IS KOCHI READY FOR GREEN BONDS? A REGULATORY, FISCAL AND INSTITUTIONAL ASSESSMENT

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Centre for Public Policy Research

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1 Introduction

Global urbanisation is accelerating at an unprecedented scale, with projections indicating that 68 percent of the world's population will reside in urban areas by 2050 (Department of Economic and Social Affairs (UN) 2018). India, now the world's most populous nation, stands at the epicentre of this demographic shift. Similarly, by 2050, India is projected to add 416 million urban dwellers (Department of Economic and Social Affairs (UN) 2018). The World Bank (2022) estimates that meeting the needs of India's fast-growing urban population will require investments of approximately US$ 840 billion over the next 15 years (2020 prices) (Ghose and Date 2024, 7). This urban transition, while emblematic of India's developmental aspirations, also presents one of the most complex governance and infrastructure-finance challenges of the 21st century.

Indian cities are facing compounding risks, particularly those on the coast and in flood-prone lowlands, from extreme climate events that demand investment in adaptation as well as basic services. The Government of India has formally acknowledged a climate adaptation financing requirement of approximately US$ 700 billion by 2030 (Bibhudatta and Rathee 2025, 3). At the sub-national level, Kerala alone estimates an investment need of ₹ 52,238 crore through 2030 to implement its State Action Plan on Climate Change, with the state and central government together expected to cover barely 28 percent of that figure (Government of Kerala 2022, 230).

Additionally, at the local level, municipal governments are mandated to provide basic civic services, and their capacity to integrate climate action into urban planning is frequently constrained by a lack of fiscal independence and technical capacity. Municipal own-source revenues (OSR) in India stand at roughly 1 percent of GDP, and Urban Local Bodies (ULBs) remain heavily dependent on intergovernmental transfers which are ~40 percent of ULBs revenue between FY 12 and FY 18 (Bibhudatta and Rathee 2025, 7) that are unpredictable and infrequent. The result is a persistent and widening gap between the infrastructure cities need and the financing tools available to them.

To meet the escalating capital requirements for sustainable and climate-resilient urban development Green bonds represent one credible mechanism enabling municipalities to mobilise long-term institutional capital by committing it to defined environmental outcomes. While the Indian municipal bond market has grown modestly since 2015, its application to climate-aligned infrastructure in these fast-growing cities remains nascent. This paper examines whether Kochi Municipal Corporation (KMC) has the fiscal, institutional, and regulatory readiness to issue a green bond and what conditions and steps would need to be taken for such an issuance to succeed.

1.1 Research Objectives

This research aims to examine the conceptual underpinnings of Green Bonds and assesses their adaptability within the specific socioeconomic and administrative context of Kochi City. By evaluating the evolution and application of green financing within the KMC framework, this study seeks to analyse what institutional, financial, and regulatory gaps must be addressed to make it investment-ready. Through a rigorous analysis of policy frameworks, empirical reports, and academic literature, this study aims to identify avenues to optimise Municipal Green Bonds as a strategic financial catalyst for Kochi's sustainable development and long-term climate resilience.

Objectives:

1. To analyse the regulatory framework of municipal green bonds and to map the compliance requirements for Kochi.
2. To assess the financial health and creditworthiness of KMC.
   - Evaluate budget trends, revenue sources, expenditure, and debt and benchmarking Kochi against cities that have issued green bonds
3. To evaluate the green infrastructure readiness and investment potential of KMC.
4. To develop the policy roadmap for Kochi to become a creditworthy, investment-ready ULB.

1.2 Research Methodology

This study is based on a qualitative, single-case approach to assess the Green Bond readiness of the KMC. A review of secondary literature was conducted to contextualise global and national trends in municipal green bond markets. This is drawn on reports by international organisations, including the United Nations, World Bank, and Bank for International Settlements (BIS), alongside National Institution for Transforming India (NITI) Aayog publications, academic research papers on municipal green bonds, and news articles. These sources inform the study's understanding of market development, structural challenges, and comparable issuer experiences.

The analysis section is developed around a three-pillar readiness framework; Regulatory, Financial, and Institutional, developed by synthesising eligibility criteria drawn from SEBI's municipal bond regulations, credit assessment frameworks used by domestic rating agencies, and structural criteria applied in offer documents of comparable municipal green bond issuances in India.

The framework is not borrowed from any single source but constructed inductively from the convergence of these practitioner standards, making it grounded in actual market requirements. The study relies on secondary data and primary data collected through an interview with a KMC official, along with the publicly available documentation for the scope of this analysis.

Pillar 1: Regulatory Assessment

The first pillar examines whether KMC satisfies the legal and regulatory preconditions for issuing a municipal green bond in India. The assessment draws on the Securities Exchange Board of India's (SEBI) regulations and its green bond framework. The analysis also examines Kerala's Municipality Act and Loans Act to determine the scope of KMC's borrowing powers under state law.

Pillar 2: Fiscal Assessment

The second pillar assesses whether KMC's fiscal position is sufficient to support bond issuance and service debt obligations. The analysis covers three audited financial years of KMC's budget, the most recent available on the cityfinance.in the portal maintained by the Ministry of Housing and Urban Affairs (MoHUA) to examine the following dimensions: Own Source Revenue (OSR), Expenditure profile, Debt profile, Key financial ratios. And offer documents of municipal green bond issuances by comparable ULBs, like Ghaziabad.

Pillar 3: Institutional Assessment

The third pillar evaluates KMC's organisational and governance capacity to design, issue, and manage a green bond, including post-issuance reporting obligations. This goes beyond financial metrics to assess whether the institution has the internal systems and reform trajectory that investors and regulators expect a credible issuer. The assessment covers three sub-dimensions: financial reforms, service delivery performance, Electronic (E)-governance and transparency:

Data sources: Atal Mission for Rejuvenation and Urban Transformation (AMRUT) and Smart Cities Mission audit performance reports; offer documents of 7 MCs green bond issuers, MoHUA/Local Self Government Department (LSGD) publications; news reports and press releases on KMC reform initiatives.

Scope and Limitations

The framework assesses readiness at a point in time based on available data and does not constitute a formal credit assessment or legal opinion. Financial data is limited to what is publicly disclosed; KMC's internal project pipeline and unpublished budget revisions are not captured. The study does not model bond pricing or investor demand, which would require primary market data beyond the scope of this research.

1.3 Significance of the Study

The existing literature on municipal (muni) green bonds in India primarily adopts a macro-analytical perspective, offering a "bird's-eye view" of national trends and regulatory frameworks. While these studies are instrumental in understanding the broader capital market landscape, they often overlook the localised, operational complexities that determine whether individual municipalities actually possess the institutional and financial conditions necessary to access the market.

This study addresses that gap directly by shifting the focus from the national market to a single ULB the KMC prior to issuance. Rather than assessing whether Indian cities should issue green bonds, it asks whether KMC can, and on what terms. By doing so, it offers a replicable city-level readiness framework that other municipalities can apply when considering their first market entry.

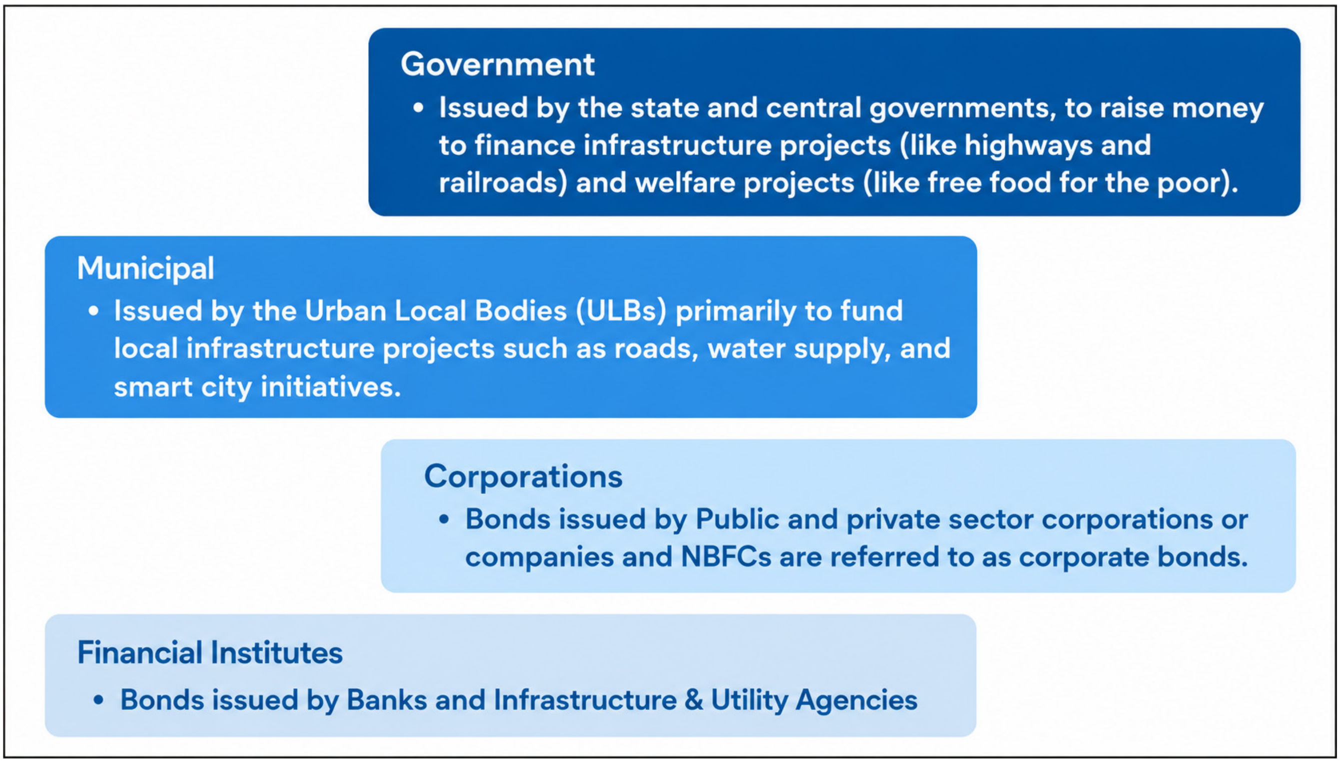
2 Literature Review & Regulatory Framework

2.1. Understanding Bonds: Definition, Types, Global and National Trends

What are Bonds?

A bond is a debt instrument in which an investor loans money to an entity which borrows the funds for a defined period of time at a variable or fixed interest rate (Reserve Bank of India 2020). These instruments serve as a primary mechanism for entities to mobilise large-scale capital for long-term projects. From a risk-management perspective, bonds are traditionally characterised by lower volatility than equity markets, providing investors with a more secure and predictable stream of income. The bonds can be broadly classified based on the issuing entity (SEBI, 2023), as seen in Figure 1. Each entity needs capital for different purposes and times.

Fig 1: Classification of bonds based on types of issuer



Source: Author's illustration

One of the type of bonds is a municipal bond (also known as a "muni bond"), a debt instrument issued to raise funds to be utilised towards the implementation of capital projects, refinancing of existing loans, meeting working capital requirements, etc., depending on the powers vested with the ULBs under respective municipal legislation. Based on the source of servicing, there are two types of muni bonds (SEBI 2015) as described below:

- **General Obligation Bonds :** Means debt securities where principal and interest are serviced through tax proceeds of the municipality. The repayment is guaranteed through the municipal body's tax revenues, making them relatively safer for investors.
- **Revenue Bonds :** Means debt securities which are serviced by revenues from one or more projects such as tolls, user charges, or fees. For example, a water supply project bond may be repaid through water charges collected from users

Muni Bond Market- Growth and Trends

The overall global municipal bond market demonstrated robust performance in 2025, with record issuance of US$ 580.4 billion, a 13 percent increase from 2024 (Zota 2025). As per the Asian Development Bank (ADB) 2025 Report, in terms of absolute size, the United States (outstanding issuance at US$ 4.2 trillion) and China (outstanding issuance of local government bonds (LGB) market is at US$ 7.4 trillion, (China Government Debt Center 2025, 18)) dominate global annual bond issuance by local government as of 2025, reflecting the scale and depth of their domestic fixed-income markets.

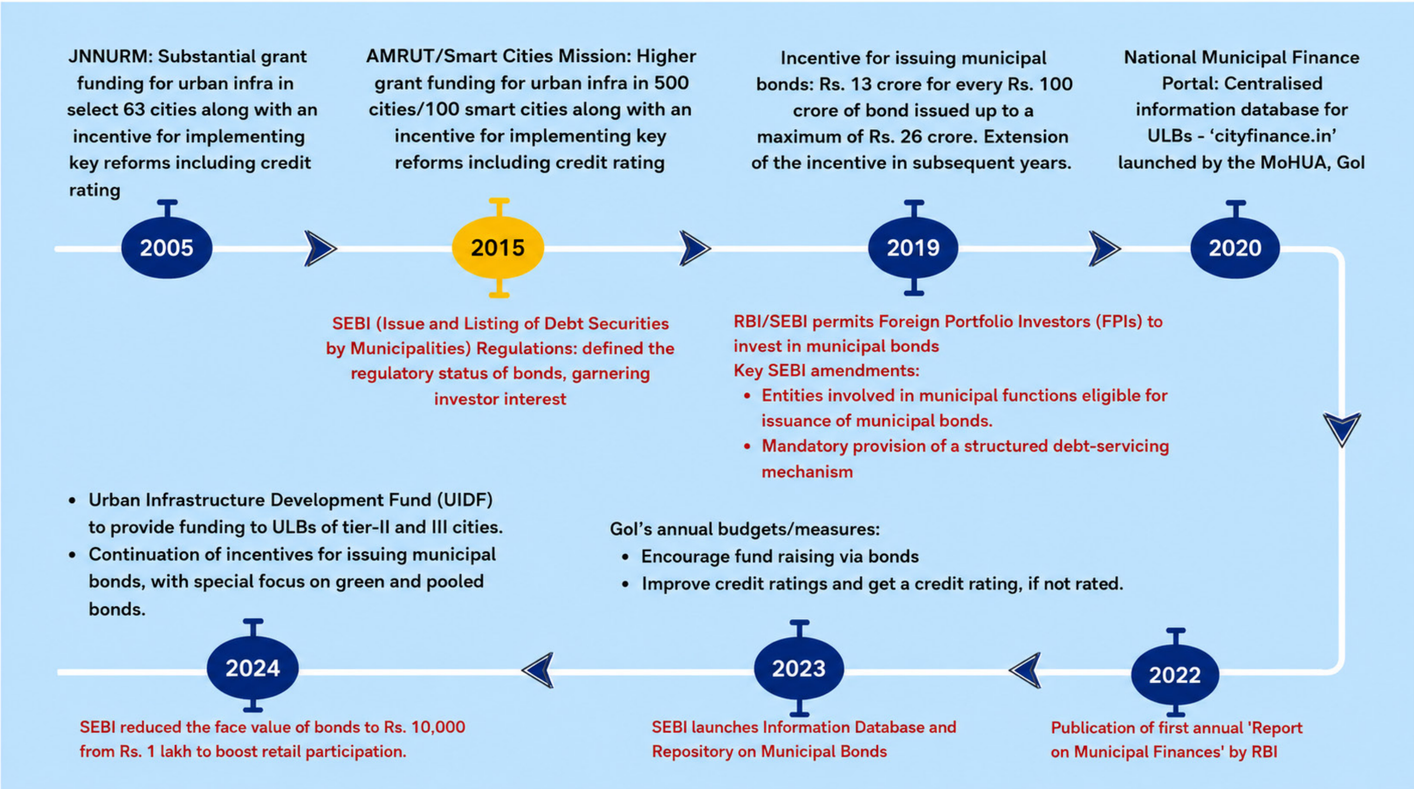
According to S&P's 2026 global forecasts, out of about US$ 1.7 trillion of projected Emerging Markets (EM), Local and Regional Governments' (LRG) entities in China and India will issue US$ 1.5 trillion and US$ 222 billion, respectively, thanks to deep capital markets in both countries that are insulated from swings in global financial markets.

Muni Bond Market in India

The urban local bodies (ULBs) in India have been structured into three categories: Municipal Corporations (MCs), Municipal Councils, and Nagar Panchayats as per the 74th Amendment to the Constitution. Since the Constitution delegates the powers regarding the establishment and regulation of ULBs to state governments, they derive their responsibilities and powers including borrowing, from state-level statutes that vary significantly from state to state.

The market's inception dates back to 1997, with the Bengaluru Municipal Corporation's pioneering ₹125 crore issuance backed by a state guarantee, followed by Ahmedabad's landmark ₹100 crore issuance in 1998 without sovereign support (Bibhudatta and Rathee 2025, 33). But the instrument remained largely underutilised for nearly two decades thereafter. Post-2015 is marked as a period of revival of the municipal bond market in India as seen in Fig 2, attributed to the proactive central government schemes and policies and regulations anchored by other sovereign institutions: the security market regulator (SEBI) and the Reserve Bank of India (RBI).

Fig 2: Key regulatory enablers relevant to KMC's issuance decision

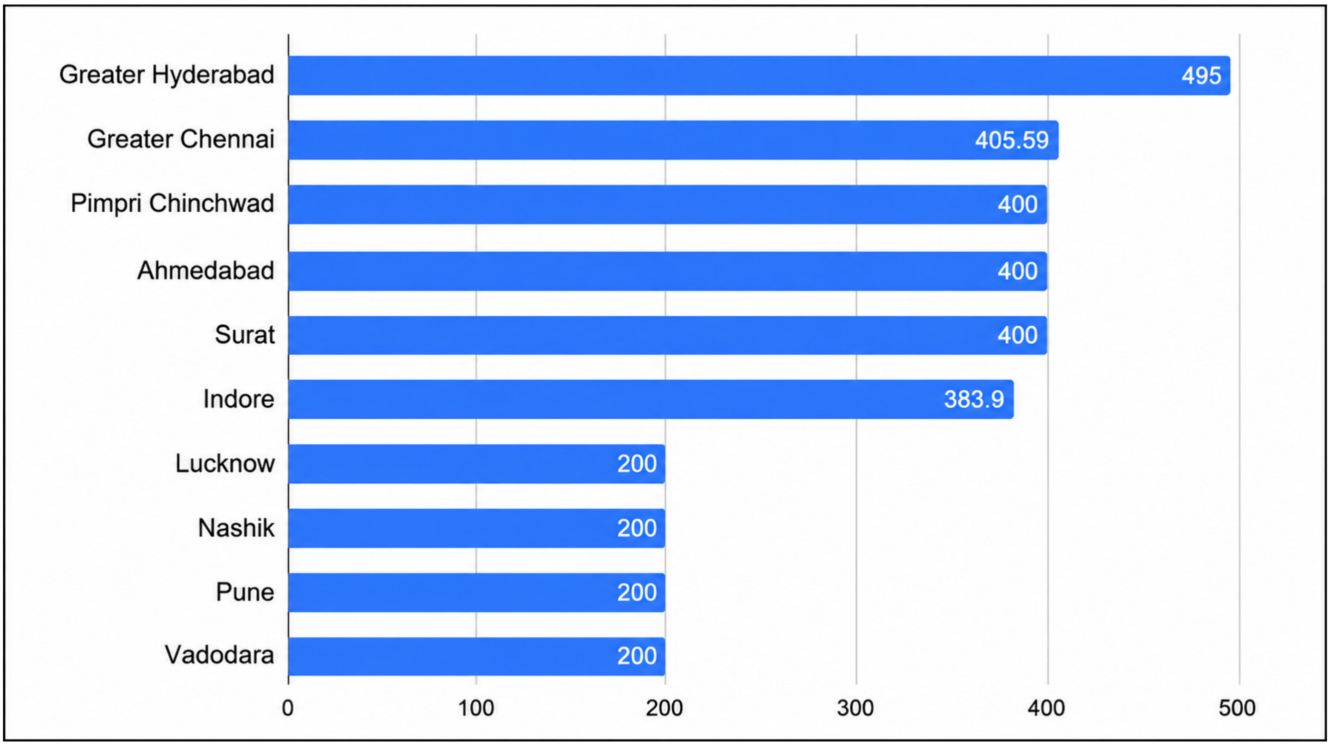


Source: Developed by the author based on ICRA (2025)

Between 2017 and 2026, a total of 22 MCs have issued 30 bonds to mobilise approximately ₹ 4,340 crore (SEBI, 2026). Six municipalities have returned to the market for a second (or third) issuance, demonstrating improving credit confidence and repeat investor demand. Water supply and sewerage projects dominate the use of proceeds, while the infrastructure KMC is also considering.

The top 10 ULBs account for ~94 percent (in value), with Hyderabad at the top with ₹ 495 crore of total issuance (SEBI 2026) as seen in Graph 1. The most intrusive outlier are the mid-tier southern municipalities especially from Tamil Nadu; Coimbatore and Tiruppur, both Tier-II cities like Kochi, along with second-issuance by Chennai MC, all mobilised capital in 2025–26. The success of these MCs indicate that KMC has the opportunity to replicate these municipalities.

Graph 1: Top Indian cities' MCs issuing bonds (₹ Crore)



Source: SEBI website 2026

2.2. Green Bonds: Global and National Trends

The International Capital Market Association (ICMA) defines a green bond as a type of bond, the proceeds of which are exclusively applied to finance or refinance new and/or existing eligible green projects (ICMA 2021). The label "green" does not, however, alter the risk profile of the bond. The projects focus on environmental, climate, or sustainability benefits, thus offering promising avenues for raising capital to fund essential green urban infrastructure projects, including those that are part of climate adaptation initiatives.

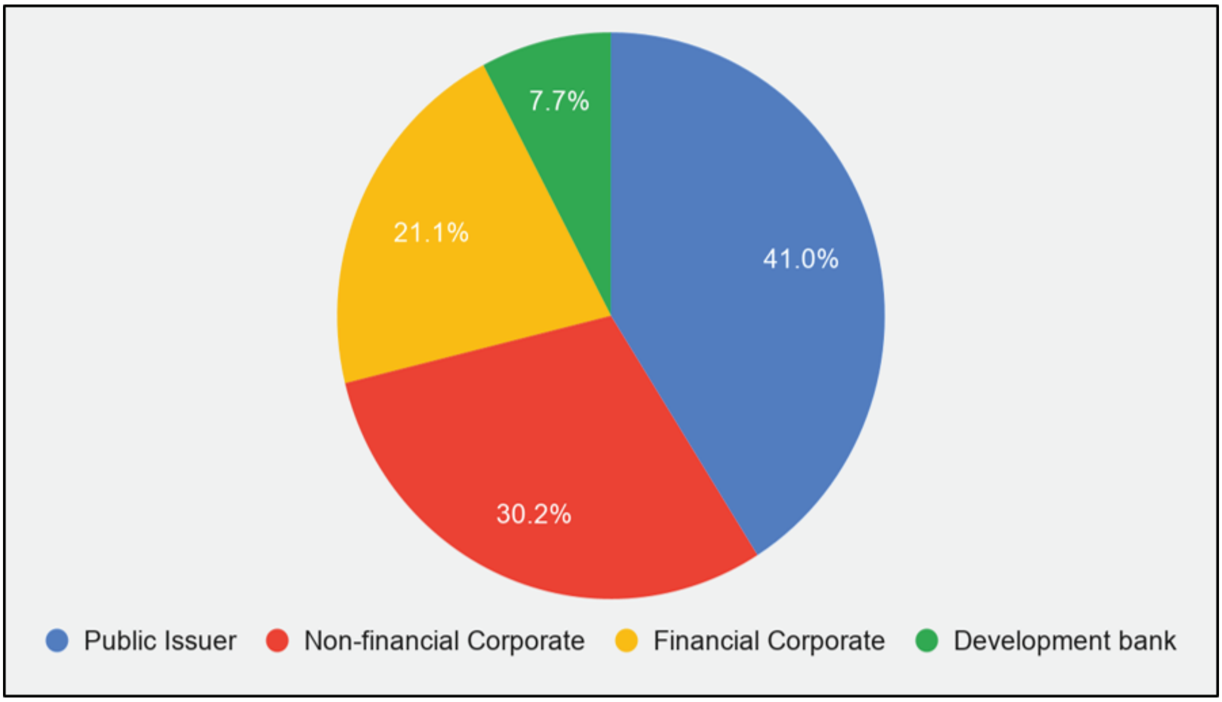
The initiation of the green bonds market can be traced back to 2007, with the issuance of the 'Climate Awareness Bond' by the European Investment Bank (EIB) widely regarded as the first green-labelled bond in modern capital markets (EIB 2022). This was followed by the issuance from Sweden's Gothenburg City in 2013, marking the entry of city-level subnational governments (UNCC 2023). In 2014, ICMA gave Green Bond Principles (GBP 2025), voluntary principles, the first framework for green bond issuance, establishing four core components as mentioned below.

- **Use of proceeds:** Which category or mix of categories the money is spent/proposed to be spent in.
- **Project evaluation and selection:** Which particular project in that category the money is spent on, and the environmental objectives associated with it.

- **Management of proceeds:** How much money is spent on which projects and/or proposed use of net proceeds?
- **Reporting:** Recurring information on the status of the project, and whether/to what extent its environmental objectives are achieved

The global green bond market has grown substantially since its inception, with annual GSS+ (green, social, sustainability and sustainability-linked bonds) issuance reaching over US$ 1 trillion in 2024, with green bonds comprising 64 percent of that total (United Nations 2025, 129-130). A structural shift is visible in who is issuing: in 2024, public issuers (sovereigns, government-backed entities, and local governments) surpassed corporate (non-financial) issuers for the first time since 2017, as seen in Graph 2, raising approximately US$270 billion. Local governments contributed US$13 billion of this, a share that remains modest but is growing.

Graph 2: Global Green Bonds Market (2024)



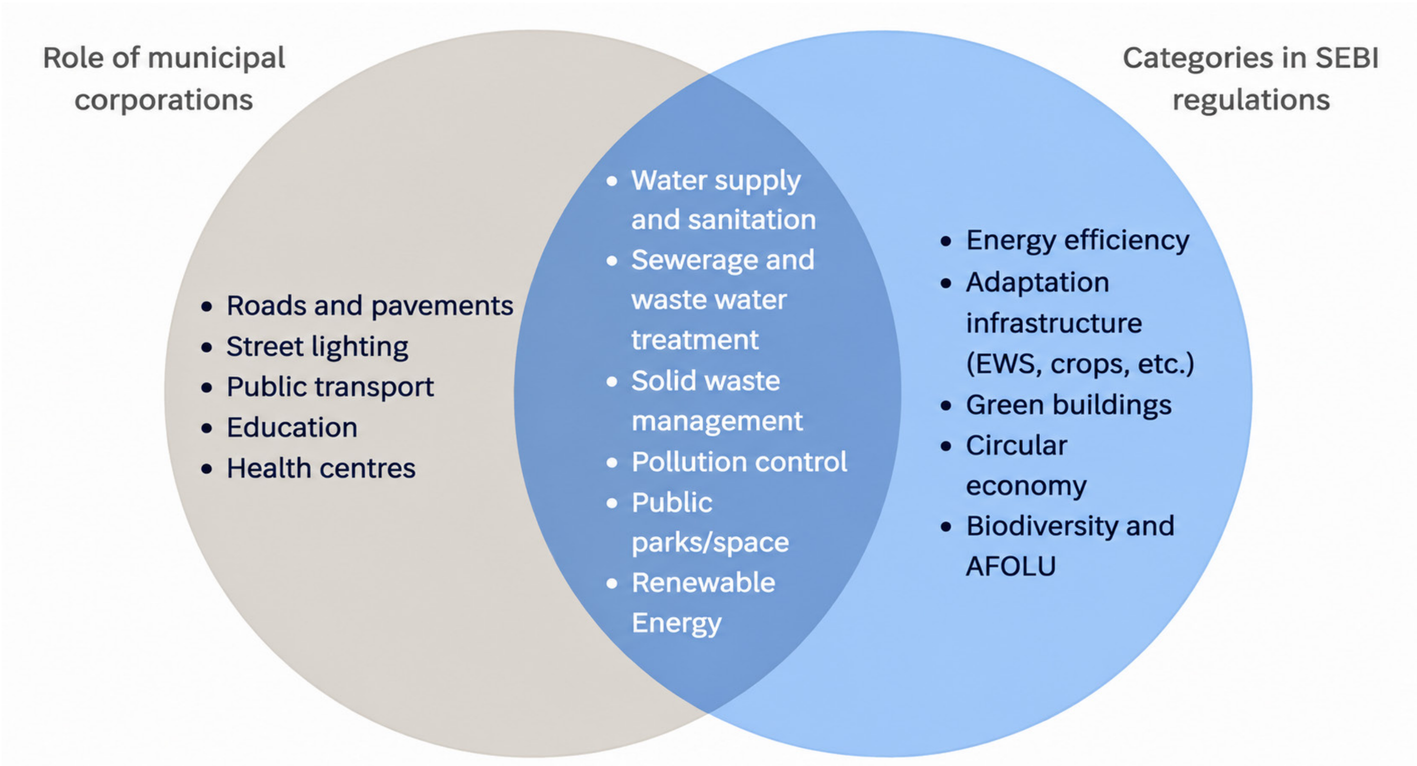
Source: World Investment Report, UN 2025

In 2022 India's first Sovereign Green Bonds framework was formulated by the Ministry of Finance, Government of India (GOI) followed by issuances of sovereign green bonds totalling ~₹47,700 crore in FY 2024-25 (Climate Bonds Initiative 2025) that has established a credible domestic precedent and a replicable disclosure template. However, at the subnational level, green-labelled municipal bond issuance remains nascent, representing a gap and an opportunity that KMC's proposed issuance would help address.

2.3 Muni Green Bonds in India

Municipalities all over the world have been issuing green bonds for over a decade. In India, the Urban local bodies (ULBs), comprising the third tier of governance in India, have a crucial role to play in this context because of their position within the government and the nature of their work. Their inherent operational mandate demonstrates a natural alignment with established green bond taxonomies. Core municipal sectors, including water supply, sanitation, and waste management, directly correspond to the 'green' project categories defined under SEBI's 2021 regulatory framework for green debt securities, as illustrated in Fig 3. This high degree of thematic congruence suggests that the statutory functions of a ULB are, by definition, eligible for green financing, thus making a strong case for expansion of municipal green bonds in India.

Fig 3: The Intersection between functions of municipality and SEBI green categories



Source: CEEW Report (2025)

Regulatory Landscape for Issuing Muni Green Bonds:

The regulatory landscape for municipal debt in India is anchored by the Securities and Exchange Board of India (SEBI) through the

1. Issue and Listing of Municipal Debt Securities (ILMDS) Regulations, 2015, last amended in 2023
2. Issue and Listing of Non-Convertible Securities, 2021 (for green debt), last amended in 2026
3. SEBI has progressively refined these frameworks, through the issuance of Specialised circulars and Master circulars, to maintain market integrity and adapt to the evolving sustainable finance ecosystem.

These directives establish the mandatory benchmarks for issuance, listing, and rigorous post-issuance disclosures, ensuring that investor interests are protected while providing a structured pathway for urban local bodies to access capital markets. The basic eligibility criterias for MCs are as follows

Basic SEBI Eligibility Requirements for MCs to issue bonds
1. **Constitutional Authority**: The issuer must be eligible to raise funds under its own constitution document. 2. **No Recent Defaults**: The issuer must not have defaulted on any debt securities or loans from banks/financial institutions during the 365 days immediately preceding the issue. 3. **Standardized Accounting**: Accounts must be prepared according to the National Municipal Accounts Manual or the manual adopted by the respective State Government, or applicable Companies Act/constitutional accounting standards. 4. **Clean Track Record**: The issuer, its promoters, or group companies must not be categorized as a "wilful defaulter" by any bank or financial institution. 5. **Fiscal Performance**: The issuer must have a surplus income in any of the three immediately preceding financial years (for public issue).

The process to issue muni green bonds by ULBs is the same as issuing muni bonds; the only difference is the additional post-issuance environmental impact disclosure requirements that are mandated by SEBI's 2021 regulations. The disclosure requirements are bifurcated into initial and ongoing commitments, listed in Table 1.

Table 1: Disclosure requirements for Green Bonds as per Issue and Listing of Non-Convertible Securities, 2021

Disclosure Category	Requirement Type	Reporting Frequency
Green Debt Securities	Initial Disclosure 1. Environmental sustainability objectives 2. Decision Making process for project eligibility 3. Appointment of an independent third party reviewer	One-time (Offer Document)
	Continuous Disclosure 1. Utilisation of proceeds 2. Impact Reporting	Annual

Business Responsibility and Sustainability Reporting (BRSR)	Essential Indicator 1. Total energy consumption 2. Water withdrawal by source 3. Air emissions 4. Greenhouse gas emissions (Scope 1,2 and 3) 5. Waste Management	Annual

Source - SEBI 2021

The issuer will have to appoint a third-party reviewer for green debt security for the post-issue management of the use of proceeds from the green debt security, and verification of the internal tracking and impact reporting. This makes the issuer's green activities more reliable, but it's possible that the ULBs looking to issue listed green debt securities would view the increased compliance requirement as a burden, which might discourage them from opting for green bonds.

Credit Rating of Municipal Corporations

The credit rating exercise is done independently by Credit Rating Agencies (CRAs) on an entity's ability and willingness to repay their debt service obligations, which include both interest payments and principal repayments. In India, a ULB has to obtain credit rating from a SEBI or RBI-registered CRAs for a municipal bond or green bond issuance and has to disclose it in the offer document. The major criterias used by CRAs for evaluating MCs can be divided under three major thematics as seen in Fig 4.

Fig 4: Credit Rating criterias for MCs

Administrative framework	State of operations/efficiency	Financial management
• Elections and governance • Domain of responsibilities • Tax levying powers • Provisions for borrowing	• Evaluation of core services • Service coverage (% of area or population covered) • Tax collection efficiency • State of internal capacity	• Fiscal and accounting practices • Transparency • Revenue receipts (e.g., own revenue vs. grant dependence)

• Fiscal relations with the state and centre • Population base • Type of activity in territory (industrial/commercial, etc.)	• Prospect of efficiency reforms • Forward-looking initiatives (e.g., geographic information system [GIS] mapping of property)	• Surplus/deficit position • Capital account position • Debt profile and liquidity (i.e., borrowing profile, debt service coverage ratio [DSCR], etc.)

Source: Author's summarization of CRA's Rating Methodology

Table 2 presents the rating scale. With respect to public issuances of debt securities by MCs, SEBI regulation mandates a minimum credit rating of A+ or its equivalent as a threshold eligibility condition for market access. It is important to note that these rating scales are specific to the Indian regulatory and financial context and are not directly comparable with international credit rating methodologies or scales.

Table 2: Credit Rating Scale

Rating (Letter Grade)	Rating Description	Investment Grade Category
AA+	Highest level of safety	Investment grade rating
AA		
AA−		
A+	Adequate level of safety	
A		
A−		
BBB+	Moderate level of safety	
BBB		
BBB−		

BB+	Moderate risk of default	Below investment grade rating
BB		
BB−		
B+	High risk of default	
B		
B−	Highest risk of default	
C		

Source: MOHUA 2025

Getting credit rating is not a one time exercise for ULBs, following acceptance and public disclosure of the rating rationale, the CRA initiates a structured programme of periodic surveillance covering both issuer and instrument ratings. The surveillance mechanism is not passive: CRAs retain the authority to upgrade or downgrade ratings in response to material developments, including significant revenue shifts arising from political decisions, the introduction of new debt obligations, or other factors bearing on the ULB's debt repayment capacity.

Existing Muni Green Bonds Issuance

There have been a total of 7 muni green bond issuances since 2021, with the first issuance made by Ghaziabad Nagar Nigam (GNN) worth ₹ 150 crore for a sewage treatment plant. This was followed by Indore in 2023, which is worth ₹ 244 crore for a solar plant. Indore is the first to do a public issue and the largest single issuance made by a municipal corporation to date. Vadodara was the first muni green bond in India to be certified as green by an external third party; the others before it were self-labeled as green. The most recent is by Nasik, worth ₹ 200 crores for the water treatment plant project, making it the second municipal corporation to do a public issue.

All these issuances have credit ratings of AA/AA+ and are taxable. Further, the capital gains arising on the transfer of municipal bonds are not tax-exempt either. Though there was a provision to issue tax-free bonds during the earlier issuances, the scarcity of such issuances suggests that the associated eligibility criteria may be prohibitive for MCs. The analysis of use of proceeds shows that the water sector projects dominate the market, followed by sewerage, waste, transport and energy sectors, all these projects are capital-intensive, large-scale infrastructure projects that have the potential of revenue generation/cost recovery mechanism.

2.4 Development of Green Bond Readiness Framework

The seven MCs represent the complete universe of Indian ULBs that have navigated the full issuance process: from regulatory eligibility through credit rating, structuring, and market execution. Their offer documents, and rating rationale reports, constitute an evidence base of what green bond readiness actually looks like in the Indian municipal context in practice. A cross-analysis of these documents reveals three reform patterns that are common across all seven issuers, regardless of city size, state, or project type as described in the Table 3 below.

Table 3: Green Municipal Bond Readiness Assessment Framework

Pillar	Assessment Focus	Key Assessment Criteria	Evidence Base
Regulatory Readiness	Determines whether the municipality has the legal and regulatory foundation to access the municipal debt market.	• Legal authority to borrow • Statutory debt servicing provisions • Compliance with SEBI municipal debt regulations • Green debt framework eligibility	Kerala Municipality Act, SEBI regulations, practices of successful municipal issuers
Fiscal Readiness	Assesses the municipality's financial capacity to sustain debt obligations and inspire investor confidence.	• Revenue stability • Own-source revenue performance • Operating surplus • Debt profile • Capital investment capacity	Credit rating methodologies, offer documents, financial performance of successful issuers
Institutional Readiness	Evaluates MCs internal capacity to plan, manage use of proceeds and timely execution of the projects for which the money is being raised.	• Service delivery performance • Green project pipeline • Systemic Reforms • Revenue Administration	Benchmarking of seven municipal issuers based on data from offer documents and municipal finance literature

Source: Author

No issuer reached the market on fiscal strength alone; the institutional reform trajectory was in every case a co-determinant of credit confidence. These three patterns, regulatory compliance, financial capacity, and institutional readiness, form the three pillars of the Green Bond Readiness Framework applied in this study. The remainder of this paper evaluates KMC against these three dimensions to assess its readiness for entering the green bond market.

3 Kochi Municipal Corporation: City Profile and Green Bond Readiness Assessment

Kochi, Kerala's commercial capital and one of India's most climate-exposed port cities, is administered by the Kochi Municipal Corporation (KMC), the second largest ULB in Kerala, serving a corporation-area population of approximately 6 lakh, with a functional urban footprint significantly larger owing to a daily commuter inflow of 2.5 lakh workers from within a 100 kilometre radius (LSGD Planning; Government of Kerala 2023).

Kochi's low-lying coastal geography, embedded within a complex network of rivers, canals, tidal creeks, backwaters, and estuaries, makes it acutely flood-prone, with 26 percent of the city's population residing within the floodplain and 25 percent of total urban settlements vulnerable to flood risk (Kochi Municipal Corporation 2022, 20-23). The city's physical geography makes climate investment an operational necessity. Heat stress further compounds this as approximately 35 percent of settlements face urban heat island exposure, and 7.3 percent of the city bears simultaneous heat and flood vulnerability (Kochi Municipal Corporation 2022, 23). IPCC projections under SSP2-4.5 anticipate sea level rise of 0.22m by 2050 and 0.58m by 2100, directly threatening Kochi's 48-km coastline and backwater systems.

Furthermore, the governance architecture of Kochi is also notably complex and multi-layered, as seen in Table 4, reflecting both the city's historical evolution and the administrative exigencies of rapid unplanned urban growth. While the KMC remains the primary civic authority, responsible for road and drain maintenance, solid waste management, street lighting, and public amenities under the Kerala Municipality Act, 1994. Critical services like, water supply (KWA), roads (PWD), electricity (KSEB), are delivered by state agencies operating concurrently within KMC's jurisdiction. This limits KMC's direct operational control over user-charge revenue streams, a factor that will bear on how bond proceeds are ring-fenced and how debt servicing is structured.

Table 4: Governance Architecture of Kochi

State Government (Government of Kerala)		
Local Self-Government Department (LSDG)	Public Works Department (PWD)	Kerala Water Authority (KWA)
Department of Town and Country Planning		Kerala State Electricity Board (KSEB)

City		Metropolitan Area and Kochi City Region (KCR)
Kochi Municipal Corporation (KMC)		Greater Cochin Development Authority (GCDA)
General Administration Department	Health Department	
Town Planning Department	Revenue Department	Goshree Islands Development Authority (GIDA)
Council Department	Engineering Department	
Accounts Department		

Source: LSGD Planning; Government of Kerala created by Author

Kochi's climate vulnerability, economic importance, rapid urbanisation and port-city revenue profile all suggest it's more important now than ever for KMC to issue green bonds. So now the question is whether it is ready to enter the debt market which the following sections assess.

3.1 Pillar 1: Regulatory Readiness

Municipal legislation in Kerala: provisions for borrowings and debt

KMC is constituted as per the Kerala Municipality Act 1994 (KM Act 1994) which clearly states the regulations for borrowing and debt for ULBs read alongside the Kerala Local Authorities Loans Act, 1963 (Loans Act). The SEBI regulations mention the eligibility criteria for MCs to qualify to issue bonds (applicable for green bond issuance), but it must be read in conjunction with both state statutes, not independently of them. The state laws that are relevant to muni green bonds are listed below.

State-level borrowing restrictions on local governments:

- No loan may be raised without prior state government sanction and must conform to the Kerala Local Authorities Loans Act, 1963
- Loan quantum, interest rate, tenor, date of floatation, and repayment terms are all subject to Government approval
- Prohibits application of borrowed funds for any purpose other than the sanctioned objective without prior Government approval
- The maximum permissible repayment period for any municipal loan under Section 298 is sixty years
- Primary operative clause subjects KMC's total borrowing powers to prescribed limits relative to its total annual receipts
- In the event of default, the Government may attach KMC's entire municipal fund, not merely the escrowed project revenue stream – to satisfy outstanding loan obligations.

State-level borrowing incentives / credit enhancements:

- Explicitly carves out an exception, stating that nothing therein shall prevent the issuance of Revenue Bonds by the Municipality, secured by pledge of the revenue stream from the project and strengthened on the basis of escrow account or credit enhancement conditions.
- Any shortfall in the escrow account shall be made good from grants due from the Government, with trustees notified accordingly.
- Mandates that KMC maintain sinking funds for all debenture-based borrowings, with quarterly instalments sufficient to fully repay each loan within the fixed period.
- In the event of default on quarterly sinking fund instalments, Government grants due to KMC are statutorily directed to the Sinking Fund.
- Mandates annual trustee statements disclosing amounts invested, aggregate securities held, and cumulative loan discharges.
- Establishes a statutory payment priority for loan interest and principal repayment over all other municipal payments.
- The Kerala Local Government Development Fund, constituted the Loans Act, is explicitly mandated to mobilise capital through bonds and pooled finance arrangements, guarantee municipal bond issues, and enable ULBs to access capital markets individually or through pooled structures.
- The Government is allowed to designate any purpose as an eligible borrowing objective, providing statutory flexibility to formally recognise green infrastructure as a permitted use of proceeds.

This statutory borrowing framework is more enabling for green finance than commonly assumed, combining revenue bond authorisation, escrow-backed structural protection, a sovereign grant backstop, statutory payment priority, and a state-level development fund with explicit guarantee and capital market access powers. These provisions closely mirror the investor protections SEBI's municipal bond regulations and that credit rating agencies require. The legislation already speaks the language of structured municipal debt.

The regulatory assessment indicates that KMC does not face any significant legal barriers to issuing municipal green bonds. Hence, the binding constraint is not the law but KMC's institutional and financial capacity that will determine if an investment grade rating is assigned to it.

3.2. Pillar 2: Fiscal Readiness

MC’s Financial health is the foundation for issuing bonds. The financial parameters are used to determine the market readiness to borrow from the market, revenue administration, capital deployment, and debt servicing capacity. First, let's understand ULBs source of revenue; the items of income credited to the fund consist of the following:

1. **Own source revenue** includes taxes, duties, cess and surcharge, fees from licenses and permissions, income from municipal properties, and income from other miscellaneous items
2. **Assigned revenues,** share of the taxes levied by the Government and transferred to the municipal corporation

3. **State Transfers and Grants** for the implementation of schemes, projects and plans formulated by the municipal corporation
4. **Central Transfers and Grants** related to schemes, urban grants allocation by Finance Commission, Loans, etc.
5. **Others** includes development loans, institutional loans, market borrowing

KMC's Fiscal Health Status

The most important fiscal parameter is the source and composition of the revenue for ULBs. Municipalities in India are largely dependent on State and central transfers even for meeting regular administrative, operations and maintenance expenditures. This is the same pattern seen in KMC's finances. The composition of revenues reveals a structural dependence on grants, refer to Table 5 below.

Table 5: KMC's key fiscal indicators- Overview

Sr. No.	Indicators (₹ Crore)	2021-22	2022-23	2023-24
A	**Total Revenue Receipts**	**430**	**467.13**	**453.44**
1	**Tax Revenue**	153	163	184
2	**Non Tax Revenue**	31.94	36.46	50.13
	Fee & User Charges	24.62	27.24	38.45
	Rental Income from Municipal Properties	4.26	4.8	4.98
	Income from Investment	0.21	0.26	0.17
	Sale & Hire charges	0.9	0.93	0.66
	Interest earned	1.95	3.23	5.87
3	**Assigned Revenues & Compensation**	0.07	0.02	0.02
4	**Revenue Grants, Contributions & Subsidies**	244.18	267.59	224.69
B	**Other Income**	**0.83**	**0.013**	**0.067**
C	**Total Expenditure**	**410.27**	**448.95**	**416.43**
1	Total Revenue Expenditure	410.27	408.46	386.13
2	Total Capital Expenditure	NA	40.49	30.3
D	**Total Debt**	**14.67**	**9.18**	**3.9**
1	Secured Loans (Cr)	14.67	9.18	3.84
2	Unsecured Loans (Cr)	NA	NA	0.06
E	**Operating Revenue Surplus (Cr)**	**20.13**	**59.77**	**67.34**

Source: City Finance portal, Ministry of Housing and Urban Affairs

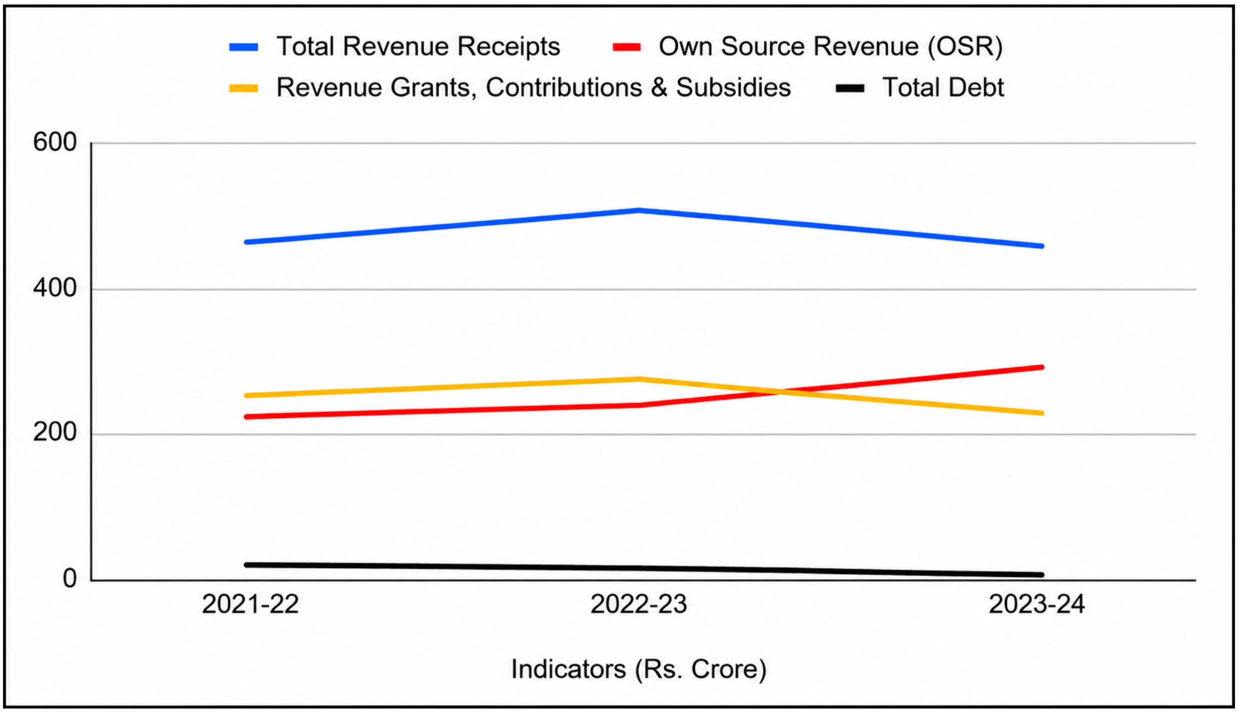
Revenue Grants constituted 56.8 percent, 57.3 percent, and 49.6 percent of total revenue receipts in the three respective years, while OSR, the most credible and bondable revenue stream from an investor's standpoint, remained relatively modest. However, its steady upward trajectory (+23 percent over the period) is an encouraging signal of improving fiscal self-reliance. The total Revenue Receipts grew from ₹ 430 Cr in 2021-22 to a peak of ₹ 467.13 Cr in 2022-23 (+9 percent), before contracting to ₹ 453.44 Cr in 2023-24 (-3 percent), indicating revenue volatility.

The debt profile of KMC is, notably, one of its strongest assets from a bond issuance standpoint. Total debt has declined sharply, from ₹ 14.67 Cr in 2021-22 to just ₹ 3.9 Cr in 2023-24, with secured loans falling commensurately and unsecured exposure remaining negligible at ₹ 0.06 Cr.

KMC's expenditure and surplus profile over the three years presents a cautiously optimistic picture for the viability of green bonds. Total expenditure rose from ₹410.27 Cr in 2021-22 to a high of ₹ 448.95 Cr in 2022-23, then moderated to ₹ 416.43 Cr in 2023-24, broadly tracking revenue trends. Critically, the Operating Revenue Surplus has shown a strong and consistent upward trajectory, rising from ₹ 20.13 Cr to ₹ 59.77 Cr and further to ₹ 67.34 Cr, representing a more than three-fold improvement over the period.

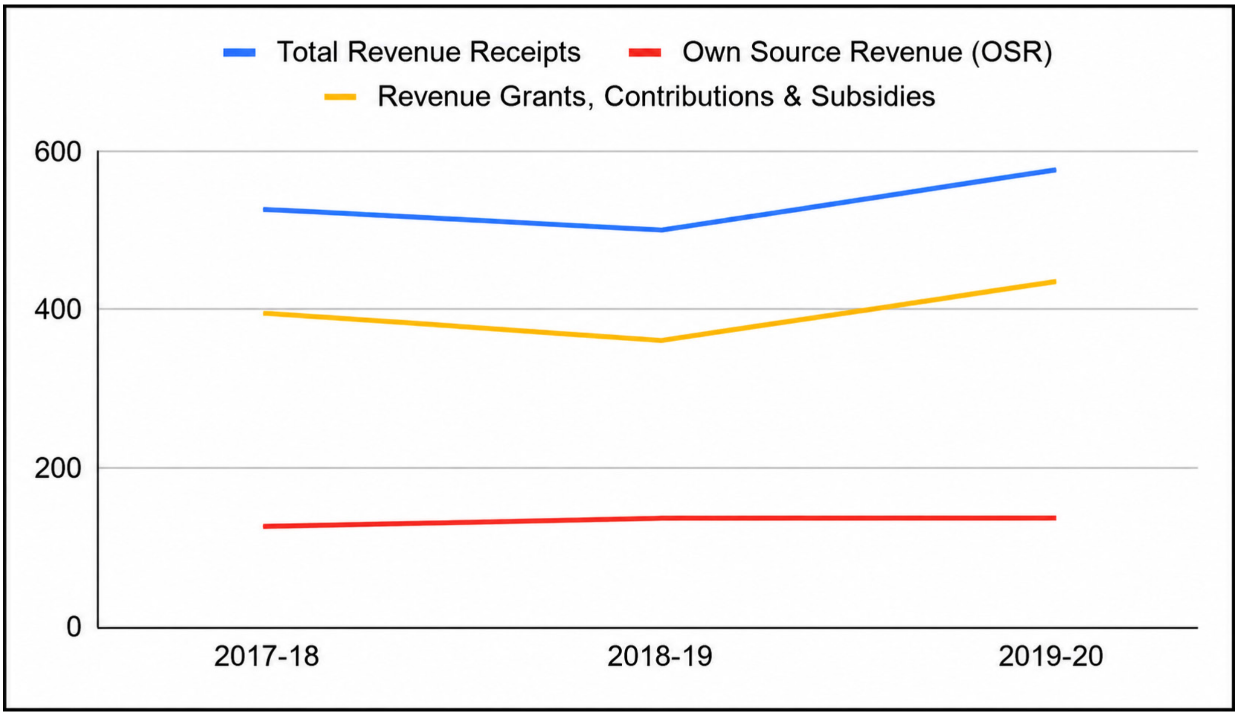
To get a better picture of KMC's financial readiness it is benchmarked against Ghaziabad Nagar Nigam (GNN), as its total revenue receipts are broadly comparable to KMC's making the financial parameters comparison analytically meaningful. The graphs 3 and 4 below present KMC's revenue receipts composition across the three years alongside GNN's reported figures as per offer document prior to its green bond issuance.

Graph 3: KMC's Revenue Receipts Composition for three FYs



Source: City Finance

Graph 4: GNN's Revenue Receipts Composition for three FYs



Source: GNN's 2021 offer document SEBI

Comparative Analysis of graph 3 and 4

- KMC's OSR share is significantly higher than GNN and shows an upward trend for FY 2023-24, while the dependency on grants and transfers shows decline from FY 2022-23 to FY 2023-24
- GNN's Total revenue receipts show an increase in FY 2019-20 but the increase is due to the increase in the dependency on grants and transfers in the same FY.
- KMC's total revenue receipts contracted in FY 2023-24
- GNN entered the green bond market with zero existing debt, KMC too shows near elimination of debt.

KMC shows a stronger balance sheet than GNN had at issuance; less debt, higher OSR share, and declining grant dependence, all positive indicators from investors and credit rating agency point of view. But KMC's revenue contraction in 2023-24 signals that its fiscal improvement may be fragile. For further in depth analysis of both the MCs the major financial ratios comparison is done as seen in Table 6 below.

Table 6: Comparison of Financial Ratios

Municipal Corporation	FY	Total Expenditure to Total Revenue Receipts (%)	Own Source Revenue to Total Revenue Receipts (%)	Revenue Grants to Total Revenue Receipts (%)	Own Source Revenue to Total Expenditure (%)	Capital Expenditure to Total Expenditure (%)
KMC	2021-22	95.41	43.2	56.79	45.27	N/A
	2022-23	96.11	42.71	57.29	44.44	9.02
	2023-24	91.84	50.44	49.55	54.93	7.28
GNN	2017-18	86.19	24.84	75.16	28.82	32.10
	2018-19	86.64	27.96	72.04	32.28	24.74
	2019-20	98.35	24.48	75.52	24.89	33.57

Source: Author's calculation based on City Finance portal and GNN's offer document

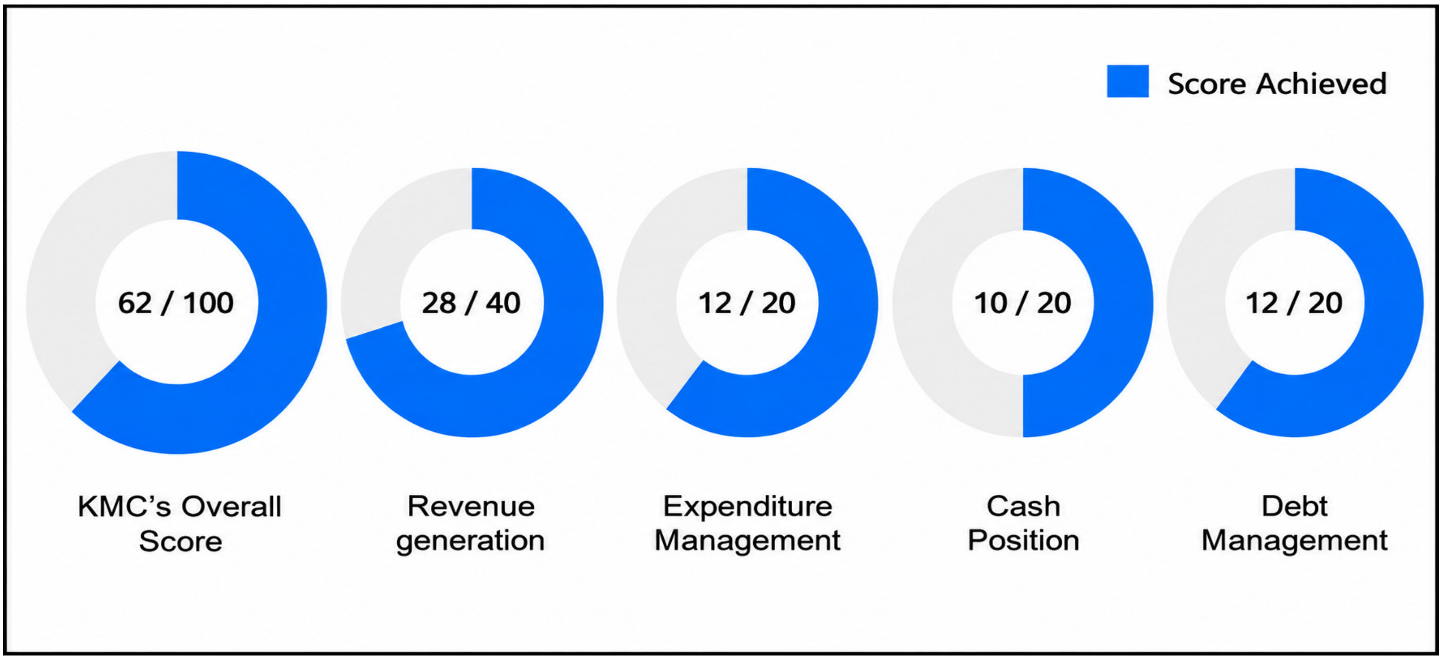
The ratio of Total Expenditure to Total Revenue Receipts has improved from 95.41 percent to 91.84 percent, for KMC suggesting that the corporation is incrementally widening its fiscal headroom, even if the margin remains thin by investment-grade municipal standards. GNN's comparable ratio at the time of issuance reflects an increase in the ratio in FY 2019-20 from approximately 86-98 percent indicating a more stringent fiscal margins.

The OSR to Total Revenue Receipts ratio presents KMC's most meaningful improvement: from 43.2 percent to 50.44 percent. Paradoxically, this ratio is higher than GNN's 24.48 percent, but this is explained not by KMC's stronger revenue administration, but by GNN's higher absolute reliance on transfers and grants. The more instructive comparison lies in the property tax collection efficiency underlying each OSR figure, where KMC's 42.51 percent collection rate (CAG 2025) stands in stark contrast to GNN's 71–78 percent rate (offer document), a difference that reflects fundamentally different revenue recovery infrastructures.

Perhaps most telling from an infrastructure investment standpoint is KMC's capital expenditure trajectory with no recorded capital expenditure in 2021-22, and only modest allocations of 9.02 percent and 7.28 percent of total expenditure in the subsequent two years. KMC's investment in physical infrastructure has been strikingly inadequate relative to GNN's 24-33 percent capex in the years surrounding its bond issuance, reflecting a demonstrated capacity to plan and execute infrastructure projects, the very pipeline that green bond use-of-proceeds frameworks require.

Bridging this investment gap is, in fact, precisely why there is a need for green bond issuance, mobilising long-term, purpose-tied capital. As per the Ministry of Housing and Urban Affairs, the market readiness assessment, based on the credit profile for FY 2022-23, KMC falls in the well-prepared category and is ready for further assessments to access municipal borrowings, with an overall readiness score of 62 out of 100 as seen in Fig 5.

Fig 5: KMC’s credit profile for FY 2022-23



Source: City Finance portal, Ministry of Housing and Urban Affairs

A well prepared category does show a strong potential but KMC will have to take measures to further strengthen its fiscal foundation by increasing and stabilising its tax collection, increase capex prior to issuance for receiving good credit rating and investor confidence. However, the strong performance in fiscal management needs to continue post issuance along with the additional responsibilities of establishing a Debt Service Reserve Account (DSRA) and an Escrow payment mechanism for timely servicing of debt to ensure its success.

3.3. Pillar 3: Institutional Readiness

Seddon (Gangamreddypalli 2023) proposes “market worthiness”, defined as “the ULB’s institutional readiness to access and use private finance for public ends”, as the benchmark for sustainable financial health of municipal governments, rather than an emphasis on the creditworthiness of particular instruments, which is a temporary condition. She suggests measuring progress towards market worthiness through institutional changes and city performance targets that can be centred on:

- Ways of achieving financial creditworthiness, particularly from revenues that are elastic to urban growth and the quality of services delivered to citizens
- ULB’s ability to convert finance into high-quality infrastructure and services, rather than just financially viable projects
- Systems for quickly and easily providing investors with adequate information to assess risk on an ongoing basis
- A detailed list of criteria for benchmarking performance, unlike the broad assessments contained in city ratings

The former 7 MCs green bond issuers received an AA/AA+ credit rating due to the implementation of institutional reforms and financial appetite for the green bond market. Table 7 below synthesises the major themes and trends emerging from a cross-comparative reading of the offer documents of all seven MCs. An analysis of these reforms trajectories of these MCs reveals a discernible pattern of deliberate and multi-dimensional urban governance initiatives undertaken in the years preceding bond issuance.

Table 7: Institutional Reforms analysis of green bonds issuing MC's

Themes	Key Trends
1. E-Governance & Digital Transformation	
All 7 MCs have invested heavily in digitizing their operations Transparent, digital governance directly reduces 1. Operational leakage 2. Strengthens revenue collection 3. Gives bond investors real-time visibility into fund utilisation	**Citizen-facing apps** Are nearly universal: Ghaziabad's 311 App, Nashik's NMC e-Connect, etc. Enables mobile-based tax payments, complaint registration, and service requests.
	Integrated Enterprise Resource Planning (ERP)/e-Office platforms Adopted by Ahmedabad (IOAS), Indore (E-Nagarpalika with 10 modules), PCMC (Central IT), and Chennai (Electronic Fund Management System (EFMS) + ERP), consolidating HR, finance, revenue, and project management in a single system.
	Centralized grievance redressal via in-house call centres (Ghaziabad, Indore, Vadodara) and automated escalation matrices demonstrates accountability infrastructure.
	Vadodara stands out as the most technologically advanced, with its **Integrated Command & Control Centre (ICCC)** deploying CCTV, smart traffic signals, environmental sensors, AI-based encroachment detection (ALEPS), and an Intelligent Transit Management System (ITMS) – signalling smart city-grade infrastructure readiness.
3. Service Delivery	
a. Solid Waste Management (SWM) Innovation: SWM reforms are often the direct end-use of Green Bond proceeds for ULBs. Demonstrating operational readiness, collection infrastructure, processing capacity, and environmental outcomes validates that bond funds will be deployed effectively. **All 7 MCs have implemented 100% (or near-100%) door-to-door waste collection with scientific processing**	**Segregated collection at source is universal**, with Indore leading the national benchmark (6-category segregation) and winning the Swachh City Award 1st rank multiple years (2017–2022).
	Scientific waste processing has moved beyond landfills: - Bio-CNG plants (Vadodara - 350 MT/day) - Waste-to-energy plants (Vadodara - 1000 TPD, Ghaziabad- MoU with GoUP) - Bio-methanation, drum composters, and plastic waste recycling facilities are widely deployed. - Construction & Demolition (C&D) waste processing plants are present in 5 of 7 MCs
	Legacy waste bioremediation is underway in Ghaziabad, Nashik, and Vadodara (Atladara - 3.75 lakh MT remediated, 17 acres reclaimed), addressing historical environmental liabilities.
	Technology integration in SWM: Global Positioning System (GPS)-tracked vehicles (Vadodara since 2006), CCTV at nuisance spots, chip-based vehicle tracking (PCMC), and mobile sanitation courts demonstrate accountability.

b. Water Supply & Cost Recovery: Water infrastructure bonds require demonstrable cost recovery to service debt. Escrow mechanisms, ring-fenced user charges, and NRW reduction all strengthen the revenue backing of bond proceeds. **All 7 MCs are working towards metered connections, online billing, and cost recovery, though maturity levels vary significantly.**	Vadodara leads with 92% **cost recovery** (FY23), 88% **collection efficiency**, only 24% non-revenue water (NRW), and 95% treatment quality: a model for urban water utility management.
	Ahmedabad has pledged **user charges to an Escrow account** for debt service, a sophisticated financial structure directly linked to bond issuance.
	Chennai is managed by a separate body – Chennai Metropolitan Water Supply and Sewerage Board (CMWSSB), meaning the **GCC's direct water revenue is limited**, but the city has a massive infrastructure scale (1590 Million Liters per Day (MLD) supply, 14 STPs).
	Metering gaps are a common challenge: Vadodara has only 7% metered connections, a weakness acknowledged in the document despite its overall strong performance.
	NRW reduction is a cross-cutting priority, with online portals, Lok Adalats, and drive campaigns deployed in Ahmedabad, PCMC, and Vadodara.
2. Financial Reforms Initiatives	
a. Property Tax Modernisation: Property tax is the primary own-source revenue for ULBs and acts as a primary lever to demonstrate fiscal health. A robust, growing, and digitized property tax collection is essential for credit rating agencies assessing debt repayment capacity. **All 7 MCs undertook significant property tax reform: GIS-based surveys, online payments, and arrear recovery mechanisms**	**Geographic Information System (GIS)-based property mapping** is present across all MCs, ensuring comprehensive coverage and reducing under-assessment. Chennai's GIS project used drone surveys and satellite mapping, identifying 3.1 lakh under-assessed properties.
	Online self-assessment and payment are universal, with UPI integration (Ahmedabad), multi-mode online payments (Ghaziabad), and app-based payments (Nashik, Indore, PCMC, Vadodara).
	Arrear recovery mechanisms are widely deployed: - Lok Adalats (Ahmedabad, PCMC) - Amnesty/One-Time Settlement schemes (Ghaziabad, Nashik) - Lucky draw incentives for advance payers (Ahmedabad)
	Tax Rate revisions have been implemented or are underway in most MCs - Ghaziabad's automatic 10% biennial enhancement is a particularly strong policy signal of long-term fiscal seriousness.
	Tax Collection efficiency varies significantly: Vadodara leads with ~89% current-year efficiency, while Ghaziabad's overall efficiency is ~45% (though current-year is ~81%), pointing to legacy arrear challenges.
b. Double Entry Accounting System (DEAS) Adoption: **SEBI mandates audited financial statements for municipal bond issuance. Accrual-based accounts, asset valuation, and clean audits are non-negotiable for credit ratings and investor confidence.**	**Early adopters**: Vadodara (1995–96), Chennai (1982), and Ahmedabad (2005) demonstrate long institutional experience with modern accounting.
	Recent adopters: Ghaziabad (2015) and Nashik are among the later reformers, though Nashik restated financial statements for FY2022–25 specifically to improve transparency for bond issuance, a direct signal.

All 7 MCs have adopted accrual-based Double Entry Accounting Systems	**Real-time financial reporting**, enabled by ERP integration of accounting with budgeting, revenue, and expenditure (Chennai, Indore's E-Nagarpalika).

Source: Author's analysis based on offer documents of 7 Muni green bonds issuers

These reforms were a strategic groundwork that enabled the municipalities to meet the stringent eligibility criteria set by SEBI for municipal bond issuance, satisfy the due diligence requirements of credit rating agencies, and demonstrate to prospective investors a credible institutional capacity to deploy and account for green capital.

Why These Reforms Matter for Green Bond Issuance

The reforms collectively serve three critical functions for any municipal bond and especially Green Bonds:

1. **Creditworthiness:** Credit rating agencies (CRISIL, ICRA, CARE) assess ULB's own-source revenue growth, collection efficiency, and audit quality. GIS-based property tax, DEAS, and ERP systems directly improve these metrics, enabling investment-grade ratings
2. **Use-of-Proceeds Integrity:** Green Bonds require credible green project pipelines. SWM plants, water treatment capacity, and smart infrastructure reforms demonstrate that the ULB already has the institutional capacity to deploy and monitor green capital expenditure
3. **Investor Confidence:** Digitised governance, transparent accounting, and ring-fenced escrow mechanisms (as in Ahmedabad) reduce perceived fiduciary risk, making it easier to attract institutional investors, insurance companies, mutual funds, and ESG-focused funds, who are the primary buyers of municipal Green Bonds in India.

In essence, these reforms are not just administrative improvements; they are the institutional infrastructure upon which the credibility of a Green Bond rests. Hence, KMC's institutional readiness, along with the financial health assessment, is equally important which are analysed in following sections.

KMC's Institutional Status

1. E-Governance Initiatives

The historical trajectory of KMC's digital governance reflects a critical institutional risk factor for the issuance of municipal green bonds, specifically regarding data integrity and revenue transparency. CAG's Audit report findings for the year 2017-18 to 2021-22 show that despite early participation in e-governance under JNNURM with a project cost of ₹8.70 crore, the abandonment of the initial digitisation project led to a decade of parallel manual record-keeping and a significant delay in migrating to the Sanchaya revenue module.

However, the KMC has transitioned to the K-SMART (Kerala Solutions for Managing Administrative Reforms and Transformation) platform in early 2024 marks a strategic pivot toward robust fiscal reporting standards. It replaces the fragmented, standalone modules with a unified, modular digital backbone, K-SMART strengthens the interoperability that previously compromised financial monitoring.

2. Service Delivery

a. Water Supply

KMC's water supply infrastructure reveals a significant gap between service delivery targets and on-ground outcomes. While 95 percent of households have access to tap water, the city faces an active supply deficit of 51 Million Liters per Day (MLD) against a projected demand of 238 MLD by 2025, compounded by an estimated loss of ~60 MLD through unaccounted-for water, leakages, and aging pipe networks (LSGD Planning; Government of Kerala 2023).

This systemic inefficiency is further underscored by the findings of the CAG’s 2024 audit report, which noted that despite the utilisation of ₹ 106.36 crore under the AMRUT scheme across 37 proposed projects that included construction of seven Overhead Service Reservoirs (OHSRs)/Ground Level Service Reservoirs (GLSRs), laying pumping main/transmission pipelines, replacement of old and damaged pipelines and replacing 5,000 damaged water supply connections, no measurable improvement was achieved in per capita water distribution (CAG 2025).

Compounding this is the structural ambiguity in jurisdictional responsibility, where the overlap between KMC and the Kerala Water Authority (KWA), which operates the two water treatment plants at Aluva and Maradu, creates institutional fragmentation in operational control and accountability.

b. Sewerage and Septage Management

Kochi's sewerage and septage situation represents one of the most acute urban sanitation deficits for its size and economic significance. Against a daily sewage generation of 100 MLD, the city's effective treatment capacity stands at less than 6 MLD, meaning that nearly the entire city discharges untreated wastewater, a condition that persists despite prior public investment. The existing sewerage network covers only 28 km against a required network of 955 km, while 70.6 percent of households continue to rely on septic tanks, 23 percent on the sewage network, and 6.5 percent on other informal arrangements (LSGD Planning; Government of Kerala 2023).

Most critically, the CAG’s 2024 audit findings reveal that even after the completion of the AMRUT scheme period and an expenditure of ₹ 23.62 crore, sewerage coverage remained negligibly unchanged at 3 percent, pointing not merely to an infrastructure gap but to a deeper failure of institutional execution. The primary responsibility for sewage treatment resting with KWA rather than KMC further diffuses accountability, creating the same jurisdictional fragmentation observed in the water supply domain.

c. Solid Waste Management

Kochi's solid waste management profile reflects a municipality grappling with both operational and infrastructural constraints that fall significantly short of the benchmarks established by the seven Green Bond-issuing MCs. Against a total waste generation of 326 tonnes per day (TPD), door-to-door collection covers only 75 percent of the city, with the Brahmapuram plant, the city's primary processing facility, receiving approximately 290 TPD but processing only 220 TPD of biodegradable waste. This leaves 72 tonnes of non-biodegradable waste untreated daily (LSGD Planning; Government of Kerala 2023).

The situation is further compounded by the dumping of 100 TPD of plastic waste within the Brahmapuram plant site itself, of which only approximately 1 percent is recyclable, with the remainder openly dumped, a practice that is not only environmentally regressive but also antithetical to the green credentials required for green bond issuance. It is evident that SWM infrastructure is inadequate to meet the current processing requirements, hence as per a KMC official they are considering issuing bonds for waste management projects.

3. Financial Reforms

a. Accounting System Reforms:

As cities grow and implement mega infrastructure development projects, preparing to enter the bond market, the accrual accounting system would be more reliable to adopt, as it is essential for the quality and clarity of fiscal information available to decision-making authorities and investors. Hence, under AMRUT 2.0, adopting a double-entry accounting system for all ULBs is an important part of the mission's reform agenda, along with SEBI's eligibility requirements for the issuance of muni bonds.

In January 2007, the Government of Kerala declared that the Accrual-Based Double Entry Accounting system would be introduced in all five Corporations in Kerala. Currently, KMC on the city finance website has uploaded audited financial reports that include Balance Sheets, Income and Expenditure, and Cash Flow statements since Financial Year (FY) 2019-20, indicating that KMC follows an accrual-based accounting system, the adoption of DEAS system was then confirmed by primary research.

b. Tax Collection Efficiency

KMC's property tax administration reveals deep structural weaknesses in institutional capacity that would raise significant red flags in any credit rating exercise. The Corporation's average collection efficiency of 42.51 percent, meaning less than half of all demands raised are actually recovered (Government of Kerala 2024). The GIS mapping exercise was initiated in 2021 in the city, but as of 2026 KMC has completed mapping of only 8 of the 74 divisions further undermining the implementation and collection efficiency of the corporation (Jose 2026). The qualitative failures in KMC's levy and collection framework further weaken the institutional capacity case. The Corporation's Council has never passed a resolution to levy service cess, a straightforward 10 percent surcharge on property tax for services already being rendered, resulting in a potential ₹ 57.44 crore foregone over the audit period from KMC alone (Government of Kerala 2024).

This is compounded by an incomplete assessment base: 84,335 of 2,30,955 existing buildings remain unrevised as of November 2022, over a decade after the Kerala Municipality (Property Tax, Service Cess and Surcharge) Rules that mandated the shift to plinth area-based assessment in January 2011. KMC's revision proceedings commenced only in 2020-21, nine years late, resulting in ₹19.91 crore in time-barred arrears that can never be recovered (Government of Kerala 2024). Furthermore as per CAG audit report KMC has no sanctioned posts of Cashier or Accountant in any of its zonal offices, violating Kerala Municipality Accounts Rules and creating the conditions for the kind of internal misappropriation.

3.4 The Three Pillar Assessment of KMC

To assess the readiness KMC's current position across the regulatory, financial, and institutional dimensions is benchmarked against the important indicators observed from the cross readings of the offer documents among the seven green bond issuers. Each indicator is assessed against the standard the market has already demonstrated it will accept. The assessment that follows is structured pillar by pillar, beginning with Table 8 for the first pillar- regulatory readiness.

Table 8: Regulatory Readiness

Primary Regulations	KMC's Eligibility and Provisions
Issue and Listing of Municipal Debt Securities (ILMDS) Regulations, 2015, last amended in 2023	Eligible
Issue and Listing of Non-Convertible Securities, 2021 (for green debt), last amended in 2026	Eligible
Kerala Municipality Act 1994 (KM Act 1994)	Enabling Provisions
Kerala Local Authorities Loans Act, 1963 (Loans Act)	Enabling Provisions

Source: Author's analysis

The assessment on the regulatory lines for KMC clearly signals that it is eligible with all the required provisions for green bond issuance.

The second dimension of the readiness framework is assessed in Table 9, which benchmarks KMC's current fiscal indicators against the corresponding position of the seven peer issuers immediately prior to their own bond issuance. This "pre-issuance" benchmark is deliberate: it measures KMC not against where mature issuers stand today, but against the threshold of institutional capacity those issuers had actually reached at the point of market entry, the most defensible standard for assessing whether KMC is similarly positioned to proceed.

Table 9: Fiscal Readiness

Indicator	Benchmark from Green Bond Issuers	KMC Status	Assessment
Total Revenue Receipts Growth	Consistent increase	Volatile	Moderate
OSR to Total Revenue Receipts %	64%	50%	Moderate
Debt	Nil - Very Low	Very Low	Strong
Capital Exp of Total Exp	42%	7-9%	Very weak
Operating Surplus	Positive	Positive	Moderate

Source: Author's analysis based on MCs offer documents and City Finance

Based on the assessment KMC is moderately ready for the debt market, and will be required to take steps to improve its fiscal condition both prior issuance and will continue to strengthen it even after issuance for a successful issuance.

The last is the institutional pillar, assessed based on four broad categories- service delivery, project feasibility, systemic reforms and revenue administration. This four-category structure allows the institutional assessment to move beyond a single composite score toward a more granular diagnostic, identifying precisely where KMC's institutional gaps lie. The detailed comparison for each category is presented in Tables 10–13.

Table 10: Institutional Readiness - Service Delivery

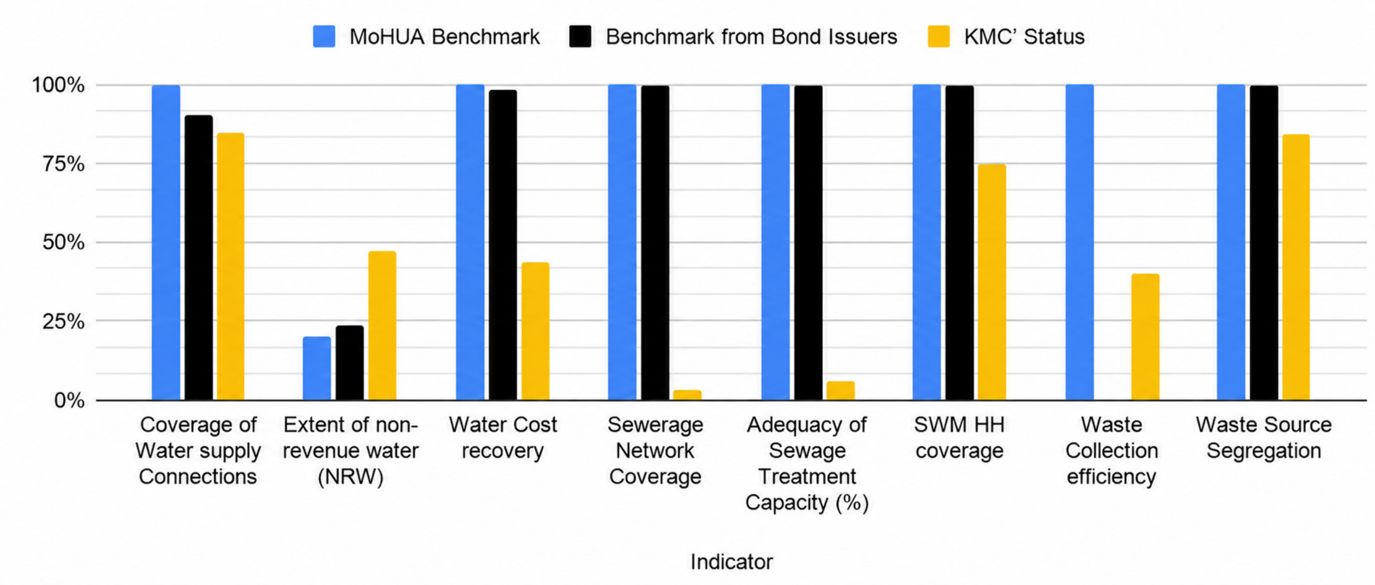
Indicator	MoHUA Benchmark	Benchmark from Bond Issuers	KMC' Status	KMC's Assessment
Coverage of Water supply Connections	100%	91%	85%	Very Strong
Extent of non-revenue water (NRW)	20%	24%	47%	Very Weak
Water Cost recovery	100%	99%	44%	Moderate
Sewerage Network Coverage	100%	100%	3%	Very Weak
Adequacy of Sewage Treatment Capacity	100%	100%	6%	Very Weak
SWM HH coverage	100%	100%	75%	Strong

Waste Collection efficiency	100%	—	40%	Weak
Waste Source Segregation	100%	100%	85%	Very Strong

Source: Master Plan for KMC Area 2040, Government of Kerala and offer documents

Service delivery is one of the weakest indicators for KMC, when compared to its peers as seen in Graph 5. This indicator has a potential to negatively impact the credit rating for the corporation.

Graph 5: Service Delivery Benchmarks



Source: Master Plan for KMC Area 2040, Government of Kerala and offer documents

Table 11: Institutional Readiness - Green Bonds Project Feasibility

Green Bonds Categories	KMC's Green Bonds Feasibility	Description
Water supply and sanitation	Low	Water supply is primarily managed by Kerala Water Authority (KWA). KMC lacks ownership and operational control over assets despite significant investment requirements.
Sewerage and waste water treatment	Low	Sewerage infrastructure and STPs are largely under KWA. KMC has limited authority over tariff collection and O&M, reducing its suitability for municipal bond financing.
Solid waste management	High	KMC exercises administrative and operational control over SWM functions, including waste collection and processing. Projects align well with SEBI Green Bond categories and are currently under consideration by KMC.

Pollution Control	Moderate	Pollution control projects are feasible where KMC has jurisdiction - air quality monitoring, landfill remediation, urban emissions reduction, but with low revenue generating potential.
Public Parks / Space	Moderate	KMC owns and manages parks and urban green spaces. While environmental benefits are significant, projects have limited direct revenue generation and depend on municipal revenues for repayment.
Renewable Energy	High	Rooftop solar, municipal buildings, street lighting and EV charging infrastructure fall within KMC's jurisdiction. Energy savings and electricity sales can improve project bankability.

Source: Author's analysis based on Master Plan for KMC Area 2040, Government of Kerala

The analysis of the green bonds issuers shows that most of the green bonds issuance by MCs are for water projects, one of the major urban services, but for KMC the feasibility for raising money for these core urban revenue generating projects is low due to low service delivery benchmark and jurisdiction issue, thus limiting its options for green projects.

Table 12: Institutional Readiness - Systemic Reforms

Indicator	Benchmark from Bond Issuers	KMC	Assessment
E- Governance system	Citizen facing apps	KSMART platform	Strong
DEAS	Present	Present	Strong
Credit Rating	AA+	Not Rated	Weak

Source: Author's analysis based on offer documents, City finance, KSMART website

Systemic reforms is a promising indicator for KMC falling on the strong category of assessment. But before entering the bond market it needs to opt for a credit rating in order to assess its preparedness to issue green bonds, a prerequisite of SEBI regulations.

Table 13: Institutional Readiness - Revenue Administration

Indicator	Benchmark from Bond Issuers	KMC	Assessment
GIS Mapping	100%	11%	Weak
Property Tax Collection Efficiency	80-90%	42.5%	Weak
Tax Revisions	Implemented	No timely revisions	Weak

Source: Author's analysis based on offer documents, CAG Report

Under institutional readiness revenue administration is another weak area after service delivery that needs strengthening.

To conclude, although KMC has enabling regulatory conditions and a workable fiscal base for green bond issuance, targeted fiscal strengthening and strategic institutional reorientation are required to achieve credible market readiness. Table 14 illustrates the overall readiness assessment of KMC. The key findings and discussion are elaborated in the following subsections.

Table 14: KMC's Overall Readiness Assessment

Pillar	No. of Indicators	Strong	Moderate	Weak	Overall Assessment
Regulatory	4	4	–	–	Satisfactory for Bond issuance
Fiscal	5	1	3	1	Requires targeted strengthening for bond issuance
Institutional	20	7	3	10	Requires substantial strategic reorientation for bond issuance

Source: Author's analysis

4 Key Findings and Discussion

Finding 1: Service Delivery Gaps will undermine KMC's credit rating and its project implementation readiness

- KMC has failed to improve the urban services in spite of spending considerable amounts on infrastructure projects highlights the lack of efficient project planning, implementation and technical capacity.
- The seven MCs that successfully issued green bonds all entered the market with demonstrable, operational infrastructure in their proposed use-of-proceeds sectors along with in other services as seen in Table 7. KMC's situation is qualitatively different.
- Post-issuance impact reporting and use-of-proceeds transparency disclosures are investor and regulatory obligations. KMC's inability to demonstrate baseline performance improvement in these sectors constitutes a material credibility risk to the entire green finance narrative.

- The current baseline for SWM is marked by open dumping, untreated non-biodegradables, and a single overburdened processing facility, leaving the corporation with a weak foundation, from which KMC will have to construct a credible, investor-grade rating for a successful issuance for SWM projects.

Finding 2 : Jurisdiction Fragmentation in Water and Sewerage will limit the Green Project Pipeline

- A recurring institutional vulnerability identified across the water supply and sewerage assessments is the diffusion of operational authority between KMC and the KWA. Currently KWA, bears the operational control of the treatment infrastructure for both water and sewerage plants.
- The absence of a single accountable implementing authority increases project execution and revenue risks, thereby constraining the corporation's capacity to leverage municipal green bonds for improving core urban service delivery.
- All the MCs that have successfully issued green bonds have full administrative and operational clarity over the infrastructure assets for which funds are being raised. This positively influences the issuer's overall creditworthiness and investor confidence as it enhances accountability, strengthens project implementation capacity, and provides greater certainty regarding revenue generation, operation and maintenance, and debt servicing.
- KMC is presently considering issuing green bonds for solid waste management projects, as it exercises greater administrative authority over this sector, currently it represents the most feasible and strategically appropriate entry point for municipal green bond financing.
- But, for KMC to expand the use of green bonds to other essential urban services, it would need to establish an appropriate institutional mechanism that clearly assigns administrative and operational responsibilities, strengthens inter-agency coordination, and provides investors with confidence regarding project implementation, revenue management, and long-term asset governance

Finding 3 : Failures in Property Tax Collection and Administration Pose the Highest Single Risk to Bond Issuance

- KMC's property tax administration presents the most acute risk to green bond viability. A tax collection efficiency of 42.51 percent, an incomplete GIS mapping exercise, nine years of delayed plinth area-based assessment revision, and irrecoverable arrears collectively signal a structurally deficient revenue recovery infrastructure
- Its collection rate remains constrained by the same structural issues: incomplete databases, delayed revision, and inadequate recovery proceedings. If KMC fails to constitute any

meaningful revenue-recovery infrastructure immediately, it will point to a corporation that remains institutionally underprepared for capital market obligations.

- These CAG findings do not reflect one-time lapses; they reveal a pattern over a 10-15-year window. KMC's current property tax baseline would make issuance compliance structurally pose a direct risk for investors.
- The adoption of the DEAS system and KSMART platform are genuine positive indicators, but the strength of the accounting system and e-governance service delivery quality needs to be validated through an independent credit rating process.

Finding 4 : KMC needs to focus on improving and strengthening revenue quality

- KMC’s financial picture looks tempered by revenue volatility, a structural dependence on State grants, and a critically thin capital expenditure base.
- A comparative analysis reveals a significant scope for optimization; a few peer MCs like Greater Chennai and Vadodara generate up to 64 percent (respective bond issuance offer documents) of their total revenue receipts from Own Source Revenue (OSR).
- Additionally, KMCs negligible capex in 2021-22 as opposed to the benchmark of ~42 percent capex by a few of previous green bond issuers, does not credibly present a pipeline of shovel-ready green projects, a baseline requirement for green bond structuring, which are fundamentally a promise to deploy capital into credible, impact-generating infrastructure.
- The overall financial position suggests that KMC would not be entering the bond market from a position of fiscal insolvency, thus, offering a cautiously optimistic starting point.

To conclude KMC’s current strongest pillar is the regulatory readiness followed by moderate readiness shown by financial indicators. What KMC needs to focus on is improving and strengthening its institutional capacity which is the weakest pillar. If KMC fails to demonstrate an improvement in service delivery status, jurisdiction clarity between agencies, and improvement in OSR all will contribute negatively to receive a good investment grade rating for a successful green bond issuance.

5 Recommendations

Now that KMC’s readiness is elaborately assessed and discussed previously based on the three pillars, suggesting that KMC's green bond readiness is in a nascent stage but not distant. The 2026-27 budget announced KMC plans to issue bonds by the end of 2026 which was confirmed by primary research suggesting the political will is present along with an enabling legislative framework. What the KMC needs to work on is strengthening its fiscal autonomy and institutional capacity by strategically sequencing the preparatory phase to get a good credit rating grade to attract investors.

This section focuses on the policy recommendations that are organised into two phases: an immediate pre-issuance sprint (0–12 months) targeting a first issuance by end-2026 or early 2027, a post issuance phase (1-3 years) that positions KMC for a credible repeat issuance at improved terms.

Phase I: Pre-Issuance Sprint (0–12 months)

The actions in this phase are non-negotiable preconditions. A bond issuance cannot proceed without them, and most are already initiated in some form by KMC, making completion the operative challenge.

Complete the GIS-Based property mapping on priority basis

Property tax is KMC's largest own-source revenue stream, and its integrity is the foundation of any revenue-backed bond structure. KMC must prioritise completing the GIS-based property mapping exercise across all 74 divisions. Even partial completion transparently documented and publicly disclosed, materially strengthens the institutional narrative that rating agencies and investors require. This exercise should be leveraged with the K-SMART platform creating a single interoperable workflow connecting property registration, building plan approval, and tax demand generation.

Revenue Recovery and DSRF Establishment

The proposed special revenue recovery cell for non-tax revenues and arrears by KMC must be operationalised with clear time-bound targets. This is a step in the right direction if done with clear time-bound targets before the issuance and resolution of recoverable dues, will help in clearing the balance sheet of fictitious assets in the long run and demonstrate KMC’s commitment to strengthen fiscal health.

KMC can parallely pledge to ring-fence a portion of recovered revenue into a Debt Service Reserve Fund (DSRF), established and separately audited prior to bond issuance. The DSRF will serve a dual purpose: it will act as a credit enhancement instrument that improves rating outcomes, and it will demonstrate to investors that KMC has moved beyond intent to structural commitment.

Robust proposed project planning and time bound targets

For the proposed green project in SWM it should have a phased operationalisation plan, with clear budgeting for each project activity, that is independently verified for quarterly milestones, that would allow KMC to build a verifiable track record for its project implementation and impact, to substitute, at least partially, for the historical low service delivery baseline. KMC has mentioned their plans to create a digital budget dashboard, designed to track project implementation in real time, this could help for post issuance impact reporting and disclosure requirements and strengthen transparency and investor confidence if implemented effectively.

Credit Rating Engagement

KMC must initiate a structured credit rating engagement, ideally with a SEBI registered credit rating agency as early as possible, as a diagnostic process that exposes the full architecture of its fiscal health to external scrutiny. The rating exercise will surface the structural vulnerabilities, and KMC should treat any credit rating outcome as the beginning of a reform roadmap rather than a final judgment.

Synergy and engagements with stakeholders

Few of the MCs have received assistance from The U.S. Treasury department to issue municipal bonds. With the approval of the Centre, the Tamil Nadu government in 2024 had asked civic bodies, such as the GCC, to receive assistance from the U.S. Similarly, KMC can collaborate with Indore Municipal Corporation, who is committed to transferring its bond issuance knowledge and experience to peer municipalities. Such engagements will help KMC to better prepare and plan for their first ever green bonds issuance. Such collaborations will create broader ecosystem value for more successful muni bonds issuances.

Phase II: Post Issuance (1–3 years)

OSR trajectory and structural revenue diversification

KMC has proposed in its 2026-27 Budget measure to increase its own source revenue by 10 percent and plans to constitute a sub committee to oversee this initiative. This is the first step to transition away from its current 49–57 percent structural dependence on State grants toward a larger share of own-source revenue. Going forward, this plan must be formally adopted, publicly disclosed, and tied to measurable annual milestones, as institutional investors in the green bond market will require evidence of a forward trajectory in revenue autonomy.

Further KMC should introduce user charges for hitherto unpriced services, particularly in solid waste management can be explored to ensure revenue generation from the proposed project. KMC also plans to mobilise around ₹30 crore by strengthening tax collection in the entertainment, advertisement and establishment sectors. These steps will help KMC to diversify its revenue stream, thus improving the OSR trajectory over time.

Escrow architecture and post-Issuance reporting infrastructure

Following the first issuance, KMC should strengthen its escrow structure based on the operational experience of the first bond cycle. The digital budget dashboard proposed in KMC's plans should be fully implemented during this phase, integrated with the bond's impact reporting framework, and made publicly accessible – both to meet SEBI's disclosure requirements and to build investor confidence.

Secure a structured institutional settlement for KMC-KWA jurisdiction

No Indian municipality has issued a green bond for services without having direct operational or co-ownership authority over the relevant assets. If in the future it plans to raise money for larger projects or wants to opt for projects for Water and Sanitation vertical, this misalignment means that KMC cannot independently plan, execute, or demonstrate outcomes in the water and sanitation sectors, precisely the sectors that need service delivery strengthening and most central and backbone of urban services. Recommendations are as follows:

- A formal inter-agency operational framework, defining KMC's autonomous project execution authority, ring-fenced funding flows, and outcome accountability, must be negotiated with the State Government and KWA before these sectors can be credibly presented as part of a green bond use-of-proceeds framework.
- Or a co-financing framework can be developed with KWA for identified water and sewerage projects in KMC's jurisdiction, whereby KMC contributes bond proceeds as a capital grant and has a revenue sharing mechanism with KWA from the green projects, enabling KMC to claim debt servicing after the completion of projects.
- Additionally, a joint KMC-KWA project monitoring committee can be established, with independent third-party verification, to track operations & maintenance until the debt from the project is recovered.

Capital markets cell and Merchant Banker appointment

KMC should not look at this year's issuance as a one time event but plan for a long term. Green bond issuance requires financial and legal expertise that is limited in KMC's administrative structure. KMC should consider designating a dedicated Capital Markets Cell within its finance department to build capacity and expertise for the bonds debt market.

6 Conclusion

This paper sets out to answer questions if KMC possesses the regulatory, financial, and institutional readiness to issue a Green Bond? Taken together, the three pillars point to KMC being closer to green bond issuance than assumed compared to other ULBs, but further than its own ambition currently acknowledges. The gaps are real, and the timeline is tight.

The critical narrow path needs to be navigated by, credit rating initiation, GIS completion, revenue recovery and DSRF establishment, OSR improvement and revenue diversification, the four actions that can unlock the rest. All four are within KMC's immediate administrative authority to initiate. None requires legislative change, state government intervention, or resources KMC does not have. What they require is institutional speed and the willingness to treat bond readiness as a present operational priority.

This paper's broader contribution is methodological. The three-pillar readiness framework developed here– regulatory, financial, and institutional– offers a replicable diagnostic tool for any Indian ULB evaluating its first capital market entry. The framework makes explicit that bond readiness is not a single threshold but a multi-dimensional condition, and that the weakest pillar sets the ceiling for the whole. For the majority of India's 4,000-plus ULBs, the institutional pillar will be that ceiling. Addressing it systematically, rather than treating each issuance as an isolated transaction, is the structural challenge that policymakers, regulators, and development finance institutions must now collectively own.

Kochi has the geography, the climate imperative, the legislative enablement, and the nascent fiscal capacity to be Kerala's first Muni green bond issuer. What it needs now is a strategically planned preparatory phase that will ensure the successful issuance of the green bonds and unlock the needed investments for infrastructure upgrades the city deserves.

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