growth in recent years, is still four times less than the estimated requirements (Athar etc. al. 2022, p.9). Their recent report estimated that India's cities require an estimated capital investment of USD 840 billion in urban infrastructure and municipal services till 2036.

There is an increased recognition that addressing these financing gaps would require significant improvements in mobilizing domestic resources, as well as the need to access private finance and to raise municipal debt. As early as 1995, the Rakesh Mohan Committee on Commercialization of Infrastructure Projects, established by the Ministry of Finance, had issued recommendations for capital market development which included the development of a municipal bond system in India. However, private commercial financing has so far played a very minor role in financing urban infrastructure in India. Most infrastructure has been financed by intergovernmental fiscal transfers, especially through tied grants from various national programmes. Thus, the available, albeit limited experience in accessing debt through municipal bonds as well as by borrowing from commercial banks suggests the need to further explore and leverage these funds.

**Creditworthiness of a city is important for its ability to finance urban infrastructure, particularly in terms of attracting private investment, mobilizing funds through bonds or from commercial banks.**

Cities with low creditworthiness will struggle to raise such funds for new projects or for upgrading existing ones. An investment grade credit rating can help a city unlock access to a wide range of funds. It is also worth noting that the improvements in financial management required to achieve this are also likely to increase the city's revenue.

There are a number of regional and local rating agencies that work with cities in India. They have provided ratings for cities, both for specific debt issues, as well for a general rating assessment. While their ratings are only recognized at the local or regional level, they reflect a good understanding of these cities. It would be useful for cities to have a more periodic assessment of their creditworthiness. If this is done through information available easily and in public domain, it will also enable them to improve performance on specific aspects. This report provides an approach to do this. The framework is developed by adapting the data available in public domain. The analysis will also enable cities to identify and learn from better performing cites and their management practices.

The creditworthiness assessment framework has been developed on the basis of rating approaches used by different agencies in India, as well as similar efforts done in some African countries. The report provides initial results and assessment for 30 cities across India based on the data sourced form publicly available information.

Out of the 30 cities selected for creditworthiness assessment, it was found that 29 cities from the sample have undergone credit assessment under AMRUT 1.0, Smart City Mission and JNNURM. Out of this, 8 cities have issued municipal bonds and undergone issuer as well as debt rating process, whereas the rest 21 cities haven't undergone any credit assessment post these missions. Few cities had undergone for credit rating process as long as thirteen years ago (last in 2011) and haven't updated yet. (Refer Annex 5 for details)

**Recent estimates from the World Bank show that less than 20% of the largest 500 cities in developing countries are deemed creditworthy in their local context, severely constricting their capacity to finance investments in public infrastructure. Supporting cities on the path to creditworthiness is the crucial first step in unlocking larger, longer-term, sustainable investments. (World Bank , 2016)**

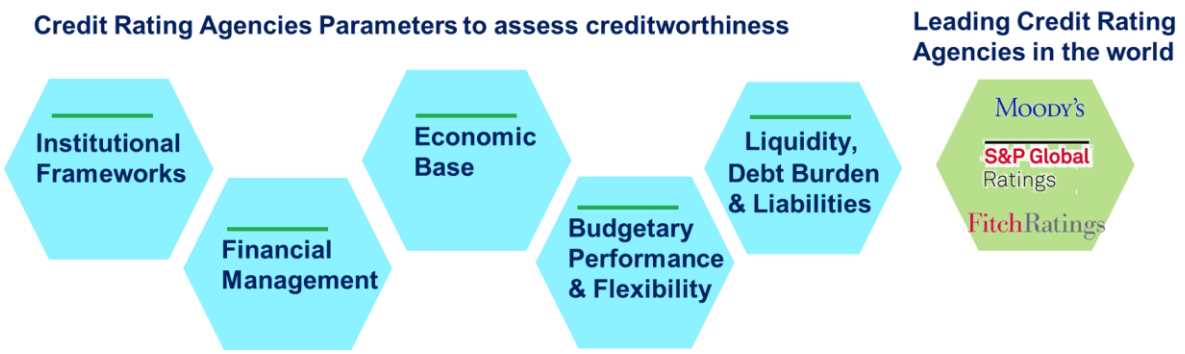
## 1.1 Emergence of Creditworthiness Assessments Globally

Credit rating agencies originated in the United States in the early 1900s, when ratings began to be applied to securities, specifically those related to the railroad bond market. In the United States, the construction of extensive railroad systems had led to the development of corporate bond issues to finance them, and therefore a bond market several times larger than in other countries. The bond markets in the Netherlands and Britain had been established longer but tended to be small and revolved around sovereign governments that were trusted to honour their debts. Following the 1907 financial crisis, demand rose for such independent market information, for independent analyses of bond creditworthiness. In 1909, financial analyst John Moody issued a publication focused solely on railroad bonds. This was the first publication in an accessible format and the first to charge subscription fees to investors. The Standard and Poor company was formed after merging of two companies. Fitch Publishing

Company started publishing financial information in 1913 and introduced the rating scale from “AAA to D” in 1924.

Three companies provided opinions on creditworthiness and the US bond market expanded to include increasing issues by local and state governments, public utilities, industrial corporations, the credit rating agency was well established. The crash of US stock market in 1929 sparked a greater demand for credit ratings as investors worried about high default rates and credit risk.

**Figure 1: Parameters of CRA to assess creditworthiness**




Creditworthiness assessment is a useful tool for a city to understand how creditworthy it may be and where it might need to take further action before applying for a formal credit rating. A ‘creditworthiness’ assessment is not essential for a city to obtain a credit rating, but it can provide an initial assessment of a city’s creditworthiness at a lower cost than a full rating. It can also send a strong signal to the financial markets that a city is actively seeking to increase its creditworthiness, peaking potential investors’ interest. This may be particularly valuable for cities which may not currently be in a position to pay for a full credit rating, as even a positive creditworthiness will be viewed favourably by the investment community. Cities around the world have undertaken an initial creditworthiness rating, including cities in Africa, such as Kampala, Windhoek, Arusha, Dar es Salaam, Gaborone, Lusaka, Maputo, and Port Louis. The Water Services Regulatory Board (WASREB)of Kenya with support from the Water and Sanitation Program did creditworthiness assessment and provided shadow rating to 43 urban water utilities to access medium-term finance from commercial lenders. (Kimani, Advani, & Sy, 2011) The City Creditworthiness Initiative by PPIAF, World Bank and Rockefeller Foundation developed Creditworthiness Self-Assessment and Preliminary Action Plan tested for Municipality of Bologna, Italy. (Kimani, Advani, & Sy, 2011)

The World Bank developed the City Creditworthiness Initiative Program to provide local authorities with comprehensive, hands-on, and long-term support to achieve higher creditworthiness by strengthening financial performance. The program was intended to support cities improving creditworthiness, develop climate-friendly green projects and improve the supply side of financing by engaging with private sector. This comprised of formation of training academies which served as the launching point of the City

Creditworthiness Initiative. The inaugural session of the City Creditworthiness Program took place in Nairobi, Kenya. The second academy took place in Seoul Korea in April 2014. Additional trainings were planned in other parts of Asia and Latin America in the coming months. This was funded through Private Public Infrastructure Advisory Facility (PPIAF), Korean Growth Partnership and Rockefeller Foundation (RF). (World Bank , 2016)

**Figure 2 Emergence of creditworthiness assessments globally**

**Post 1980s**

Three globally dominated CRAs:

- Moody's Investors
- S&P Global Ratings
- Fitch Ratings

**2006**

**Practitioner's workshop on mobilizing market finance for water utilities in Africa in Pretoria, South Africa.**

Focused on two key financing challenges in attaining the MDGs on water and sanitation:

- Market finance and utility reform are closely intertwined
- Need to demonstrate & create space for market transactions
- Need to strengthen water niche for facilitating market finance.

**2011-2015**

**WASREB and WSP in Kenya** developed the **Creditworthiness Index in lieu of shadow rating** which provides a simplified snapshot of the financial performance of is WSPs to facilitate commercial lending. 13 utilities are creditworthy and interest of private sector

**2014**

**IBNET report** on review of performance of water utilities in Africa:

- Utilities in the sample were able to slowly improve water coverage, but overall coverage stood at only 60%
- High O&M cost of utilities.
- Few utilities were weak, but few had good performance as well

**2015**

**World Bank estimated additional** $1.3 trillion of investment of public investment in a year. **City Creditworthiness Initiative by World Bank** of aiming to assist 300 cities in 60 LMIC countries for green growth and creditworthiness.

Source: City Creditworthiness Initiative, World Bank, 2015, Ripley, William (1915). Railroads: Finance & Organization. New York: Longmans, Green, & Co. pp. 106–107. ISBN 1-58798-074-6, Mobilizing market finance for water utilities in Africa, 2006, M Mehta (2003). Meeting the finance challenge for water and sanitation.

## 1.2 What are Credit Ratings?

"A credit rating is a key element of the pre-sale stage of a municipal bond issue, for it indicates the risk level as- sociated with an issuer's ability to repay debt. Accessing capital markets, though, requires projects developed in commercially and financially viable formats with adequate attention given to adequacy of revenues and timely completion of projects within a specified time and cost. This, in turn, requires considerable investment in project development, with intensive technical assistance, supported by documentation and dissemination of experiences to maximize benefits." (Indo-USAID, 1999) A credit rating is assigned by an accredited Credit Rating Agency (CRA) to a proposed borrowing program of an entity (corporate, bank, state government, municipal corporation etc.) to indicate relative ability of the borrower to pay interest as per the terms of the borrowing program and repay principal as per agreed terms. This exercise involves a detailed assessment of various business, operational and financial parameters as well as qualitative assessment of a number of parameters to arrive at the credit rating. Credit rating agencies also carry out credit assessments of entities which assess overall creditworthiness without linking it to a specific borrowing program. They are useful to prospective issuers as they provide an indication of the likely credit rating, they will receive in case they decide to proceed with the formal credit rating.

A credit rating is an independent opinion on the ability of the issuer to make full and timely payments and opinions as to the credit quality of the issuer throughout the life of the bond. They are not a recommendation to buy or sell a security; these are only an opinion on the credit quality of the specific bond issue/borrowing program. A credit rating has also come to be regarded as a solid indicator of a city's performance and competitiveness. (Indo-USAID, 1999)

## 1.3 Benefits of Creditworthiness Assessments

Credit rating is important to an issuer because it facilitates achieving finer pricing on the borrowed amount. On the other hand, investors and lenders derive comfort from the independent creditworthiness assessment provided in the public domain. Further, credit ratings assume importance in the context of the current regulatory requirements pertaining to borrowings in the form of bonds/bank loans.

Credit ratings provide a wide range of benefits to cities. A regular formal assessment by an external credit rating agency will improve investors' confidence and provide them with an on-going report on a city's financial and operational performance. This not only increases the pool of investors available to cities and facilitates better access to infrastructure finance. A good credit rating will also increase the speed at which a lender is prepared to come to a decision about whether or not to lend to a city. Donors and national governments also value a city with a high credit rating, as it indicates high level of governance and overall

management. The credit rating may also highlight any areas where a city might have issues with related risks and provide an indication as to where corrective measures should be targeted.

Creditworthiness assessment frameworks can bring several benefits to Indian cities. Here are some key advantages:

- **Improved Access to Capital:** A robust creditworthiness assessment framework helps cities establish their creditworthiness, making it easier for them to access capital from financial institutions and investors. It enables cities to secure loans, issue bonds, or attract private investment for infrastructure development, urban projects, and public services.
- **Lower Borrowing Costs:** When cities have a strong creditworthiness assessment framework in place, they are likely to receive more favorable terms and conditions for borrowing. Lenders and investors perceive lower risk associated with creditworthy cities, resulting in lower interest rates and reduced borrowing costs. This allows cities to plan and allocate resources more efficiently.
- **Enhanced Financial Management:** Creditworthiness assessment frameworks encourage cities to adopt better financial management practices. To maintain a good credit rating, cities need to demonstrate fiscal discipline, efficient budgeting, and effective revenue management. This promotes transparency, accountability, and prudent financial decision-making, leading to improved governance and financial stability.
- **Investor Confidence and Economic Development:** A creditworthy city attracts investor confidence and stimulates economic development. When investors perceive a city as creditworthy, they are more likely to invest in projects.
- **Long-term Planning and Sustainability:** Creditworthiness assessment frameworks encourage cities to focus on long-term planning and sustainability. To maintain a good credit rating, cities need to demonstrate their ability to generate revenue, manage debts, and address financial challenges effectively. This prompts cities to adopt strategies that prioritize sustainable development, revenue diversification, and prudent fiscal policies.
- **Enhanced Service Delivery:** Creditworthy cities can leverage their financial standing to invest in and improve public services and infrastructure. They can access funds for essential projects such as transportation systems, water supply, waste management, healthcare facilities, and educational institutions. This contributes to the overall well-being and livability of the city.

## 1.4 Credit Rating vs Credit Assessments

Creditworthiness assessments and credit ratings are both tools used to evaluate the credit risk associated with lending to an entity be it in the private sector in the public realm. In the

case of individual borrowers, banks or lenders use a credit score either assigned on internally developed credit scoring models or using third party evaluations. However, credit assessments can be done by many organizations, but credit ratings can only be awarded by an accredited credit rating agency as detailed below:

Creditworthiness Assessments are typically conducted by lenders or financial institutions or even rating agencies as an overall evaluation of the credit profile of the borrower. It involves a detailed assessment of business risk as well as the financial risk of the borrower and any other risk which could potentially impair the credit profile of the borrower. It is an overall assessment and is not linked to the terms of the lending instrument ie. term loans, working capital loans, bonds etc. It is often a pre-cursor to the actual credit rating of a bond issue or final credit appraisal for approving a specific loan.

Credit ratings are evaluations of the creditworthiness linked to specific debt securities or financial instruments issued by governments, corporations, or other entities. In very basic terms, credit ratings provide an opinion of the probability of the borrower honoring the terms of a particular debt instrument such as payment of interest on the due dates specified in the loan/bond document and repayment of the principal amount borrowed as per the schedule agreed to between lender/bond investor and borrower. They are widely used by investors and lenders to assess the credit risk associated with investing in a particular security or lending money to a specific entity. In summary, while both creditworthiness assessments and credit ratings evaluate credit risk, the former is focused on overall credit evaluation of a potential borrower whereas a credit rating can only be awarded by a rating agency accredited with the regulatory authorities in a financial market.

# 2 From credit ratings to creditworthiness assessments

This Section explains the history of credit ratings and municipal bonds and need for creditworthiness assessments in India

## 2.1 History of Credit Ratings and Municipal Bonds in India

For Indian cities, the concept of borrowing through municipal bonds as an instrument for raising resources for urban infrastructure projects was new. Indian cities were introduced to this concept, which has played a crucial role in creating urban infrastructure projects in the United States of America (USA) and Canada, in a seminar organized by USAID-FIRE (D) project in 1995. This was subsequently elaborated on by an Expert Group on Commercialization of Infrastructure Projects (1996) headed by Dr. Rakesh Mohan.

“The methodology for evaluating and rating municipalities – the first of its kind in India – was developed by Credit Rating and Information Services of India, Ltd. With the assistance of the FIRE(D) Project and has since been applied to other Indian cities”. (Indo-USAID, 2004)

In 1996, Ahmedabad became the first city in India to request and receive a rating for a municipal bonds issue. Credit Rating and Information Services of India, Ltd (CRISIL), the country’s premier credit rating agency, assigned Ahmedabad an “A+” rating for a municipal bond issue of INR 1000 million ($29 million). In 1997, the Bengaluru municipal corporation (BMC) initiated the first bond issue in India under state guarantee, which was then followed by the Ahmedabad MC in 1998 for its water and sewerage project.

### 2.1.1 Credit Rating Agencies in India

In India, there are several credit rating agencies that assess the creditworthiness and risk associated with various entities, such as companies, financial institutions, and government bodies. These credit rating agencies operate under the regulatory framework established by the Securities and Exchange Board of India (SEBI). Some of the prominent credit rating agencies in India include:

1. **CRISIL (Credit Rating Information Services of India Limited):** CRISIL is one of the leading credit rating agencies in India and provides credit ratings, research, and risk and policy advisory services. It offers ratings for companies, banks, financial instruments, infrastructure projects, and government securities. It is a subsidiary of Standard and Poor’s, USA.
2. **ICRA (formerly Investment Information and Credit Rating Agency of India Limited):** ICRA is another major credit rating agency in India, offering ratings for various entities and financial instruments. It covers areas such as corporate and debt ratings, bank

loan ratings, infrastructure ratings, and mutual fund ratings. Moody's Investor Services has a substantial equity stake in ICRA.

3. **CARE Ratings (Credit Analysis and Research Limited):** CARE Ratings is a credit rating agency that provides ratings and research services across sectors such as corporate, banking, financial institutions, and government entities. It assesses credit risk and provides opinions on the creditworthiness of entities.
4. **India Ratings and Research:** India Ratings and Research is a credit rating agency affiliated with Fitch Ratings. It offers credit ratings and research across sectors, including corporate, financial institutions, infrastructure, and public finance.

These credit rating agencies play a crucial role in the Indian financial system by providing independent assessments of credit quality, aiding investors and lenders in making informed decisions, and promoting transparency in the market.

### 2.1.2 Credit rating under GOI's AMRUT programme

In 2015, the Govt of India passed a memorandum under AMRUT and Smart Cities Mission for cities to get credit rating done under 18 months. The main aim was to establish and operationalize financial intermediary - pool finance, access external funds, float municipal bonds. In 2015, SEBI also notified with a new regulatory framework to issue municipal bonds in India which emphasized on three pre-requisites:

i. Cities need to have an investment grade rating
ii. No default in net worth in 365 days.
iii. Compliance with National and State accounting manuals.

According to the data provided by Ministry of Housing and Urban Affairs (MOHUA), credit rating was completed for 467 Cities under the AMRUT programme, of which 163 cities had investment grade and only 36 cities had A- and above credit rating. (Press Information Bureau, 2017). However, only 8 out of the basket of 163 investment grade cities were able to issue municipal bonds. This reflects the constraints impacting the municipal bond market development as most cities would need suitable credit enhancements.

**Figure 3: Timeline of credit rating and municipal bond in India**

**1995**

- Discussion of a municipal bond system was initiated at a national workshop in Bangalore, sponsored by the FIRE(D) Project, on the potential and relevance of a municipal bond system for India.
- Rakesh Mohan Committee on Commercialization of Infrastructure endorsed the concept of municipal bonds, and the Government of India (GoI) provided income tax exemption for these bonds.

**1997**

- 1997- Bangalore MC issued first municipal bond in India backed by state guarantee

**1998**

- January 1998- Ahmedabad MC issued India's first municipal bonds not backed by a state guarantee

**2015**

- SEBI notified a new regulatory framework for issuing municipal bonds in India
  - ✓ Investment Grade Rating
  - ✓ No default in net worth in 365 days
  - ✓ Compliance with state and National accounting manual
- Govt of India passed a memorandum under AMRUT and Smart Cities Mission for cities to get credit rating done under 18 months. Main aim was to establish and operationalize financial intermediary for pool finance, access external funds and float municipal bonds.

**2020**

- World Bank City Creditworthiness Initiative Report on India
  - ✓ Borrowing approvals from state govt.
  - ✓ Lack of reliable and comparable data on local government finance.
  - ✓ Difficult to aggregate debt data
  - ✓ Unpredictable central and state transfers

**2022**

- Total 17 MCs and 2 regulatory authorities issued municipal bonds from 1997-2023.
- 2018 onwards: Total 8 MCs issued municipal bonds out of which 5 cities were newly added
- World Bank estimated that Indian cities require an estimated capital investment of USD 840 billion in urban infrastructure and municipal services till 2036.
- RBI released a report on Municipal Finances

**2023**

- Supplementary guidelines by GoI on "Special Assistance to States for Capital Investment 2023-24"

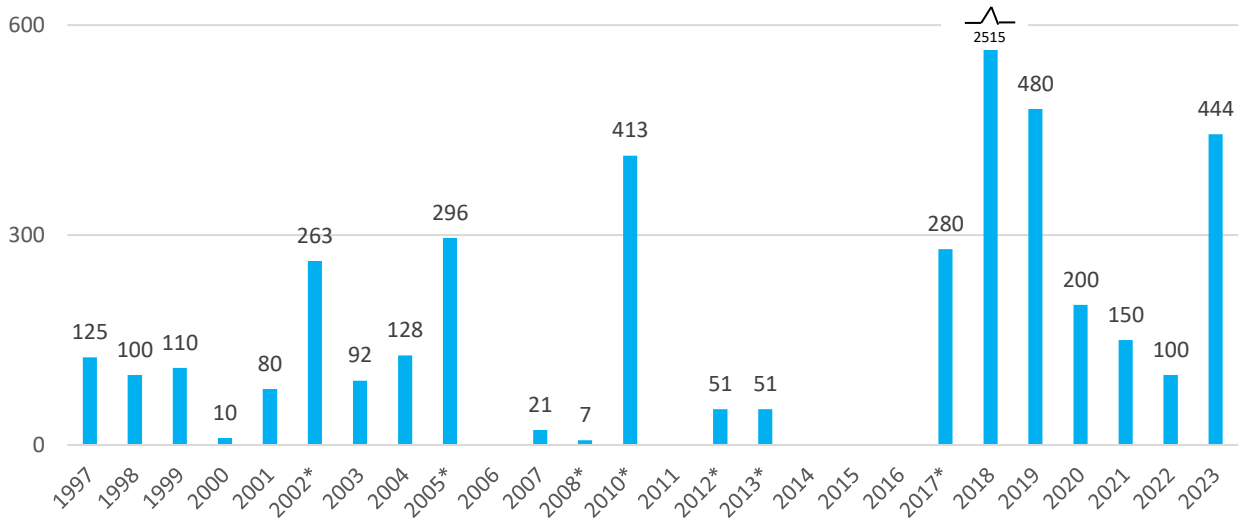
Source: M Mehta (2003). Meeting the finance challenge for water and sanitation, Indo-US Financial Institutions Reform and Expansion Project - Debt Market Component FIRE(D), p.6, 2004; Operational guidelines for AMRUT, 2015, Incentives to ULBs covered under AMRUT, MoHUA, 2018, Status of AMRUT, 2022, City Creditworthiness Initiative for India, World Bank, 2020

Many cities that undertook credit rating process under AMRUT programme only took it as a one-time process. These ratings have now become old and probably obsolete.

In India, between 1997-2023, total 33 municipal bonds (excluding pooled bonds) have been issued by 17 cities worth INR 3,308 crore. Between 1997-2010, 10 cities issued 20 municipal

bonds worth INR 1,125 crore. During the time period between 2011 and 2016, there was no municipal bond issuance possibly due to availability of grants and low level of policy thrust on encouraging issuance of municipal bonds. In 2015, SEBI issued new guidelines for Issuance and Listing of Municipal Debt Securities, which established a distinct regulatory framework for municipal bonds. Pune Municipal Corporation was the first to issue bonds under this regulatory framework in June, 2017. In 2017 itself, the GoI started offering incentives of INR 13 crore on issuing bonds worth INR 100 crores. Under this process, a city can maximum avail incentives of INR 26 crore on issuing bonds worth INR 200 crore. From 2018 onwards, Indian cities again gained the momentum of issuing municipal bonds. Between 2017 to 2023, total 13 bonds have been issued by 11 cities worth INR 2,184 crore which is 71% of the total funds mobilized through municipal bonds.

**Figure 4 Total municipal bonds issued in India from time period 1997-2023 (in INR crore)**




Note*: Pooled bonds issued years marked

**Source: Chakrabarti (2014); Kapoor and Patil (2017); Tamil Nadu Urban Infrastructure Financial Services Ltd (2019); World Bank (2016), Retrieved from https://www.sebi.gov.in/statistics/municipalbonds.html, 2023**

The Ministry of Finance, GoI initiated a circular dated June 23, 2023 about the Capital Investment Scheme for special assistance to states in which the central government promised in offering incentives of INR 1.3 lakh crores. The scheme aimed at improving creditworthiness of cities and making them ready to issue municipal bonds by incentivizing property tax governance reforms and ring-fencing of user charges on urban infrastructure. (Ministry of Finance, 2023) However, according to Economic Times, the Centre has released INR 60,104 crores as a special assistance for the Special Capital Project Investment Scheme which means states couldn't meet the eligible criteria to avail the scheme (Economic Times , 2023). The challenge here is not lack of funds, but lack of creditworthiness of cities.

On the other end, limited revenue base of cities in terms of low property tax base and inadequate user charges has translated into high level of dependence on fiscal transfers, crowding out private investments.

In 2020, the World Bank's City Creditworthiness Initiative program collated assessment for India based on country findings. The report was developed as a country report which focused on a broader assessment approach of reviewing various state acts, legal and regulatory environment, borrowing readiness and macro credit conditions. It didn't mention anything about city's creditworthiness. (World Bank , 2020)

## 2.2 Need of Creditworthiness Assessment in India

There have been many attempts to explore alternative measures for meeting expenditure requirements. Schemes such as Smart Cities Mission, AMRUT seek to meet their financing requirements through a mix of sources such as municipal bonds and public private partnership. (MoHUA, 2021, p. 7) The Ministry of Housing and Urban Affairs also provides financial incentives to cities for issuance of municipal bonds. As regards the Budgetary announcement of the Finance Ministry pertaining to Municipal Bonds, it is stated that the Committee in their Twelfth Report on 'Demand for Grants (2022-23) of the Ministry of Housing and Urban Affairs had recommended that the Ministry should impress upon the various State Governments the need to take suitable steps to improve the credit worthiness of various Municipal Bodies and ensure that adequate capacity building training is conducted so that they can raise additional funds through Municipal Bonds. (MOHUA, 2023, p. 5)

Credit ratings are relatively expensive and time consuming for cities if done individually (0.1% of bond/ loan amount). The rating exercise remains a one-time process for most of the cities. There is a strong need for cities to understand their own creditworthiness an identify measures to improve performance. This exercise should be simple and should be done on a regular basis using datasets which are publicly available. Regular annual assessments will help cities in tracking their own improvements, cross-learning through other cities and identify measures of improving performance.

The main investors in municipal bonds are Provident/Superannuation/Gratuity/Pension Funds, Banks, FIs and Insurance companies, Mutual Funds, Traders, Foreign Portfolio Investors etc. The Ministries of Finance and Labour control investments by provident/superannuation/gratuity/pension funds and insurance companies specify a minimum credit rating of AA for eligible bond investments including municipal bonds or have a requirement of a state government guarantee in case the credit rating is lower than AA. All other investor classes have their own risk-return requirements but at a very basic level require the municipal bond to be investment grade i.e., the municipal entity issuing bonds is capable of paying interest on time and repaying principal on time. The Insurance Regulatory and Development Authority of India (IRDAI) provides guidelines on investments for insurance

companies operating in India. These guidelines are designed to ensure the prudent and sound management of investment portfolios to safeguard the interests of policyholders and maintain the financial stability of insurance companies.

The Pension Fund Regulatory & Development Authority Act (PFRDA) was passed on 19th September,2013 and the same was notified on 1st February, 2014. PFRDA is regulating NPS, subscribed by employees of Govt. of India, state governments and by employees of private institutions/organizations & unorganized sectors.

**Box Item 1 General principles and guidelines that IRDAI emphasizes regarding investments by insurance**

| | |
|---|---|
| **Prudent and Diversified Investments** | Insurance companies are encouraged to make prudent and diversified investments to minimize risks. The investments should be in line with the objectives of safety, liquidity, and return. |
| **Asset-Liability Management (ALM)** | Insurance companies are required to adopt effective ALM practices to ensure that their assets are aligned with their liabilities. This involves matching the duration and nature of assets and liabilities to manage interest rate and liquidity risks. |
| **Investment Categories** | IRDAI categorizes investments into various classes, such as government securities, corporate bonds, equities, real estate, and infrastructure investments. The allocation limits for each category are specified to ensure a balanced and diversified investment portfolio |
| **Credit Quality** | There are guidelines regarding the credit quality of investments. Insurance companies are usually required to maintain a certain percentage of investments in high-rated instruments to minimize credit risk. |
| **Valuation and Accounting Standards** | IRDAI specifies the valuation methods and accounting standards that insurance companies should adhere to for their investments. |
| **Prudential Norms** | There are prudential norms in place to ensure that insurance companies maintain a certain level of solvency margin, which is a measure of their financial strength. |

Source: IRDAI, Retrieved from https://irdai.gov.in/about-investment, 2023

**By adopting creditworthiness assessment frameworks as performance improvement tools, Indian cities can strengthen their financial position and improve operational performance, attract investments, and achieve sustainable development. These frameworks encourage financial discipline, prudent management, and transparency, resulting in improved governance and the ability to meet the evolving needs of urban residents.**

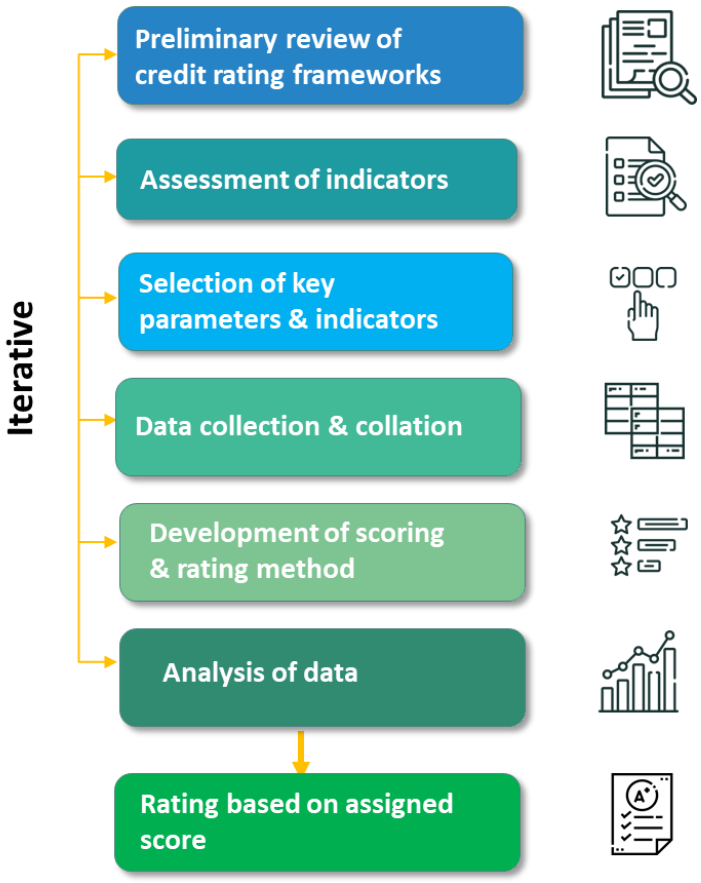
# 3 Creditworthiness Assessment Framework

This Section explains the developed approach and methodology of creditworthiness assessment framework.

## 3.1 Development of Creditworthiness Framework: Approach and Methodology

The creditworthiness scoring methodology developed by CEPT assigns a creditworthiness score for a city. This methodology relies on indicators derived from past financial performance of the city and its operational parameters as finetuned by CWAS Team. It does not rely on qualitative parameters such as quality of urban management, reform orientation, and other factors used by rating agencies to assign the final credit rating. The main benefit of this methodology is that cities planning to issue municipal bonds or raise other forms of debt can get an indication of their creditworthiness score and likely credit rating.

**Figure 5 Methodology of development of creditworthiness assessment framework**




It can also be used as a tool to evaluate municipal financial and operational performance. Improvements in credit scores over the years under this model suggest improvements in

certain operational and financial parameters. Cities can use the creditworthiness framework and tool to assess current financial and operational performance and identify areas for improvement prior to going for a formal credit rating and bond issues.

## 3.2 Review of parameters considered for credit rating assessment by rating agencies

The parameters and indicators used by leading Credit Rating Agencies - Crisil, Brickworks, CARE Ratings and India Ratings for credit rating assessment for local bodies or issuance of bonds were compared to understand the rating criteria. These credit rating agencies have broadly classified the parameters for the assessment as: i) Legal and administrative framework ii) Demographics and economic profile iii) Accounting and budgeting iv) Current and future financial performance (revenue-expenditure management, liquidity, and solvency profiles) v) Operating and service efficiency. CARE ratings has listed a separate set of indicators for issuance of municipal bond for project evaluation and credit enhancement mechanisms. Crisil and Brickworks ratings consider only accounting quality and not budgeting process for evaluation. Hence, accounting and auditing are taken into consideration for creditworthiness assessment. In the creditworthiness framework, we have considered accounting compliance as per the National Municipal Accounting Manual and/or States Municipal Accounts Manual and timely publication of audit reports in the public domain.

**Table 3 Comparative assessment of parameters used for credit ratings by leading rating agencies in India**

| Credit Rating Agencies / Parameters | CRISIL | Brickworks | CARE Ratings | India Ratings |
|---|---|---|---|---|
| **Legal and administrative framework** | | | | |
| Municipal functional domain | ✓ | ✓ | ✓ | ✓ |
| Tax-levying powers | ✓ | ✓ | ✓ | ✓ |
| Borrowing powers and administrative requirements for mobilising funds from the capital market, as specified in the Act | ✓ | ✓ | ✓ | ✓ |
| Tax collection ability and experience in managing the arrears in collections | ✓ | | | |
| **Economic and social profile** | | | | |
| Demographics and area covered | ✓ | ✓ | ✓ | ✓ |
| Population base and its growth rate | ✓ | ✓ | ✓ | ✓ |
| Industrial and commercial activities | ✓ | ✓ | ✓ | ✓ |
| Per capita property tax or creation of sinking fund | ✓ | ✓ | ✓ | ✓ |
| Importance of the service area within the state | ✓ | ✓ | ✓ | ✓ |

| Credit Rating Agencies<br>Parameters | CRISIL | Brickworks | CARE Ratings | India Ratings |
|---|---|---|---|---|
| **Municipal finances** | | | | |
| Accounting quality | ✓ | ✓ | ✓ | ✓ |
| Analysis of surplus/deficits | ✓ | ✓ | ✓ | ✓ |
| Growth in tax and non-tax revenue | ✓ | ✓ | ✓ | ✓ |
| Collection efficiency, debtor analysis | ✓ | ✓ | ✓ | ✓ |
| Dependence on state governments for discretionary grants and fund transfers | ✓ | ✓ | ✓ | ✓ |
| Expenditure on core services | ✓ | ✓ | ✓ | ✓ |
| Past/projected debt-servicing requirement | ✓ | ✓ | ✓ | ✓ |
| Past/projected DSCR | ✓ | ✓ | ✓ | ✓ |
| Liquidity | ✓ | ✓ | ✓ | ✓ |
| Projected revenue/expenditure growth | ✓ | ✓ | ✓ | ✓ |
| **Current and future financial positions** | | | | |
| Own revenue/revenue receipts | ✓ | ✓ | ✓ | ✓ |
| Grants from the state government/total revenue | ✓ | ✓ | ✓ | ✓ |
| Operating surplus/deficit | ✓ | ✓ | ✓ | ✓ |
| Operating surplus/revenue receipt | ✓ | ✓ | ✓ | ✓ |
| Non-debt capital income/capex | ✓ | | | |
| Operating surplus/net debt | ✓ | ✓ | ✓ | ✓ |
| Interest coverage ratio | ✓ | ✓ | ✓ | ✓ |
| Debt-service coverage ratio | ✓ | ✓ | ✓ | ✓ |
| Operational effectiveness and policy framework | ✓ | | | |
| Expenditure on core services/total expenditure | ✓ | ✓ | ✓ | ✓ |
| Establishment cost/revenue expenditure | ✓ | ✓ | ✓ | ✓ |
| Water supplied per capita | ✓ | ✓ | | |
| Area and population coverage for each of the core services | ✓ | ✓ | ✓ | ✓ |
| Per capita expenditure on primary education | ✓ | | | |
| Capex in relation to existing services | ✓ | ✓ | ✓ | |
| Per capita expenditure on health services | ✓ | | | |
| Collection efficiency of taxes and user charges | ✓ | | | |
| **Policy framework** | | | | |
| Organisational structure and responsibility division | ✓ | ✓ | ✓ | ✓ |
| **Credit Rating Agencies** | CRISIL | Brickw | CARE | India |

| **Parameters** | | orks | Ratings | Ratings |
|---|---|---|---|---|
| Systems and procedures: level of computerisation | ✓ | | | |
| Project management capabilities and track record of execution | ✓ | ✓ | ✓ | ✓ |
| Reform orientation | ✓ | ✓ | ✓ | ✓ |
| Initiatives adopted to enhance resources | ✓ | | | |
| Level of control exercised on expenditure | ✓ | | ✓ | ✓ |
| Level of disclosures and transparency | ✓ | ✓ | ✓ | ✓ |
| Property tax collection<br>Level of tax collection per capita | ✓ | ✓ | ✓ | ✓ |
| Project evaluation (only for municipal bond) | ✓ | ✓ | ✓ | ✓ |
| **Evaluation of credit enhancement mechanisms** | | | | |
| Financial flexibility to meet unforeseen contingencies | | | ✓ | |
| Constitution of the project as a departmental project or an SPV | | | ✓ | |
| Sources and uses of funds for project being financed.<br>Analysis of projected revenues and expenditure for the tenure of the instrument as well as the underlying assumptions | | | ✓ | |
| Revenue flow pattern from the project and extent of cost recover | | | ✓ | |
| Committed budgetary support and other credit enhancement measures | | | ✓ | |
| Sensitivity analyses to user charge hikes, cost of borrowing etc | | | ✓ | |
| Evaluation of credit enhancement measures | | | ✓ | |
| Track record in project implementation | | | ✓ | |

**Source: Rating criteria for municipal and urban local bodies, CRISIL, 2020; Rating criteria for municipal and urban local bodies, Brickworks, Rating methodology for urban infrastructure projects, CARE Ratings, 2020; Local and state governments rating criteria, India ratings and research, 2021**

Service level parameters are of utmost importance as they assess the performance of WASH services, governance, and operational performance of cities. Rating cities based on a creditworthiness score that incorporates WASH service indicators sounds like a futuristic and incredibly beneficial approach. Assessing the creditworthiness of a city is not only assessing the financial performance but also recognizing the importance of its basic WASH services and governance. A city with a high creditworthiness score in this context would not only be financially sound but also excel in providing essential services like reliable water supply, efficient sanitation systems, and effective overall WASH governance practices. Generally, credit rating agencies assess the overall financial and operational performance of cities based

on several criteria with emphasis on financial criteria. The parameters include economic profile, service delivery, dependence on own revenue sources, debt ratios, servicing mechanisms, conditions on further borrowings, liquidity and tax collections which varies according to different CRAs. The PAS framework details out into the service level indicators like WASH access, coverage and treatment, cost recovery of WASH service, collection of WASH taxes, complaint redressal mechanisms, human resource adequacy and accounting quality based on PAS service level benchmark data. The indicators are compared to MoHUA's benchmark.

**Figure 6 PAS Creditworthiness assessment approach versus typical credit rating agencies approach in India**

| Parameters | PAS Creditworthiness Assessment Framework Approach | Credit Rating Assessment Approach by CRAs |
|---|---|---|
| **Rationale** | Annual assessment to measure and improve creditworthiness of cities. | Mandatory pre-requisite for issuance of debt securities which is regulated by SEBI |
| **Overall Approach and Methodology** | Assessment of Financial and Operational Indicators based on publicly available data. Detailed assessment of operational indicators is done and reported in city reports. | Assessment of Financial and Operational Indicators based on data obtained on a one-to-one basis from cities. Major KPIs benchmarked by MoHUA are only used for assessment which again varies from one CRA to another. |
| **Assessment Model** | Simple, quick self-assessment and improvement tool to measure creditworthiness of cities. | Requires skilled human and monetary resources for assessment, hence is time-consuming. |
| **Results and application** | Individual detailed reports and consultation with cities. Do It Yourself Toolkit to assess creditworthiness of cities | Individual detailed reports prepared and released in consultation with cities. |
| **Scalability** | Easily scalable | Methodology is scalable yet tedious and time-consuming. |

There is a difference in the approach developed by CWAS Team as compared to the City Creditworthiness Initiative by World Bank and the Kenya Creditworthiness Indexing. The broader objective of the City Creditworthiness Initiative (World Bank) was to assess the creditworthiness at three levels of government- local, state and national with the available data. This was also extended to creation of database for borrowings during the assessment and launching it in public domain. But data points remain a challenge in context to assessing local revenues and expenditure. Under the initiative, a five-day workshop was organised in India in December 2022. Based on this, country profile has been created for India which captures regulatory regime, sources of lending, debt management, transparency, and initiatives. However, it doesn't capture any city level assessment reports. The Kenya Creditworthiness framework is adapted largely from the shadow rating approach for WSPs in Kenya, 2011 and the Practitioners workshop for financing urban utilities in Africa, 2006. The

PAS Creditworthiness assessment framework captures both financial and service level indicators for assessment of creditworthiness of ULBs using publicly available data. The annual self-assessment tool will help cities not only assessing but also monitoring and improving its creditworthiness. This approach is easily scalable in Indian cities of diverse population, size and geography.

**Table 4 Creditworthiness approach versus other similar initiatives across the world**

| Parameters | City Creditworthiness Initiative | Kenya Creditworthiness Index | PAS Creditworthiness Assessment Framework |
|---|---|---|---|
| **Rationale** | Five-year initiative to provide technical assistance to cities | Annual assessment to assess creditworthiness of WSPs of Kenya. | Annual assessment to measure and improve creditworthiness of cities |
| **Overall Approach and Methodology** | Formation of City Creditworthiness Academies which train city officials to improve creditworthiness of LMIC on a path to improve green growth and creditworthiness. Indicators considered for assessment are majorly based on financial parameters. Data is a huge constraint. | Adapted from shadow rating approach and then annual creditworthiness index is assigned. Comparison of creditworthiness score with previous shadow rating of WSPs. Financial parameters are included for assessment. | Assessment of Financial and Operational Indicators based on publicly available data |
| **Assessment Model** | Guidelines/ toolkits are developed | Data collected from WSPs and fed in the system | Simple, self-assessment and improvement tool. |
| **Results and application** | Has trained 261 local authorities across 30 low- and medium-income countries. Workshop is done in India too but no further developments on city level. | Useful starting point for screening the creditworthiness of the WSPs by the commercial lenders and becomes a management tool for the WSPs | Individual detailed reports and consultation with cities. Do It Yourself Toolkit to assess creditworthiness of cities |
| **Scalability** | Planned to scale up in 300 cities across 60 LMIC. | | Tested across 30 Indian cities across 10 states of various population basket size. Hence, easily scalable |

Source: City Creditworthiness Initiative, World Bank, 2015, Kenya Water Service Provider Creditworthiness Index Report, 2015

## 3.3 Creditworthiness Assessment Indicators

The creditworthiness scoring methodology adapted for the study is developed based on review and assessment of actual credit rating process done by Credit Rating Agencies (CRA's) and few international practices. The criteria include factors that mirror key rating factors of the credit rating agencies.

The assessment framework considered for ratings is based on financial and operational parameters. The financial parameters include revenue size and performance, expenditure management, liquidity profile, leverage ratios. The non-financial service level parameters include water, sewerage/ FSSM and solid waste management service levels like coverage, treatment adequacy, human resource adequacy, grievance redressal mechanisms, cost recovery, collection efficiency, accounting quality and transparency.

Each parameter includes a set of sub-indicators. For example, under the parameter of revenue profile, sub indicators like own-tax to total revenues, non-tax to total revenues, revenue grants to total revenue, property tax to total revenue is considered. Each of the indicators is given weightage based on its impact on the creditworthiness assessment. The indicators are assessed in terms of their relative risks and a weighted value/ score is worked out. For example, revenue profile and expenditure management, liquidity and solvency profiles, cost recovery and collection efficiency may have higher impact than adequacy of staff and grievance redressal mechanisms. Overall creditworthiness score is calculated as a weighted sum of all the individual scores of the parameters on the base of 100.

**Table 5 Key parameters and indicators for creditworthiness assessment**

| | Parameter | | Indicator |
|---|---|---|---|
| **Financial Ratios** | | | |
| 1 | Income Ratios | 1.1 | Own Tax Revenue to Total Revenue Income Ratio (%) |
| | | 1.2 | Non-tax Revenue to Total Revenue Income Ratio (%) |
| | | 1.3 | Assigned Revenue to Total Revenue Income Ratio (%) |
| | | 1.4 | Revenue Grants to Total Revenue Income Ratio (%) |
| | | 1.5 | Own Revenue Income/Total Revenue Income (%) |
| | | 1.6 | Property tax demand as a % of own tax |
| | | 1.7 | Property tax demand as a % of total revenue |
| | | 1.8 | Property tax collection as a % of own tax |
| | | 1.9 | Property tax collection as a % of revenue |
| 2 | Expenses Ratios | 2.1 | Establishment Expenses to Total Revenue Income Ratio (%) |
| | | 2.2 | Fixed charge=(Establishment + Admin Int.)/ Revenue Income (%) |
| | | 2.3 | O&M/ Total revenue income |
| | | 2.4 | Establishment Expenses to Total Revenue Expenditure Ratio (%) |
| | | 2.5 | Fixed charge= (Establishment + Admin Int.)/ Revenue Expenditure (%) |
| | | 2.6 | O&M/ Total Revenue Expenditure |

| | Parameter | | Indicator |
|---|---|---|---|
| 3 | Operating Ratios | 3.1 | Surplus / Deficit prior to depreciation / interest) to Total Income Ratio (%) |
| 4 | Debt Servicing Ratios | 4.1 | Interest Service Coverage Ratio (Operating Surplus/ Interest) |
| 5 | Leverage Ratios | 5.1 | Total borrowings/ Total revenue income |
| 6 | Liquidity Ratios | 6.1 | (Cash and bank balance + all investments)/ Revenue Expenditure |
| 7 | Budget Size/ Economic Base | 7.1 | Revenue Income |
| | | 7.2 | Revenue Expenditure |
| | | 7.3 | Per Capita Revenue Income |
| | | 7.4 | Per Capita Revenue Expenditure |
| | | 7.5 | Per Capita Property Tax |
| | | 7.6 | Per Capita Own Tax Income |
| | | 7.7 | Growth of Revenue Income (CAGR) |
| | | 7.8 | Growth of Revenue Expenditure (CAGR) |
| **Service Level Operating Ratios** | | | |
| 8 | WASH Coverage | 8.1 | Water supply coverage (No of water connections/ property) |
| | | 8.2 | FSSM / Wastewater/ Sewerage Coverage |
| | | 8.3 | SWM Coverage |
| | | 8.4 | Toilet coverage |
| 9 | WASH user charges and property tax collection efficiency | 9.1 | Collection efficiency of water tax |
| | | 9.2 | Collection efficiency of sanitation tax/ sewerage charges |
| | | 9.3 | Collection efficiency of SWM charges |
| | | 9.4 | Collection efficiency of property tax |
| | | 9.5 | Collection efficiency of arrears |
| 10 | WASH Cost Recovery | 10.1 | Cost Recovery in Water Services |
| | | 10.2 | Cost Recovery in Sanitation Services |
| | | 10.3 | Cost Recovery in SWM services |
| 11 | Metering and NRW | 11.1 | Non-Revenue Water |
| | | 11.2 | Metering of water connections |
| 12 | Adequacy, Treatment, Reuse | 12.1 | Adequacy of water supply (lpcd) |
| | | 12.2 | Adequacy of treatment of sanitation |
| | | 12.3 | Adequacy of treatment of SWM |
| | | 12.4 | Extent of re-use of Wastewater |
| 13 | Accounting Quality and transparency | 13.1 | Does the city prepare annual audit reports of CITIES and publish it in public domain? |
| | | 13.2 | Does the city follow accrual-based accounting? |
| 14 | Human Resource Adequacy | 14.1 | Total working staff versus sanctioned in water supply |
| | | 14.2 | Total working staff versus sanctioned in sanitation |
| | | 14.3 | Total working staff versus sanctioned in SWM |
| 15 | Grievance Redressal Mechanism | 15.1 | Grievance Redressal in water supply |
| | | 15.2 | Grievance Redressal in sanitation |
| | | 15.3 | Grievance Redressal in SWM |

**Table 6: Importance of each parameter**

| Parameter | Importance of the indicator |
|---|---|
| Income Ratios | These ratios indicate the ability of the urban local body/city to translate its economic base into actual revenues based on its capacity to levy and collect taxes and user charges. |
| 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 |
| 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. |
| Debt Servicing Ratios | Debt Servicing Ratios indicate the adequacy of municipal cash flows to meet debt servicing requirements in a timely manner. |
| Leverage Ratio | This ratio indicates the level of current leveraging of their urban local body/city vis-a-vis its net worth and revenue profile. |
| 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. |
| Size of revenues | This indicates the size of income, expenditure, and their growth rate over the years. It is also a proxy for the economic base of the city. |
| WASH Service Levels (coverage, collection efficiency, cost recovery, treatment adequacy) | These indicators help assess the performance of the city in its WSS service delivery in terms of coverage, treatment, and financial sustainability. |
| Accounting Quality and Transparency | This indicator reflects the timeliness of providing audited information (an important regulatory requirement for issuance of municipal bonds) as well as transparency in terms of access to the same in the public domain. |
| Human Resources and Adequacy of Staff | 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. |
| Complaint Redressal Mechanisms | The parameters used are indicative of the city/cities ability to redress the complaints received from consumers/citizens. |

## 3.4 Assessment for Scoring and Rating Methodology

The selection and finalization of indicators has been done through an iterative process to ensure alignment with the formal credit rating assigned to the same city available in the public domain. The audited municipal balance sheets are analyzed in detail in the context of the functional domain and taxation powers assigned to cities under their respective state Municipal Acts as well as the National Municipal Accounting Manual. While it has been

noticed that wide variations in accounting classification even within cities operating under the same Municipal Act, we have attempted to develop financial indicators which are comparable across cities irrespective of the differences in accounting classification.

### 3.4.1 Rating Methodology

The PAS shadow rating scale is defined based on review of actual credit rating scales by CRAs. Rating becomes an essential parameter for a city to understand where it will actually stand in terms of financial and service level performance before it gets actual credit rating. Hence, rating becomes more like a self-assessment tool rather than a comparative tool of city's performance with peers. The PAS rating scale is defined as below:

**Table 7 PAS Creditworthiness Assessment Scale**

| PAS Creditworthiness Rating Scale | Rating | Creditworthiness | Grade of Investment |
|---|---|---|---|
| Above 90 | PAS AAA | Highest level of creditworthiness | Investment Grade |
| 70-90 | PAS AA | High level of creditworthiness | |
| 60-70 | PAS A | Adequate level of creditworthiness | |
| 50-60 | PAS BBB | Moderate level of creditworthiness | |
| 40-50 | PAS BB | High level of Credit Risk | Below Investment Grade |
| 30-40 | PAS B | Higher level of Credit Risk | |
| 20-30 | PAS C | Highest level of Credit Risk | |
| Less than 20 | PAS D | Not creditworthy | |

These rating levels fall into two categories: Investment Grade, where a city is creditworthy and is assessed to be capable of honouring its debt obligations and therefore is attractive to investors and Speculative Grade, where a city is not seen to be creditworthy and therefore not attractive to debt investors/lenders. Lenders consider 'BBB- to AAA' ratings as 'investment grade', meaning entities with these ratings are of medium to good credit quality and likely to honour commitments made on their loans/bonds in terms of paying interest on time and repaying principal as and when due and, therefore, can access the private sector financial markets.

# 4 Creditworthiness Assessment of Cities

This Section presents the results of the creditworthiness for 30 Indian municipal corporations. The section reviews creditworthiness assessment and key findings from the cities.

## 4.1 City Selection and Data Sources

PAS Creditworthiness assessment is carried out for 30 municipal corporations across India. The selection of cities is purely based on availability of data points in public domain. The cities are selected from nine states across India like Gujarat, Maharashtra, Madhya Pradesh, Uttar Pradesh, Jharkhand, Chhattisgarh, Telangana, Karnataka and Tamil Nadu.

The revenue size and balance sheet which dominate the creditworthiness of the Municipal Corporation is mainly dependent on the population size of the city. Hence, the cities are categorized according to their population size as per below:

**Table 8 Cities selected for testing creditworthiness assessment framework**

| Population Size | Cities |
|---|---|
| **4 million plus** | Ahmedabad, Surat, Pune, Lucknow |
| **1- 4 million** | Aurangabad, Pimpri Chinchwad, Vadodara, Rajkot, Warangal, Ranchi, Raipur, Indore, Dhanbad, Agra, Bareilly, Moradabad, Prayagraj, Madurai, Vishakhapatnam, Vijayawada |
| **Less than 1 million** | Jalgaon, Chas, Satna, Saharanpur, Nizamabad, Jamnagar, Erode, Bhilai, Bilaspur, Tumkuru |

Latest available data points of consecutive years during FY 2018-22 have been considered. Unlike actual credit rating processes, the developed methodology does not involve any processes of direct communications with urban local bodies. The data sets are compiled from Performance Assessment System of CWAS, CEPT, financial audited statements available in public domain from city websites, and City Finance portal of MoHUA.

**Figure 7 Cities selected for testing creditworthiness assessment framework.**

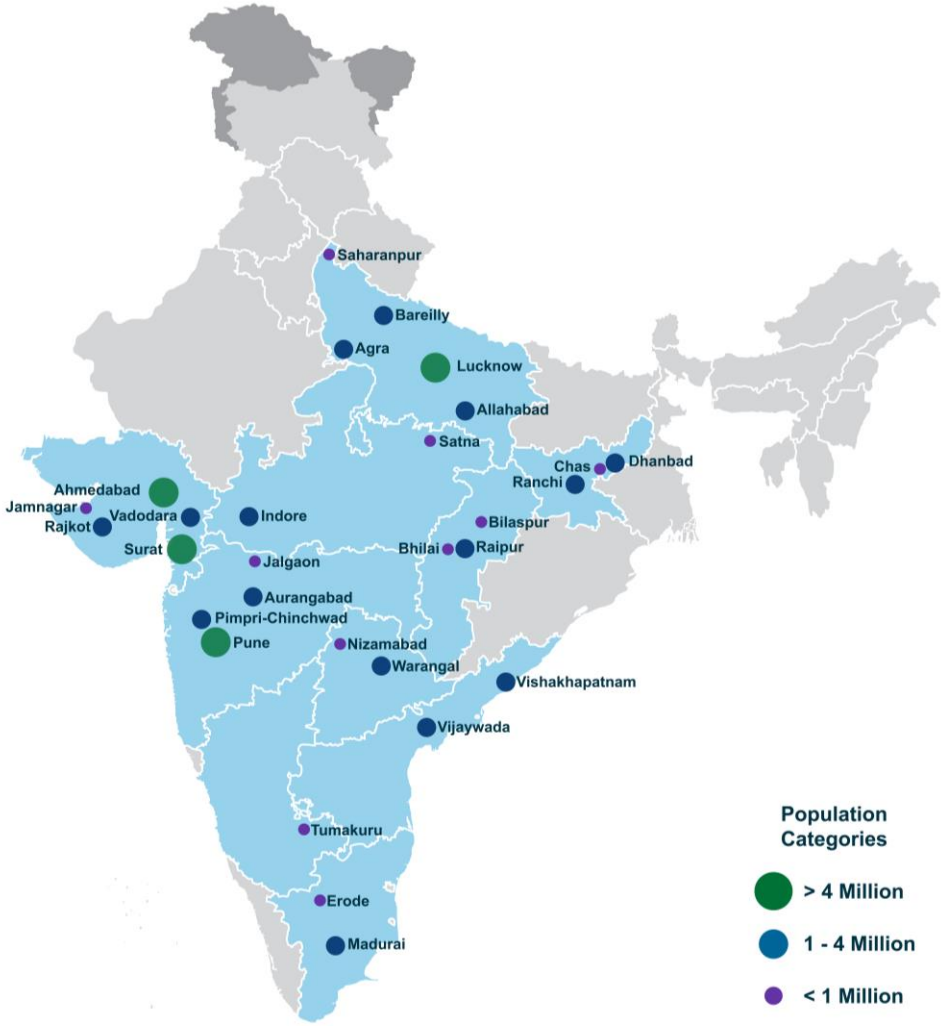



**Table 9 Data points used for creditworthiness assessment**

| Source | Data/ Framework/ Dashboard | Data Source/ Links |
|---|---|---|
| CWAS-CRDF-CEPT | PAS Framework | https://cwas.org.in/cwas-resources/performance-assessment-toolkit |
| MoHUA | City Finance | https://cityfinance.in/home |
| Other Resources | City Website \| Budgets and Financial Statements \| Development Plans | Multiple sources |

## 4.2 Overall results of creditworthiness assessment based on pilot cities

The overall creditworthiness assessment rating is given based on the combination of financial and operational performance of the Municipal Corporations.

**Table 10 Results of Creditworthiness Assessment of 30 cities**

| PAS Creditworthiness Score | Rating | Cities | Creditworthiness |
|---|---|---|---|
| **Above 90** | PAS AAA | | Highest level of creditworthiness |
| **71-90** | PAS AA | Pune, PCMC, Surat, Vadodara, Indore Ahmedabad, Vishakhapatnam | High level of creditworthiness |
| **61-70** | PAS A | Vijayawada, Jamnagar, Jalgaon, Bhilai, Raipur, Lucknow | Adequate level of creditworthiness |
| **51-60** | PAS BBB | Rajkot, Chas, Aurangabad, Moradabad, Tumakuru, Warangal, Agra, Ranchi, Bilaspur, Madurai, Satna,Prayagraj, Saharanpur, Nizamabad | Moderate level of creditworthiness |
| **41-50** | PAS BB | Dhanbad, Erode, Bareilly | High level of Credit Risk |
| **31-40** | PAS B | | Higher level of Credit Risk |
| **21-30** | PAS C | | Highest level of Credit Risk |
| **Less than 20** | PAS D | | Not creditworthy |

### 4.2.1 Overall Creditworthiness Assessment and Rating

Pune, PCMC, Surat, Vadodara, Ahmedabad and Indore Municipal Corporations have high quality of creditworthiness and have been assigned PAS AA rating based on their creditworthiness scores. Vishakhapatnam, Vijayawada, Jamnagar, Bhilai, Jalgaon, Raipur and Lucknow Municipal Corporations have adequate quality of creditworthiness based on which these cities have been assigned PAS A rating. Rajkot, Chas, Moradabad, Aurangabad, Warangal, Ranchi, Nizamabad, Saharanpur, Bilaspur, Madurai and Satna Municipal Corporations have moderate quality of creditworthiness based on which these cities have been assigned PAS BBB rating. Bareilly, Dhanbad and Erode Municipal Corporation have high

level of credit risk based on which it is assigned PAS BB rating. The average overall creditworthiness assessment score of cities is 61.6 out of which 14 cities are performing above average whereas 16 cities are performing below average.

### 4.2.2 Financial Performance

On the financial performance of the cities, Pune stands out amongst the peer group at 93 score followed by PCMC (79), Vadodara (71), Vishakhapatnam (71), Indore (71) and Ahmedabad (70). Pune gets the highest score in financial vertical due to its highest revenue size and highest per capita revenue income for FY 2021-22. The average financial score of the universe of 30 cities is 60 with high performance in share of expenditure management, liquidity and leveraging capacity of borrowings. Cities have not performed well in share of own tax to total revenue income, per capita property tax and per capita own tax revenue indicators.

### 4.2.3 Operational Performance

Surat MC stands out in the operational performance at 88.8 among four million plus cities followed by Pune MC at 76.3. Vadodara MC scores the highest operational performance at 75.6 among the group of one-four million plus cities. Jamnagar MC scores the highest at 73.8 within the universe of cities with less than one million population. These cities are scoring highest operational performance scores due to high-quality in-service levels like WSS coverage, treatment adequacy, adequacy of staffing, efficient complaint redressal system and good accounting quality and transparency. The average operational performance score of all the cities is 65.5. Out of the universe of 30 cities, 16 cities score above average on their operational performance whereas 14 cities score below the average. Majority of the cities have performed well in their sanitation service levels and effective complaint redressal mechanisms, however, the water supply service levels have been moderate. Cities have achieved moderate to adequate level of collection efficiency for their property taxes, however, low to moderate for their WSS taxes and charges.

**Figure 8 Overall Creditworthiness Assessment Score of cities on a scale of 100**

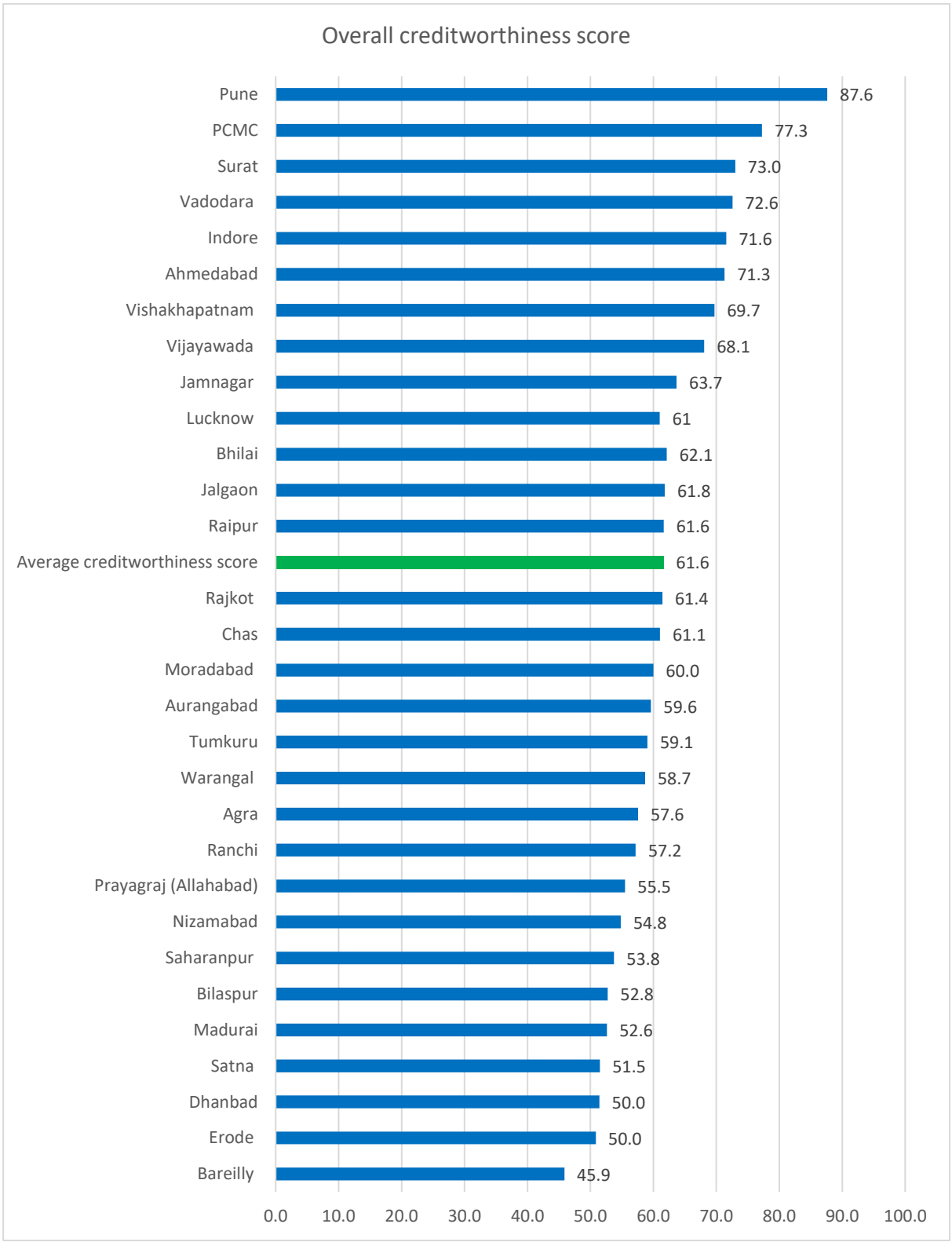


**Figure 9 Financial Score of cities on a scale of 100**

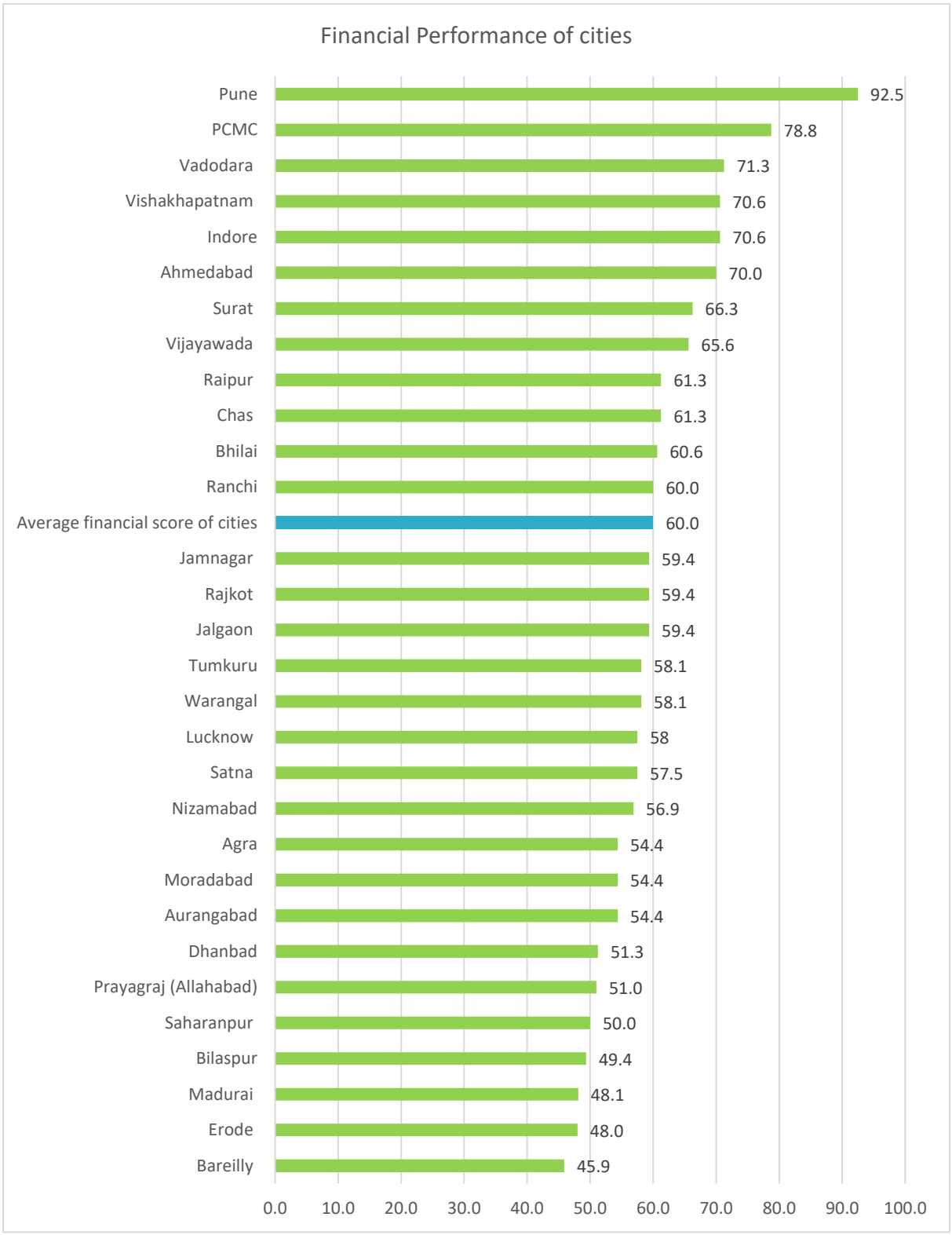
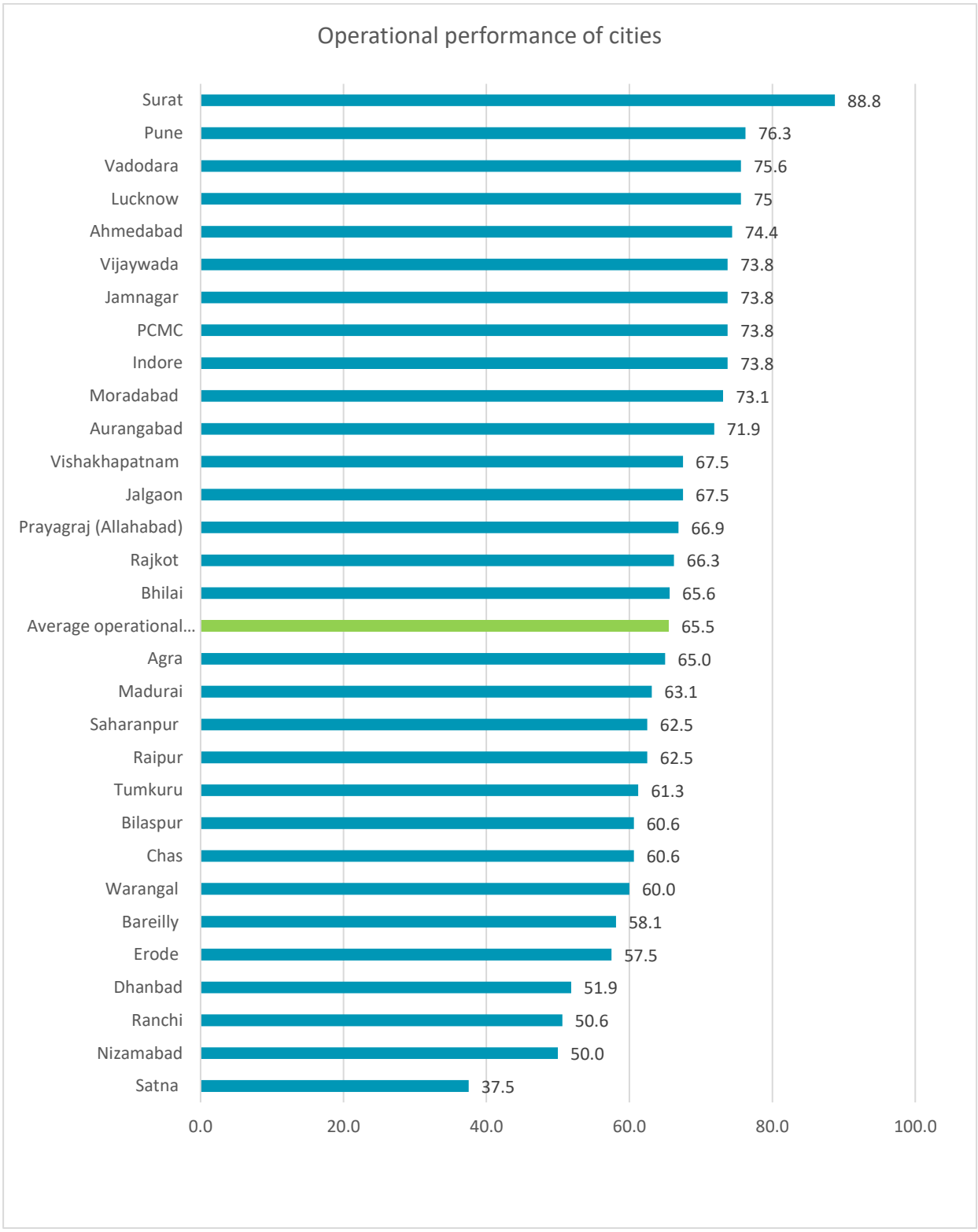


**Figure 10 Operational Performance of cities on a scale of 100**



### 4.2.4 Detailed Rationale and Key Rating Drivers

The key rating drivers for creditworthiness quality are revenue size and profile, expenditure management, liquidity profile, WASH service levels of a city-coverage, treatment adequacy, accounting quality and transparency. PAS creditworthiness score is a combination of legal and administrative framework, economic base, financial performance and operating performance.

**Economic and social profile**

Economic profile of the cities were studied to get a sense of the economic base from which the city can derive both its tax and non-tax revenues. However, in Indian context, very few cities have managed to translate the strong economic base into a strong revenue base.

The economic profile of the cities is governed by their nature of industries, production of goods and services, employment opportunities, strengths and weaknesses. The economic base of the municipal body's service area is used to assess the tax base, elasticity of tax income and the possibility of enhancing the body's tax base and revenue-generating potential. The economic base of the service area would thus be a strong indicator of the citizens' ability to bear increase in taxes and user charges. Furthermore, non-tax revenue from activities such as commercial property development would also depend to a large extent on the service area's economic base.

Cities of Gujarat like Ahmedabad and Surat are rich in textile, pharmaceuticals, chemicals and industrial base whereas Rajkot has strong auto ancillary, machine and tool industry. Cities of Maharashtra like Pune and PCMC have strong IT sector, manufacturing, engineering and automobile base whereas Jalgaon has strong agricultural export and import industry. Cities of Jharkhand like Raipur, Ranchi and Chas have iron-steel, cement, metal works, agro-based industries whereas Dhanbad in Jharkhand has high coal mining and metallurgical industries. Indore is famous for its textile, banking, and finance sector. The economy of Warangal mainly relies on tourism and agro-based industries. Cities in Uttar Pradesh like Lucknow, Moradabad, Agra, Prayagraj and Saharanpur have a robust industrial infrastructure with SEZ and industrial infrastructure development centre, cottage industries, wood, handloom and various small and large scale industries.

## 4.3 Key findings from creditworthiness assessment of cities

### 4.3.1 Revenue and Expenditure Profile

Size of revenues is an important criterion to measure creditworthiness of a city. It is dependent on many factors such as own-tax revenue sources like property tax, water and sanitation tax; non-tax sources like rental income, development charges; sales and interest charges, assigned revenues and compensations and revenue grants.

### 1. Revenue size and expenditure management of the cities are reflected on their overall service level performance.

Cities with higher revenues can plan their regular operations and maintenance expenses based on their assessments of fixed administrative and establishment expenses using the creditworthiness self-assessment tool. Higher per capita revenue income of most of the cities across all the basket size is translated into its higher per capita revenue expenditure. Most of the larger metropolitan and smaller cities from the existing universe of 30 cites have their high per capita revenue expenditure translated into their high service level performance. Few exceptions Erode and Satna have higher per capita expenditure but lower than average service level performances.

- Pune Municipal Corporation collects highest per capita revenue income of INR 20,122 within the universe of four million plus cities covered in this study. PMC has the highest share of own tax income (more than 60%) among the peer cities of four million plus population whereas AMC's share is 28-30%, SMC's share is 40-45%.
- PCMC has the highest revenue income in terms of size and per capita of INR 17,863 followed by Indore, Vadodara and Vishakhapatnam in the universe of cities with population from one-four million.
- Within the universe of cities with less than a million population, the highest per capita revenue income is of Tumakuru MC is INR 5,478 for FY 2021-22 followed by Jalgaon, Jamnagar and Satna MC.

### 2. The distribution share of own tax, non-tax and revenue grants differs in the pool of cities.

Metropolitan cities with more than four million population have the highest income from own-tax and non-tax sources whereas low share of revenue grants as compared to cities with one-four million plus and less than a million population. However, share of revenue grant is higher for cities in Uttar Pradesh (>60%) as compared to other states. The average own tax contribution is 39%, non-tax contributions and assigned revenues are 31% and revenue grants is 30% of the universe of four million plus cities. For one-four million plus 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 34%. Within the universe of less than a million plus cities, the average contribution ratio of own tax revenues is 27%, non-tax is 22%, assigned revenues and compensations are 11% and revenue grants is 40%.

This distribution of own-tax, non-tax, assigned revenues and compensations and is governed by various State Municipal Corporation Acts and mandates. For example, Maharashtra Municipal Corporation Act allows inclusion of assigned revenues and compensations in tax revenue due to its untied nature whereas, Corporations in Gujarat report this in revenue grants, contributions, and subsidies due to its tied nature. Also, state government of

Maharashtra transfers a higher quantum of funds to ULBs compared to many other state governments. Maharashtra is the only state government that has promised a share of GST to cities in lieu of octroi and local body tax which were abolished post the implementation of the GST regime. The impact of GST imposition on local finances is well illustrated in the case of Mumbai. Jha (2019) and Udas Mankikar (2018) estimate that, "In compliance with the new GST regime, the Municipal Corporation of Greater Mumbai (MCGM) has had to abolish octroi, which on average had contributed almost 35 per cent of its annual total revenue" (p. 2). Cities in Gujarat, cities like Ahmedabad do not receive GST transfers/compensation from the state but are only being compensated for abolition of octroi. Annual reporting of taxes and compensations also differs from city to city. For example, Ahmedabad Municipal Corporation reports its rental income and fees in own tax income. Similarly, Surat Municipal Corporation reports its rental income, fees and user charges in own tax income.

### 3. Property tax contributes to one-third of the total revenue income of the cities, the rest funding is through non-tax sources, assigned revenues and revenue grants.

The average percentage of property tax share to total revenue income is less than 30% for all the classification of cities. This means that property tax which is a buoyant in nature is not the highest revenue income source for the sample cities. Many cities in Uttar Pradesh, Jharkhand, Chhattisgarh have higher dependency on revenue grants from the state. On the other hand, cities in Gujarat and Maharashtra have equal share of non-tax revenue streams like rental income, development charges etc. The highest share of property tax in four million cities is for Surat at 39% whereas the lowest is of Ahmedabad at 11%. The highest share within one-four million cities is 55% for Vijayawada whereas lowest among this classification is of Raipur at 11%. Within cities with less than a million population, the highest share is of Nizamabad at 62% whereas the lowest is of Bilaspur at 9%.

**Table 11 Property tax demand as a % of total revenue income**

| Property tax demand as a % of total revenue income | FY 2018-19 | FY 2019-20 | FY 2020-21 | FY 2021-22 | Max | Min |
|---|---|---|---|---|---|---|
| Four million plus cities | 27% | 25% | 25% | 26% | 39% (Surat) | 11% (Ahmedabad) |
| One-four million cities | 25% | 24% | 24% | 26% | 55% (Vijayawada) | 11% (Raipur) |
| Less than a million cities | 19% | 20% | 17% | 20% | 62% (Nizamabad) | 9% (Bilaspur) |

**4. Metropolitan cities are spending more on their fixed expenses; however, the spending share is low on operations and maintenance as compared to smaller cities.**

Expenditure management includes fixed establishment expenses, administration, operations and maintenance and interest expense. 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 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. In the universe of less than one million cities, the average fixed expenses is 44% whereas the average operations and maintenance expense is 26%. This means metropolitan cities are spending a higher proportion of their annual revenue expenditure on establishment expenses which may include salaries of contractual employees, pensions etc. and other fixed administrative costs.

**5. All four million, one-four million plus cities from the universe have operating surplus prior to depreciation and interest indicating a healthy financial profile.**

It is found that cities have shown operating surplus over consecutive four years indicating a healthy and stable financial profile when assessed prior to depreciation and interest. This allows them to spend on additional projects which the cities want to undertake in planning and achieving better services.

- 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 at INR 165 crores.
- 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.
- 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.

### 4.3.2 Liquidity Profile, Debt Servicing and Borrowing Capacity

**Liquidity Profile**

Liquidity is a measure of the cash and other current assets cities have available to quickly pay operational expenses and meet short-term and financial obligations. Cities with a good liquidity profile will have access to sufficient cash or easily convertible assets to meet the

financial obligations without delay. The liquidity profile is determined through an indicator quick ratio.

**Quick Ratio= (Cash and Bank Balance + Marketable Securities)/ Total Revenue Expenditure**

Marketable securities include investments in general and other funds which can be directly converted into cash. (Receivables are not considered due to their uncertain nature). Higher the quick ratio, higher cash flow can be liquidated for the local bodies.

The assessment indicates that most of the cities from the sample showed adequate cash balance and marketable securities which can be easily liquidated. This ensures them to fund for their future regular operations through existing cash reserves. Larger cities with more than one million population also have adequate asset bank.

Key findings from the assessment of cities are:

- Pune, Lucknow, Ahmedabad and Surat Municipal Corporations have strong liquidity profile, adequate cash balance and marketable securities through which they can comfortably meet their future operating expenses at least for a quarter period.
- All the one to four million plus cities have a positive liquidity ratio, 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.
- Most of the 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.

**Debt Servicing Ability**

Another key indicator to assess the financial health of a city is to assess its debt servicing ability. The debt servicing of the municipal corporations is measured through indicators like interest coverage ratio and leverage ratio. Ideally, DSCR is applied for measuring the debt servicing ability; there is data constraint in obtaining principal payments from the available balance sheet. Hence, interest coverage ratio and leverage ratio is considered for analysis.

**Interest Coverage Ratio= (Operating surplus prior to depreciation and interest)/ Interest**

Ideally, Interest coverage ratio (ICR) should be greater than 1. Higher the ratio indicates higher debt servicing ability for an urban local body.

**Leverage ratio = Debt/ Equity = Total borrowings/ General fund + Free Reserves**

Ideally, total borrowings / general fund + free reserves should not exceed 50% to ensure that debt servicing is adequately supported by resources retained by the municipal corporation.

- Within the universe of four million plus cities, Pune, Ahmedabad and Surat Municipal Corporations can comfortably pay for their future debt obligations with their operating surplus and adequate cash balance.
- Most of the Corporations from the universe of one to four million plus cities have a positive Interest Coverage Ratio (ICR). This indicates that they can comfortably pay for their future debt obligations from their operating surplus prior to depreciation and interest.
- 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. Tumakuru MC has 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.

**Borrowing Capacity**

The borrowing capacity of all the municipal corporations is estimated on the basis of operating surplus available prior to depreciation and interest. **The thumb rule for assessing the borrowing capacity of the municipal corporation is ideally considered as 2.5 times the operating surplus prior to depreciation and interest.** The credit rating agencies look at the minimum of DSCR of 2 in many of the covenants governing municipal bond issuances which implies that only half of the operating surplus prior to depreciation and interest is available for debt servicing. An ideal Debt Service Coverage Ratio (Operating Surplus/Debt Service (Principal + Interest) of 2 means that operating surplus is 2 times the debt service, indicating a relatively strong capacity to meet debt obligations as only half the available operating surplus is being utilised to meet annual debt servicing operations. If one assumes that a typical borrowing would be for a tenure of 10 years and for simplicity assume an interest of 10%, this covenant translates into borrowing limit of 2.5 times annual operating surplus. This is a rule of thumb and it has to be reassessed based on actual borrowing terms. However, this enables a quick estimation of safe borrowing capacity of a city. States have shown flexibility in terms of repayment of principal and interest for loans to the cities which either gets transferred from SFC grants or assigned revenues. For commercial borrowing, decisions will have to be made based on this safe estimated borrowing capacity.

1. **Both larger metropolitan and smaller cities have the ability to borrow from the market based on calculated borrowing capacity and can leverage additional investments. The creditworthiness assessment tool analyses that 26 cities have investment grade rating out of the universe of 30 cities and are able to borrow from the market.**

Within the universe, 86% of the cities have the ability from the market. The borrowing capacity varies according to corporation's annual operating surplus prior to depreciation and interest. Larger cities with higher revenue size like Pune, PCMC, Ahmedabad, Vadodara,

Indore and Surat have issued municipal bonds worth INR 100-200 crore for infrastructure projects. Interestingly, these cities have a much higher ability to borrow from the market ranging from INR 1000-9500 crore and other sources than what they have borrowed. Lucknow has issued a municipal bond of INR 200 crore and has additional debts to be paid to the state government leading to borrowing levels than the safe levels computed using the thumb rule explained earlier. However, structured escrow mechanisms, cash collaterals and liquidity support from the state government's Infrastructure Fund along with internal improvements on the revenue front has enabled Lucknow to obtain a AA credit rating. Cities like Jalgaon, Raipur, Ranchi and Warangal have a decent borrowing capacity ranging from INR 100-500 crore. These cities haven't yet issued any municipal bonds, yet they have the ability to borrow from the market. Smaller cities like Chas, Satna, Erode, Saharanpur, Warangal, Jamnagar, Ranchi, Jalgaon, Tumakuru etc. have borrowing capacity ranging from INR 13 crore to 335 crores. Cities like Dhanbad, Bilaspur and Bareilly had operating deficit prior to depreciation and interest. These cities have existing borrowings in the form of secured and unsecured loans which needs to be repaid. Such cities will have to improve their revenue streams to sustain regular operations as well as achieve a revenue surplus to improve their creditworthiness score to investment grade.

**Table 12 Estimated borrowing capacity vs current borrowings of cities**

| **Cities** | **Current borrowings (in crores)** (as on 31st March, '22) | **Estimated borrowing capacity (in crores)** | **Current borrowing to Estimated borrowing capacity (%)** | **Type of borrowing** |
|---|---|---|---|---|
| **Four million cities** | | | | |
| Pune | 200 | 9527 | 2% | Municipal bonds |
| Ahmedabad | 453 | 1994 | 23% | Municipal bonds and World Bank loan |
| Surat | 200 | 1334 | 15% | Municipal bonds |
| Lucknow | 799 | 404 | 196% | Municipal bonds and loan from UP state govt. |
| **One-Four Million cities** | | | | |
| Pimpari Chinchwad | 196 | 2722 | 7% | Municipal bonds and loan |
| Vadodara | 163 | 1576 | 10% | Municipal bonds |
| Indore * | 648 | 1555 | 42% | Municipal bonds |
| Visakhapatnam | 267 | 1509 | 18% | Secured loan |
| Raipur * | 84 | 486 | 17% | Secured loan |
| Vijayawada | 213 | 372 | 57% | Secured and unsecured loans |
| Ranchi | 107 | 194 | 55% | Unsecured loan |
| Prayagraj (Allahabad) | 14 | 174 | 8% | Unsecured loan |
| Moradabad | 0 | 116 | 0% | No borrowings |
| Warangal | 0 | 104 | 0% | No borrowings |

| Cities | Current borrowings (in crores) (as on 31st March, '22) | Estimated borrowing capacity (in crores) | Current borrowing to Estimated borrowing capacity (%) | Type of borrowing |
|---|---|---|---|---|
| Agra | 0 | 100 | 0% | No borrowings |
| Madurai | 108 | 92 | 117% | Secured loan |
| Rajkot | 2 | | | Secured loan |
| Dhanbad | 15 | Not applicable | Not applicable | Unsecured loan |
| Aurangabad | 70 | Not applicable | Not applicable | No borrowings |
| Bareilly | 0 | Not applicable | Not applicable | Unsecured loan |
| **Less than a million cities** | | | | |
| Tumakuru | 175 | 356 | 49% | No borrowings |
| Jalgaon | 0 | 242 | 0% | No borrowings |
| Jamnagar | 25 | 127 | 20% | Secured and unsecured loans |
| Bhilai | 5 | 88 | 6% | Unsecured loan |
| Saharanpur | 0 | 61 | 0% | No borrowings |
| Nizamabad | 161 | 46 | 350% | Secured loan |
| Erode | 109 | 41 | 266% | Secured loan |
| Satna | 23 | 31 | 74% | Secured loan |
| Chas | 0 | 14 | 0% | No borrowings |
| Bilaspur | 13 | Not applicable | Not applicable | Unsecured loan |

**2. All the cities follow double entry accounting and regularly publish their audit reports in public domain, however, information about when the cities publish their reports is not known.**

The cities follow an accrual based, double entry accounting system as per the National Accounting Manual and respective state mandates like Gujarat Municipal Accounts Code, 1961, The Maharashtra Municipal Accounting Code, 2010, Tamil Nadu Municipal Accounting Manual (TNMAM), Jharkhand Municipal Accounts Manual, Madhya Pradesh Municipal Accounts Manual, 2007. The Securities Exchange Bureau of India (SEBI) has mandated cities to upload their audited accounts within three months at the end of the financial year. As of March 31, 2022; all the cities have published their annual audited statement for the year 2021-22 on the city finance portal. Information about when the cities have published these reports is not known. Reporting formats of cities is not universal and their distribution of revenues and expenditures are governed by the State Municipal Corporation Acts.

**Service 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.**

### 4.3.3 WASH Service Levels

**Water and Sanitation Coverage, Adequacy and Treatment**

1. **Metropolitan cities have highest water service levels with coverage ranging from 64-100%, one-four million cities have moderate service levels with coverage ranging from 13-99%, cities with less than a million population have coverage ranging from 20-75%, however, NRW remains high for most of the cities.**

From the service level data analysis, it is found that majority of the four million plus cities have good water coverage and adequacy. In terms of adequacy, all the cities with population more than four million reported adequate water supply from 140-170 lpcd. Cities with population ranging from one-four million have average water service levels with the per capita water supplied was ranging from 75-177 lpcd. In this pool, the cities of Uttar Pradesh perform exceptionally well. Cities with less than a million population have coverage ranging from 20-75%. In terms of adequacy, none of the less than a million populated cities achieved the 135 lpcd water supply, it ranges between 80-132 lpcd. Among the universe of all 30 cities considered for assessment, 21 cities have NRW levels higher than MoHUA's benchmark of 20%. This indicates cities need to work on improving their NRW and reduce it through assessment of leakages in distribution and transmission networks, unauthorized connections, improved database etc.

2. **Metropolitan cities have 100% sanitation coverage, cities with one-four million population have 88% and cities with less than a million population have 83% sanitation coverage. All the cities need to improve their sanitation reuse practices.**

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 had 57% against the benchmark of 100%. SWM coverage was more than 80% in all four cities against the benchmark of 100%. Cities with one to four million plus population have 30-100% sanitation coverage. The average sanitation coverage is 81%, only four cities out of sixteen have less than the average coverage. SWM coverage in cities with one to four million plus population ranges from 19-100% with average coverage of 88%. Only four cities have less than average SWM coverage. All the ten cities with less than a million population except Jamnagar predominantly rely on on-site sanitation solutions. In Jamnagar, majority of households are connected to underground sewerage. The average sanitation coverage in these cities is 83%.

The National Water Policy 2012 mandates recycle and reuse of water as general norm and advocates treatment to specified standards before reuse of wastewater. It provides, properly planned tariff system to incentivize reuse of treated water in various sectors including industries, agriculture, and others. Though MoHUA's SLB indicator mandates cities to adapt reuse, only 13% of the cities from the sample have actually initiated the practice.

### 3. Smaller cities need to improve collection efficiency of property taxes, water, and sanitation taxes to enhance own sources of revenue. Larger cities have reported lower collection efficiency for property taxes than WSS charges whereas smaller cities have reported higher property tax collections than WSS collections.

Generally, very few municipal corporations have a high collection efficiency for their taxes, user charges and non-tax revenues. In the universe of 30 cities, cities with population more than 4 million have highest average collection efficiency for its property and WSS taxes at 74% and 69% respectively. Cities with population less than a million have the lowest WSS collection efficiency at 47%. Cities with population from one to four million have lower property tax collection efficiency at 67%. These cities need to improve their collections and enhance own revenue streams to improve their overall creditworthiness.

**Table 13 Average collection efficiency of WSS taxes and property taxes of cities for FY 2021-22**

| Category of cities | Average WSS taxes / charges collection efficiency | Average Property tax collection efficiency |
|---|---|---|
| Four million plus | 74% | 53% |
| One-Four Million | 51% | 67% |
| Less than a million | 47% | 68% |

### 4. Metropolitan cities are able to achieve 55-141% cost recovery in their WASH services. Cities with one-four million population achieve 15-93% cost recovery whereas cities with less than a million population achieve very low-cost recovery ranging from 10-76% in their WASH services.

Among the universe, cities with population more than four million have the highest average cost recovery in WSS services. Pune MC and Surat MC can recover more than 100% in WSS services; Lucknow at 82% whereas, Ahmedabad MC recovered 55%. Cities with population from one-four million, have moderate average cost recovery at 58%. Within this universe, Indore MC achieves highest cost recovery at 93% whereas Ranchi could achieve only 15%. Cities with less than one million population have the lowest average cost recovery in WASH services at 38% as compared to other pool of cities. In this category, the highest cost recovery is achieved by Jalgaon MC at 76% whereas the lowest is 10% by Saharanpur MC. One of the most important factors which is influencing operational cost recovery in WSS services is service coverage, NRW losses and tariff structures. It is found that all the cities with high NRW losses (>30%) have low-cost recovery in the WSS services. Refer Annex for details.

**Table 14 Cost recovery of WSS services of cities FY 2021-22**

| Category of cities | Average WSS cost recovery | Highest WSS cost recovery | Lowest WSS cost recovery |
|---|---|---|---|
| Four million plus | ~100% | 143% | 55% |
| One-Four Million | 58% | 93% | 15% |
| Less than a million | 38% | 76% | 10% |

# 5 Recommendations and Way Forward - Call to action

This Section presents key recommendations and suggestions based on the creditworthiness assessment and possible steps for way forward.

Infrastructure investments to improve WASH services is the need of the hour for Indian cities. Cities will need to innovate and access private sources of long-term financing through local capital markets and public-private partnerships. To attract investment from private sources cities need to first be creditworthy, which implies that cities have the capacity to honour financial commitments. They need to manage finances, plan development, and engage citizens using methods that emphasize sustainability and transparency. The limited revenue base of cities in terms of low property tax base and inadequate user charges has translated into high level of dependence on fiscal transfers. This has led to poor credit quality across majority of cities, as the fiscal transfers are not predictable and are erratic.

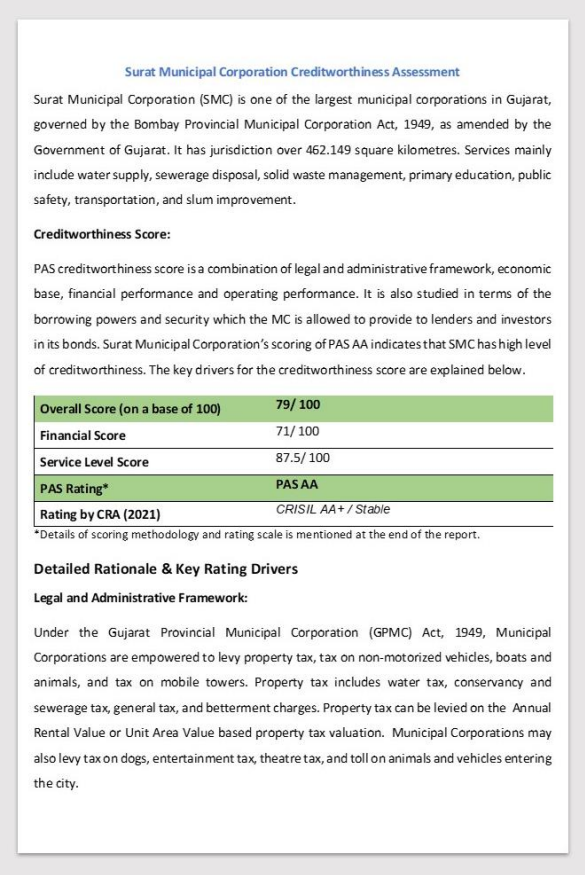
Based on the team's experience and extensive research, we have identified a few indicators based on facts (no qualitative judgements) for reliable creditworthiness assessment of cities. The proposed Creditworthiness assessment framework developed by CWAS, CEPT provides a tool to cities to assess their creditworthiness on an annual basis using factual data.

Using the CWAS creditworthiness assessment framework and tool, cities can assess their current operational and financial performance and develop a customized preliminary action plan of specific reforms, capacity building, and other actions that will improve their creditworthiness and enhance their ability to plan, finance and deliver infrastructure services.

### 1. System Development and collaboration with cities

The creditworthiness assessment approach has a set of indicators which must be updated on a timely and regular basis. Operational database from PAS SLB and financial database from City finance portal can be embedded in the tool at regular annual intervals for evaluation of creditworthiness on a timely basis. Annual re-evaluation of performance indicators will, over time, reflect the effectiveness of policies and targeted investments and technical assistance, providing continued guidance to decision-makers and city managers on city performance. Detailed creditworthiness reports will be generated for each city with a creditworthiness score with identification areas for improvement. This will help the cities in improving their creditworthiness parameters before they embarked on actual credit rating and accessing the bond markets. The tool also provides a simple approach to estimating borrowing capacity of the city based on their current operating surplus. The cities need to restrict their fresh borrowings to be within their estimated borrowing capacity after accounting for their outstanding debt. This will also ensure that cities will maintain data in appropriate formats and the taxonomy / nomenclature of financial terms will be uniform.

**Figure 11 Sample of Creditworthiness Score Report for Surat Municipal Coproration**



Surat Municipal Corporation Creditworthiness Assessment

Surat Municipal Corporation (SMC) is one of the largest municipal corporations in Gujarat, governed by the Bombay Provincial Municipal Corporation Act, 1949, as amended by the Government of Gujarat. It has jurisdiction over 462.149 square kilometres. Services mainly include water supply, sewerage disposal, solid waste management, primary education, public safety, transportation, and slum improvement.

**Creditworthiness Score:**

PAS creditworthiness score is a combination of legal and administrative framework, economic base, financial performance and operating performance. It is also studied in terms of the borrowing powers and security which the MC is allowed to provide to lenders and investors in its bonds. Surat Municipal Corporation's scoring of PAS AA indicates that SMC has high level of creditworthiness. The key drivers for the creditworthiness score are explained below.

| | |
|---|---|
| **Overall Score (on a base of 100)** | **79/ 100** |
| **Financial Score** | 71/ 100 |
| **Service Level Score** | 87.5/ 100 |
| **PAS Rating*** | **PAS AA** |
| **Rating by CRA (2021)** | *CRISIL AA+ / Stable* |

*Details of scoring methodology and rating scale is mentioned at the end of the report.

**Detailed Rationale & Key Rating Drivers**

**Legal and Administrative Framework:**

Under the Gujarat Provincial Municipal Corporation (GPMC) Act, 1949, Municipal Corporations are empowered to levy property tax, tax on non-motorized vehicles, boats and animals, and tax on mobile towers. Property tax includes water tax, conservancy and sewerage tax, general tax, and betterment charges. Property tax can be levied on the Annual Rental Value or Unit Area Value based property tax valuation. Municipal Corporations may also levy tax on dogs, entertainment tax, theatre tax, and toll on animals and vehicles entering the city.

Donors and national governments also value a municipal credit rating as a mechanism to assess financial and operational performance as well as accountability, transparency and governance. A city with a high credit assessment indicates a well-managed city that can be relied upon to manage grants and other forms of support appropriately. The credit assessment will also highlight any areas where a city might have issues and provide an indication as to where technical assistance should be targeted.

The PAS creditworthiness assessment evaluates that majority of the Indian municipal corporations have low revenue base due to low rates of property tax and user charges (water, sanitation, SWM) compounded by poor collection efficiency. Property tax arrears collections have been reported to be below 50% for most of the cities considered in these cities which is alarming. Another major cause for concern is that revision of property taxes and user charges is not being carried out on a timely basis in most of the universe of cities leading to a low revenue base with a slow rate of growth.

### 2. Improve revenue base by increasing property tax collections through improvements in assessment, billing, and collection.

One of the most important aspects of property tax collection improvements is to assess actual property tax demand and make improvements in billing and collection processes.

**Box Item 2 Good practice of PMC to generate revenue by enhancing its property tax system**

Prior to 2004–05, Pune used the annual rental value (ARV) for property tax assessment that did not account for the area and value of the property, making it less progressive and less buoyant. Assessment data collection prior to 2013 was an irregular process of physical property assessment by the revenue department based on applications filed by new property owners. Property tax billing was a manual process, and collection was done purely through collection centres in cash. PMC made self-assessment of properties mandatory for its citizens and levied penalties for false or misleading information. They adopted GIS based system of city mapping and creation of unique IDs for all properties has led to creation of a digital property database. This led to an increase in assessed properties by 18% in which INR 89 crore was added to the existing tax base of INR 228 crore from new properties that have been brought into the tax net increasing the enumeration base from INR 8.34 lakh to INR 9.23 lakh properties. PMC moved to a capital value-based system that considers the increasing value of properties for property tax assessment, making it a more progressive and buoyant tax system. PMC increased property tax collection centres and introduced digital platforms, partnerships with banks which helped in increasing the property tax collections with multiple folds. They also carried out amnesty scheme to recover property tax from top defaulters like malls, commercial centres etc. and added a revenue of INR 70 crore to the base. PMC also fast tracked the process of legally disputed properties and added additional revenue of INR 61 crore.

Source: Property taxation in India-Issues impacting revenue performance and suggestions to reform, World Bank Group, 2020

**Improving enumeration of properties through GIS- based solutions**: Many municipal corporations leverage GIS Mapping technology to improve their property assessments to achieve a robust property tax system. For example, Raipur MC appointed a third-party consultant for GIS mapping of properties. This objective was to be achieved by analysing the existing system of property assessment and collection and leverage GIS technology to plug inefficiencies. Identifying the unassessed and underassessed properties to increase coverage to at least 90% and achieving 90% efficiency in tax collection were the goals set by the RMC. Computerization of the tax management system and setting up of a digital grievance redressal system were two other goals set for the project.

### 3. Streamlining financial management processes

Linked to improving own-source revenue, introducing best practices in financial management can significantly aid a city's creditworthiness by demonstrating the city has strong and robust systems in place. This will also improve efficiency and transparency, helping to identify opportunities for savings and increasing investor confidence in the municipality. System and

process improvements through digitization and capacity building of cities to operate them will help them practice uniform municipal accounting and budgeting.

**4. Medium term investment planning and linking to annual budgeting cycle**

Cities can prepare medium term investment plans which can be linked to service delivery. Pipeline of projects can be assessed by the city officials based on its service level performance. The capital projects required for the cities in the next three years and the funds required for its operations and maintenance should be estimated. Various financing options required to fund the projects should be identified. The medium-term investment planning should also link with the revenue management- property taxes, WSS taxes/charges and other charges and borrowing capacity of the cities.

**5. Support credit enhancements through sustainable escrow and commercially viable mechanisms.**

Capacity building of ULBs is necessary to develop alternatives to reliance on state government guarantees to support municipal borrowings. These credit enhancements may involve strengthening escrow mechanisms arrangements with necessary reserve funds/cash collateral and enhanced financial and operational performance. This will enhance transparency of cities and improve trust of investors. SEBI has also urged municipal corporations to enhance transparency by establishing digital escrow accounts for specific cash flows, obtaining credit ratings for their bonds, and exploring various credit enhancement options.

**6. Cities have decent water and sanitation coverage, however, the NRW is high for most cities. Thus, water metering, regular water audits and service level improvement performance-based contracts might help cities to improve and evaluate their NRW losses scientifically. Cities also need to improve reuse practices for wastewater.**

Cities can take various initiatives for reduction of water loss like taking regular water audits at various scales of the city. An NRW-PBC is a contract for outsourcing technical, commercial, and construction activities related to NRW reduction, while providing the contractor with incentives to achieve the desired results. Unlike conventional NRW reduction contracts in which contractors are paid based on inputs (for example, number of connections replaced), NRW-PBCs pay the contractor for outputs, such as amount of water saved, number of illegal connections detected, or number of customers receiving 24/7 service. NRW-PBCs differ from management contracts, concessions, leases, or other forms of private sector participation, in that the utility retains control of utility operations and assets. (Kingdom, Sy, & Soppe, 2018) Enabling market for performance-based contracts for NRW can help in reducing water losses.

**Box Item 3 Performance-Based Contracts for Non-Revenue Water reduction in Vietnam**

Water utilities in Vietnam had limited funding, yet high demand for modernising infrastructure. Aging public water infrastructure which was not upgraded for 50 years weighed heavily on water utilities, contributing substantially to poor performance and water losses. NRW losses in Hanoi and Ho Chi Minh Cities were estimated to be 44% and 40% of the total water produced, respectively due to pipe leakage, metering inaccuracies, or illegal connections. (SWAN, 2011) Previous experience with traditional input based contracts based on pre-defined tasks brought non-satisfactory results in overcoming water losses. The advantages of the 'performance' element in the contracts come from aligning incentives with output objectives, in addition to more flexibility for the contractor in design and implementation of measures (PPIAF, 2016). The first PBC was implemented in Ho Chi Minh City in 2008 as an initiative from World Bank. During its six years' time span, this PBC project was able to save 122 MLD of water, improved supplying reliability, connected more customers to the network, and saved more than US$100 million of capital expenditures by reforming and restoring the water network. Comparing this project with a similar, traditional contract-based project which was executed in a neighbouring district of Ho Chi Minh City at the same time period, it was found that the PBC was implemented faster, saved more water, and reduced the operating costs per unit of water.

Source: Abdeldayem, Retrieved from "Performance Based Contracts for NRW reduction in Vietnam", https://iwa-network.org/performance-based-contracts-for-non-revenue-water-in-vietnam/, 2019

## 7. Scaling up and linking creditworthiness assessment framework with national and state frameworks and guidelines:

The creditworthiness assessment framework can be scaled across other Indian cities of various size and population and other states. The Ministry of Finance, GoI has initiated a circular dated June 23, 2023, about the Capital Investment Scheme for special assistance to states in which the central government will be offering incentives of INR 1.3 lakh crores. The scheme aims at improving creditworthiness of cities and making them ready to issue municipal bonds by incentivizing property tax governance reforms and ring-fencing of user charges on urban infrastructure. (Ministry of Finance, 2023)

## 8. Public Disclosure of creditworthiness assessment reports:

In consultation with the cities, the creditworthiness assessment of cities can be disclosed in public domain to improve transparency and accountability of cities. This will help cities avail a pool of investors from the borrowing market and gain investors' confidence to raise urban investments.

**Note: Individual city reports will be accessible. Please mail on cwas@cept.ac.in**

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