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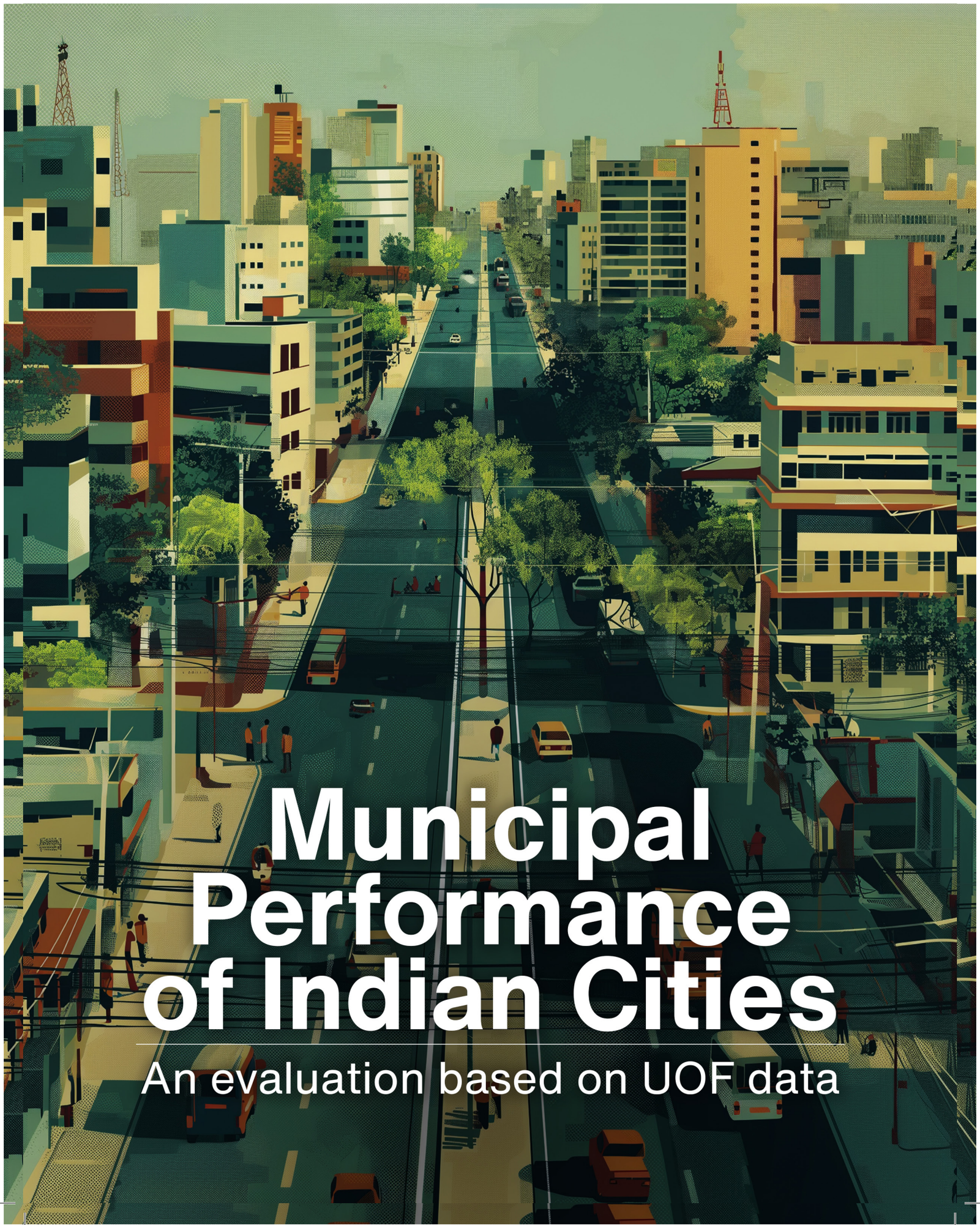
Smart City

Ministry of Housing and Urban Affairs
Government of India

NIUA
National Institute of Urban Affairs



Municipal Performance of Indian Cities

An evaluation based on UOF data

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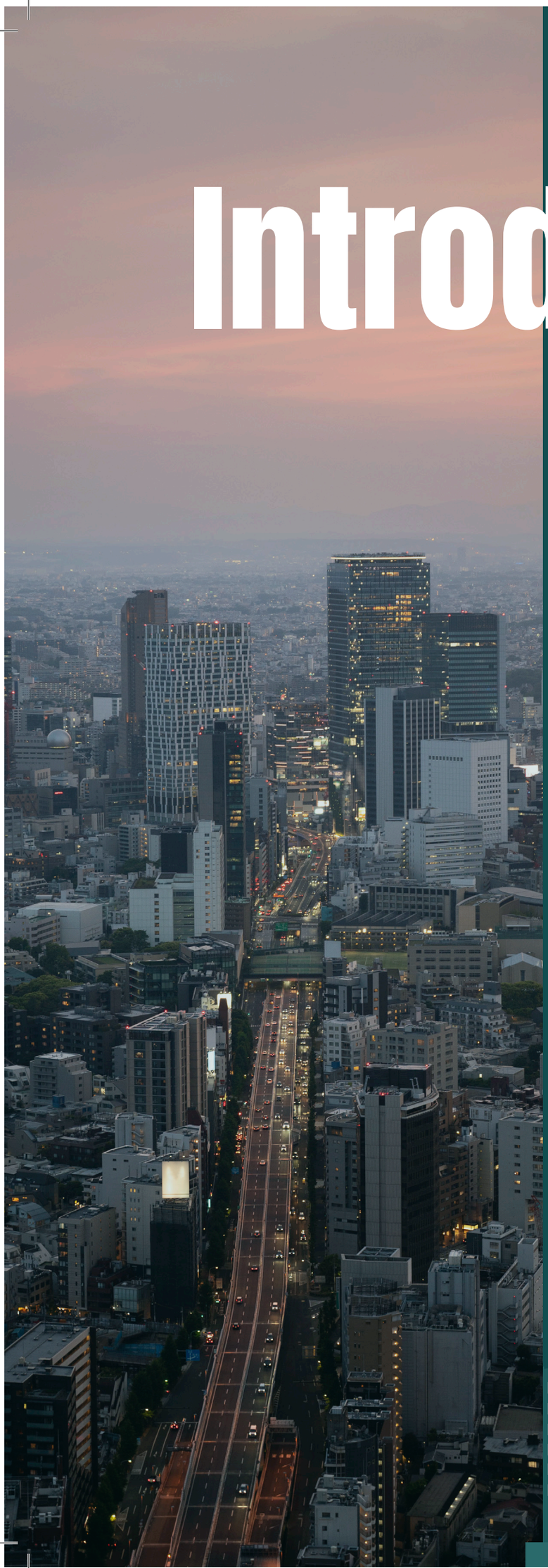


Introduction

India is currently experiencing rapid urbanization and is recognized as one of the world's fastest-growing economies. This urbanization trend, however, presents substantial challenges for effective urban governance.

Between 1991 and 2011, India's urban population expanded from 26 percent to 31 percent of the total population, reaching

400
million people.

Projections suggest that by 2030, over

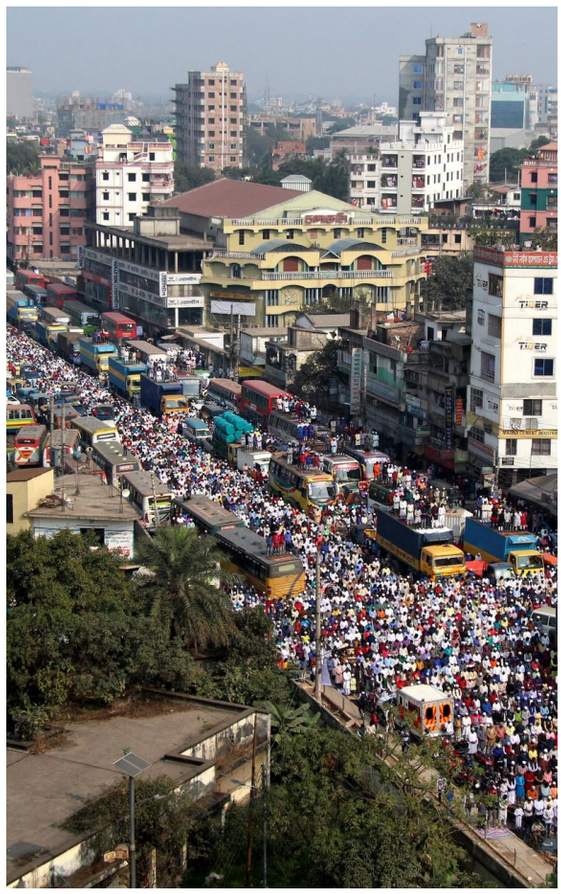
40 percent 

of India's population will reside in urban areas (Bandelwal and Mhase, 2020).

This surge in urbanization presents considerable prospects for poverty alleviation due to its cost-effectiveness in addressing numerous essential requirements within urban settings. Nevertheless, the transition to urban living poses significant hurdles. Issues such as inadequate infrastructure, housing shortages, sanitation concerns, and traffic congestion become more pronounced in the face of this unprecedented growth.

Urban local bodies or municipalities play a crucial role in understanding these distinct challenges and needs of the people and communities. The quality of service delivery and the course of development is dependent on the success of these local bodies because they possess the ability to make decisions and implement projects with respect to the specific requirements of the communities. The primary objective of urban local bodies is to furnish essential services to their constituents and to reinforce local democracy. Citizens heavily rely on their municipal government to deliver fundamental amenities and services. The efficiency of the local authorities, as well as the standard of services they offer, depends not only on organizational procedures, financial capacity, tax administration, administrative and technical proficiency of municipal personnel, but also on the understanding and collaboration of the communities. Regarding public services such as water supply, sanitation, electricity, and solid waste management, there is a compelling need to ensure that these services generate sufficient revenue from their beneficiaries to maintain their sustainability.

As we know, decentralisation of powers to the local governing bodies has been carried out through the 73rd and 74th amendments of the Indian Constitution. However, it has been over a quarter of a century since the enactment of this legislation, but the transfer of powers and responsibilities as originally outlined has not been fully realized. In this regard, the state governments have not ceded their authority, and the underlying reasons for this situation surround a spectrum of issues. These include the inherent difficulties associated with implementing change, concerns related to the distribution of power, and the central question of where ultimate decision-making authority should lie. Given these circumstances, it is crucial to ensure



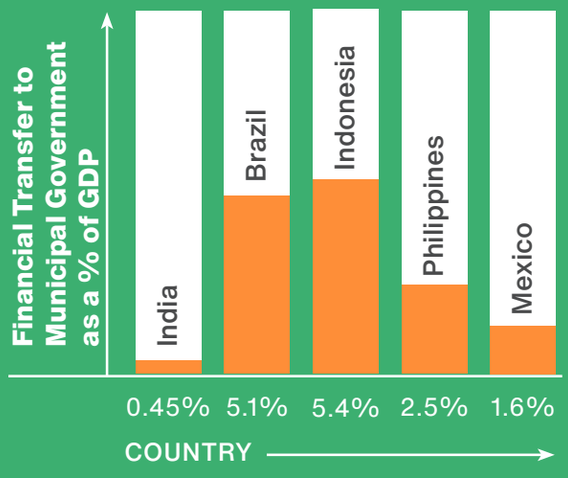
that Urban Local Bodies (ULBs) are not merely perceived as entities responsible solely for providing services but rather as full-fledged city governments.

Enabling municipal governments to wield more authority necessitates tackling gaps within the current urban governance structure and transferring both financial resources and administrative responsibilities to the local level. The 74th Amendment introduced the Twelfth Schedule to the Constitution, which delineates 18 functions that could potentially be delegated to municipal governments. However, the actual determination of which functions from this list should be transferred was entrusted to individual states, who could make this decision by enacting a municipal act. Notable among these functions were tasks related to urban planning, water supply, fire services, land use regulations, and the enhancement of slum areas. As per evidence and various studies, it is observed that most state governments have not completely devolved the functions to the ULBs (Bandelwal and Mhase, 2020).

Box 1
Strengthening urban local bodies: A global perspective

One crucial source for enhancing the capabilities and authority of municipal bodies is the decentralization of powers and responsibilities from the state and central government. For instance, in the federal countries, urban local bodies can generate revenue through financial allocations from national and state governments. These financial allocations play a substantial role in supporting urban local bodies, accounting for more than half of their financial resources.

However, when comparing India's urban local bodies to those of other countries, it becomes evident that India lags significantly in terms of the devolution of powers. To illustrate, in India, the share of financial transfers to municipal governments is estimated to be a mere 0.45% of the GDP. In contrast, countries like Brazil, Indonesia, the Philippines, and Mexico allocate 5.1%, 5.4%, 2.5%, and 1.6% of their GDPs, respectively, to such transfers. In certain European countries, these transfers even reach as high as 6% to 10% of GDP.



For example, some federal countries like Brazil have established substantial transfer mechanisms, such as the municipalities participation fund, which comprises 23.5% of income taxes and industrialized product taxes. Similarly, the Philippines has mandated in its Local Government Code of 1991 that 40% of the previous fiscal year's internal revenue collections be allocated to local government units (Centre for Water and Sanitation et al., 2020). The experiences of these countries, with their considerably higher transfer levels, exhibit the need for a substantial increase in transfers to India's municipalities. Strengthening the fiscal foundation of Indian cities can only be achieved by a significant boost in financial allocations sourced from both central and state finance commissions, as well as support from central and state governments.

Additionally, the Comptroller and Auditor General (CAG) reports (2020-21) of several states reveal concerning issues. In many urban local bodies, elections are not conducted regularly, resulting in prolonged periods without elected local governments. This absence of elected leadership can **obstruct the development of these urban local bodies and may lead to violations of the mandates outlined in the 74th Constitutional Amendment Act, which aims to empower urban local bodies. Furthermore, in some states, the Mayors and Presidents of urban local bodies** are not directly elected by the people, and their terms do not align with the tenure of the local bodies. **Certain state governments, like Madhya Pradesh, Kerala, etc. have not devolved all the 18 functions to the ULBs, whereas there are states like Maharashtra which delegated all 18 functions to parastatal agencies, diluting the intended devolution and empowerment of urban local bodies.** Overall, the CAG reports highlight that the persistence of control by state-level agencies over local governments has undermined the meaningful spirit of decentralisation and requires immediate attention.

Enhancing the capabilities of urban local governments by improving their capacity and financial management is recognized as a crucial approach for advancing urban development in the 11th Plan.

The plan acknowledges the shortage of skilled personnel as a significant issue and suggests the establishment of a top-tier organization to oversee and integrate the initiatives of training institutions at both the national and state levels.

For city governments to carry out their functions with proficiency and efficacy, they also require personnel equipped with the necessary skills and capabilities.

Additionally, city governments depend on the state and central governments for financial support. Achieving financial stability for city governments requires a crucial element known as fiscal decentralization. This process includes the transfer of the power and authority to implement new taxes and adjust tax rates, among other measures. However, the 74th Amendment to the Indian constitution does not outline specific resources for local governments. Instead, their funding relies on transfers from both the national and state governments, as well as their own revenue sources determined by the state governments. In comparison to international practices, municipal corporations in India significantly fall short in terms of both the amount of inter-governmental transfers they receive and their own generated income.

To promote transparency and accountability in the governance process, it is essential to encourage active engagement of citizens, especially in critical domains like budget formulation and urban development planning. This approach guarantees that the concerns and perspectives of underprivileged individuals receive top priority in policy formulation, whether on a global, regional, or national scale. People's engagement in the management of local resources and institutions is a requirement for strengthening urban local bodies.

The Municipal Performance of Indian cities

An UOF data-based evaluation study has been developed to incorporate data-driven governance in India's urban development. It is aimed to assess the input-level parameters that play a crucial role in enabling better provisioning of municipal services to citizens.

The framework measures the sector's performance of

134

municipalities

by identifying the gaps in their service delivery mechanisms, planning efforts, financial systems, and governance.

The assessment serves as a guide for evidence-based policymaking decisions that help cities achieve their broader development goals, including sustainable development. The Municipal Performance extends a granular assessment of the local government bodies and, in the process, also creates scope for increasing transparency and promoting grassroots democracy. The performance evaluation keeps citizens in the loop and allows other stakeholders to examine their municipalities' governance scenario. The report is a convenient way to depict and report complex ground realities in a simplified manner. It keeps citizens informed and builds trust and confidence in local government bodies.

Framework & Methodology

Municipalities play a vital role in ensuring that these challenges are met. Their success determines the quality of urban services and the trajectory of regional development. This study evaluates the sectors performance of municipalities.

In total,
134 municipalities were assessed across a set of

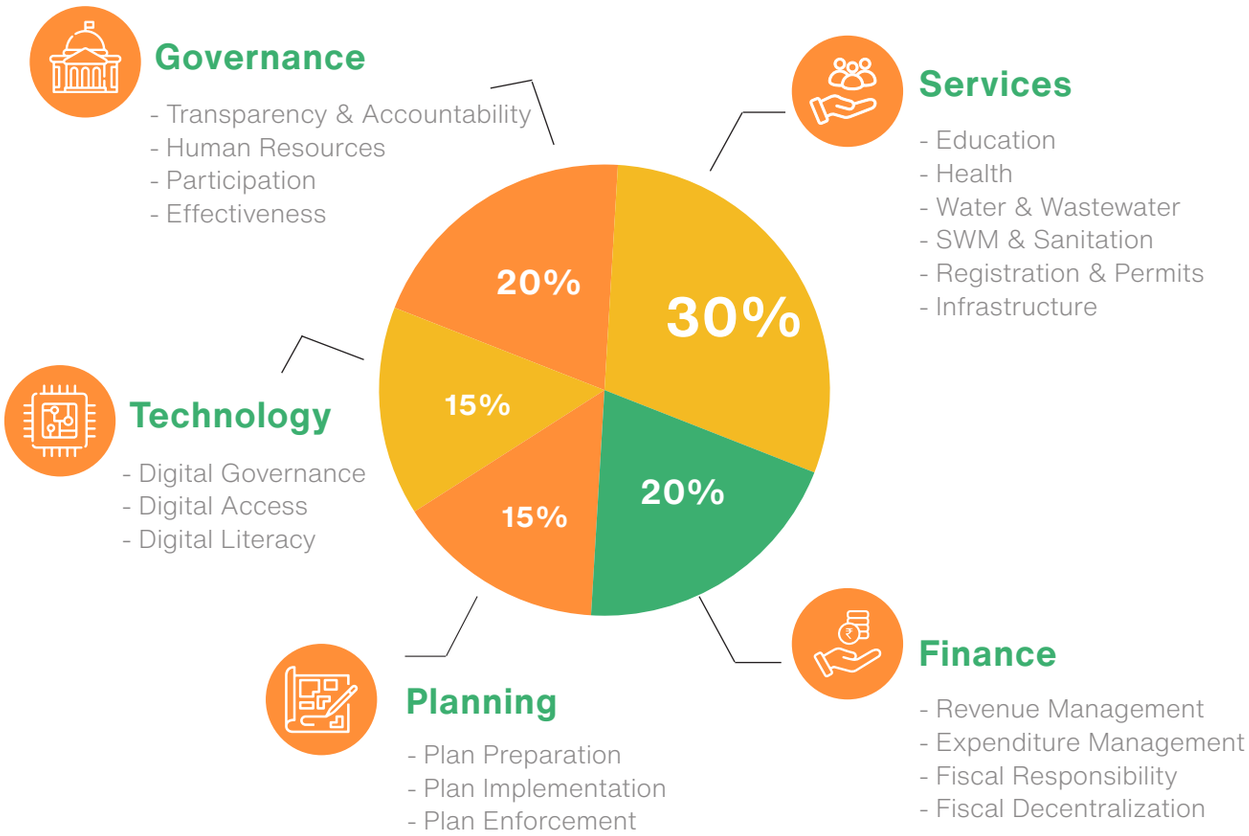
5
verticals,
which include

20
sectors

100
indicators

The vertical for Services include an assessment of all functions that citizens experience on a daily basis. Finance measures municipalities based on how they manage public funds and how their agency is accessing financial resources. The vertical for Planning examines the level of preparation, implementation, and enforcement of urban planning. Digital coverage of municipality services and the extent to which it empowers its citizens to access such services, is measured under Technology. Finally, Governance deals with aspects of municipal bodies and their governance mechanism. These vertical showcase significant aspects of governance that impact the lives of citizens. The sectors under each vertical vary in number based on the range of functionalities they encompass. Nevertheless, each sector is equally critical, and thus, has been given equal weightage. The variability in the vertical overall weightage is determined by the number of indicators that constitute it. Even so, each indicator under each sector has been accorded equal weightage.

The set of 100 indicators form a combination of metrics that have varied nature and specifications. So, a series of steps have been followed to standardize the data for comparability across the study.



Indian cities are characterized by their varying levels of development and population sizes, have been systematically categorized into five distinct tiers. This stratification is pivotal in organizing the dataset for the purpose of our study. The categorization unfolds as follows:

Categories

01 Encompasses cities with populations below 50,000, reflecting a specific subset of smaller municipalities.

02 Encompasses cities whose populations fall within the range of 50,000 to 1,00,000 representing urban centers of moderate size and significance.

03 Consists of cities with populations ranging from 1,00,000 to 5,00,000, signifying cities of substantial regional importance.

04 Encapsulates cities with populations varying between 5,00,000 and 10,00,000, highlighting significant urban hubs within the Indian landscape. Lastly,

05 Encompasses cities with populations exceeding 10,00,000, encompassing the country's major metropolitan areas.

Scoring Methods

The data collected for the indicators across the study have been obtained in various units. For instance, professionally trained teachers in schools is a percentage of the total teachers, while footpath density is a ratio of the total length of the footpath to the total length of road. Each of these indicators has had a different scoring mechanism.

Percentage

Since cities vary in population sizes and economic strength, most indicators need to be weighed for comparability. For instance, the total number of households connected to sewerage network needs to be weighed against the total number of households in the city. These indicators, therefore, take the form of percentages. These do not require any scoring mechanisms but were standardised, as explained below.

Ratio

Similarly, to weigh the data for comparability, some indicators were obtained in the form of ratios. For instance, transport-related fatalities were weighed by per lakh of population. Again, these did not require scoring mechanisms but were standardised.

Binary Marking

Some indicators take the form of yes or no questions to the cities. For instance, the indicator assessing if the city Incentivise green buildings takes the form of a question. The response to this is binary, with the “yes” answer marked as 1 and the “no” answer marked as 0.

Data Transformation

The indicator set includes some indicators that are positively related. For example, Percentage of elected women officials in the ULB. However, not all indicators are positively related. Some indicators were modified to correlate with the aspects that are supposed to be examined throughout the study. Indicators such as extent of NRW and average number of days taken by the ULB to issue building and construction permits are transformed to reflect the challenges ensure that greater value means a higher score. An exhaustive list of indicators is provided in the appendix to the report.

Normalisation

Normalisation is required to make the indicators comparable with each other. It is critical to normalise the data before making any data aggregation as indicators have different units. For example, the sewerage network coverage is captured as a percentage of the total road while the pupil-teacher ratio is a proportion. These indicators are not comparable by any standards. The normalisation procedure is carried out to transform all the data into dimensionless numbers. This is done using z-scores that can be placed in a normal distribution. The z-score or the standard score indicates how many standard deviations an indicator value is from the mean. It ranges from -3 standard deviation to +3 standard deviation.

Standardisation

Standardisation helps solve non-comparability by making indicators unitless as it re-scales them with a mean of zero and a standard deviation of one.

It is calculated using the following formula:

$$Z= (X- \mu)/\sigma)$$

Where Z represents z-score; μ is the mean; X is the indicator value, and σ is the standard deviation.

Aggregation

The aggregation methodology of the study is based on three elements i.e., indicators, sectors and verticals. Each indicator under the sectors will be given equal weightage.

Sector scores

The weights for sectors have been decided based on consultation with experts and proportionality of the said indicators across pillars. The category values are calculated by summing the weighted scores using the following formula:

Sector = Σ (wi * indicator)

For instance, the Digital Governance sector comprises eight indicators, with each indicator equally contributing to the overall score. The score for Digital Governance is calculated by summing the values of the following indicators and dividing by 8:

This implies that:
Scores of Digital governance:

("Does the ULB have the Following e-Governance Initiatives" +"Number of Tenders Finalized through e-Tendering in the Last Financial Year" + "Value of Tenders Finalized through e-Tendering in the Last Financial Year" + "Does the City have an Open Data Policy?" + "Has the City Appointed a City Data Officer (CDO)?" + "Has the City Formed a City Data Alliance?"+" + Does the City have Presence on an Open Data Portal?") / 8

These scores have been transformed to a 0 to 100 scale. The calculation has been done using the following formula:

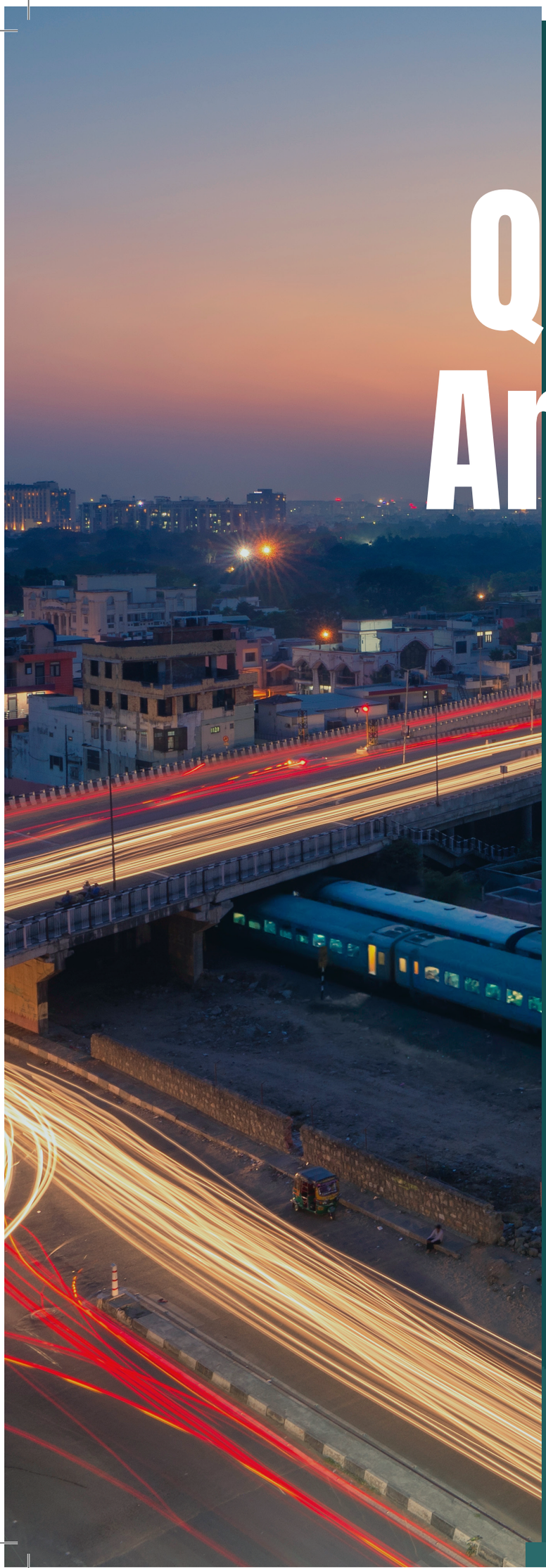
(X- Minimum Scores) / (Maximum Score-Minimum Score)
Where X is the city score.

The category values are represented in the form of A to M in the table below.

Vertical Scores

The scores of the categories under each pillar will be aggregated to arrive at the pillar score.
This will be calculated using the following formula:
Vertical = Σ (wi *Sector Scores).
Later for each category final scores are capped relative to top performing scorer city. The table below presents the weights and the complete methodology for each pillar.

Vertical	Sectors	Scores of Verticals
Services (30%)	Education (A) Health (B) Water and Waste Water (C) SWM & Sanitation (D) Registration & Permits (E) Infrastructure (F)	[U= [∑(A+B+C+D+E+F)/6]
Finance (20%)	Revenue Management (G) Expenditure Management (H) Fiscal Responsibility (1) Fiscal Decentralization (J)	[V=∑ (G+H+I+J)/4]
Technology (15%)	Digital Governance (K) Digital Access (L) Digital Literacy (M)	[W=∑ (K+L+M)/3]
Planning (15%)	Plan Preparation (N) Plan Implementation (O) Plan Enforcement (P)	[X=∑ (N+O+P)/3]
Governance (20%)	Transparency & Accountability (Q) Human Resources (R) Participation (S) Effectiveness (T)	[Y=∑ (Q+R+S+T)/4]



Quartile Analysis

Municipalities, as integral components of the urban landscape, play a pivotal role in the socio-economic development of regions. Recognizing the diverse population sizes and characteristics of cities, a systematic categorization has been undertaken, resulting in five distinct categories, each demarcated by specific population thresholds. Furthermore, within each category, cities have been meticulously classified into quartiles, allowing for a nuanced analysis that facilitates a deeper understanding of the dynamics at play. This structured approach to urban classification and quartile-level analysis holds immense importance in comprehending the evolving nature of cities and gauging the extent of change within each category. The methodology of calculating quartiles is given in Methodology notes.

City Categories and Criteria

The categorization of cities is based on population of cities, with each category representing a different range of inhabitants. The five categories are as follows:

Categories

01 Cities with a population of less than 50,000 (7 cities)

02 Cities with a population ranging from 50,000 to 100,000 (6 cities)

03 Cities with a population ranging from 100,000 to 500,000 (51 cities)

04 Cities with a population ranging from 500,000 to 1,000,000 (28 cities)

05 Cities with population exceeding 1,000,000 (42 cities)

Establishing quartiles based on specific scores within each population category provides urban policymakers with a nuanced and targeted approach to city analysis. This granular method enables the identification of high-performing cities, allowing policymakers to understand and replicate successful strategies.

By categorizing cities into quartiles, policymakers can efficiently allocate resources, prioritize interventions, and monitor progress over time. This approach facilitates the identification of best practices, promotes tailored policies to address specific challenges in lower-performing quartiles, and ensures that urban policies are customized to local realities. In essence, quartile-based analysis serves as a dynamic and adaptive framework, empowering policymakers to make informed, data-driven decisions for more equitable and sustainable urban development.

Cities in Category 1

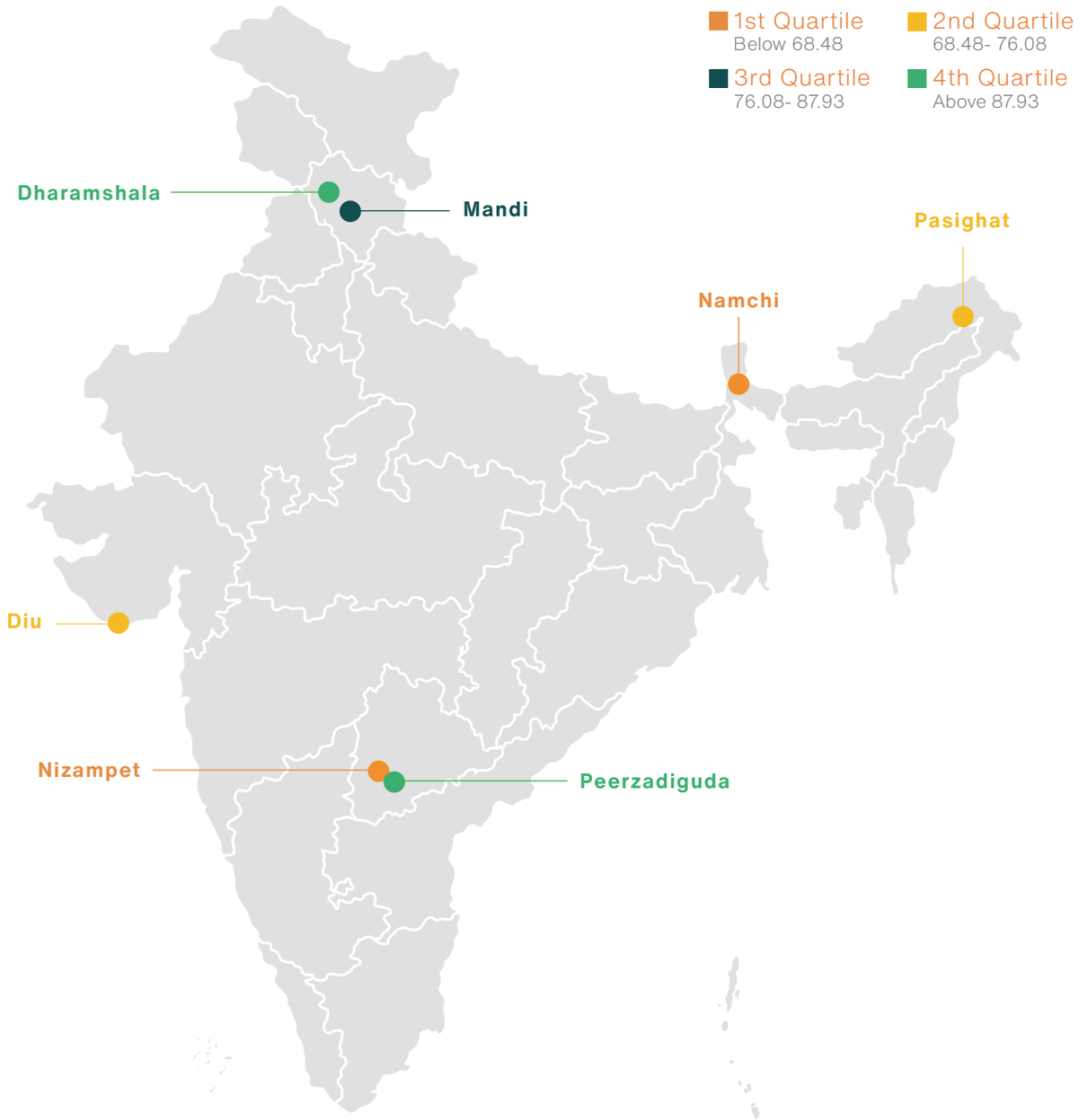


Figure 1: Cities in Category 1

This map represents cities in category 1 with 7 municipalities. Among these, 4 of them are smart cities. The first quartile scores are below 68.48, the second quartile ranges from 68.48 to 76.08, the third from 76.08 to 87.93, and the scores above 87.93 are in the fourth quartile. With regards to distribution, 2 cities each belong to the first, the second and the fourth quartile, while 1 city belongs to the third quartile.

Note: The image is for representative purposes only and is not to scale

Cities in Category 2

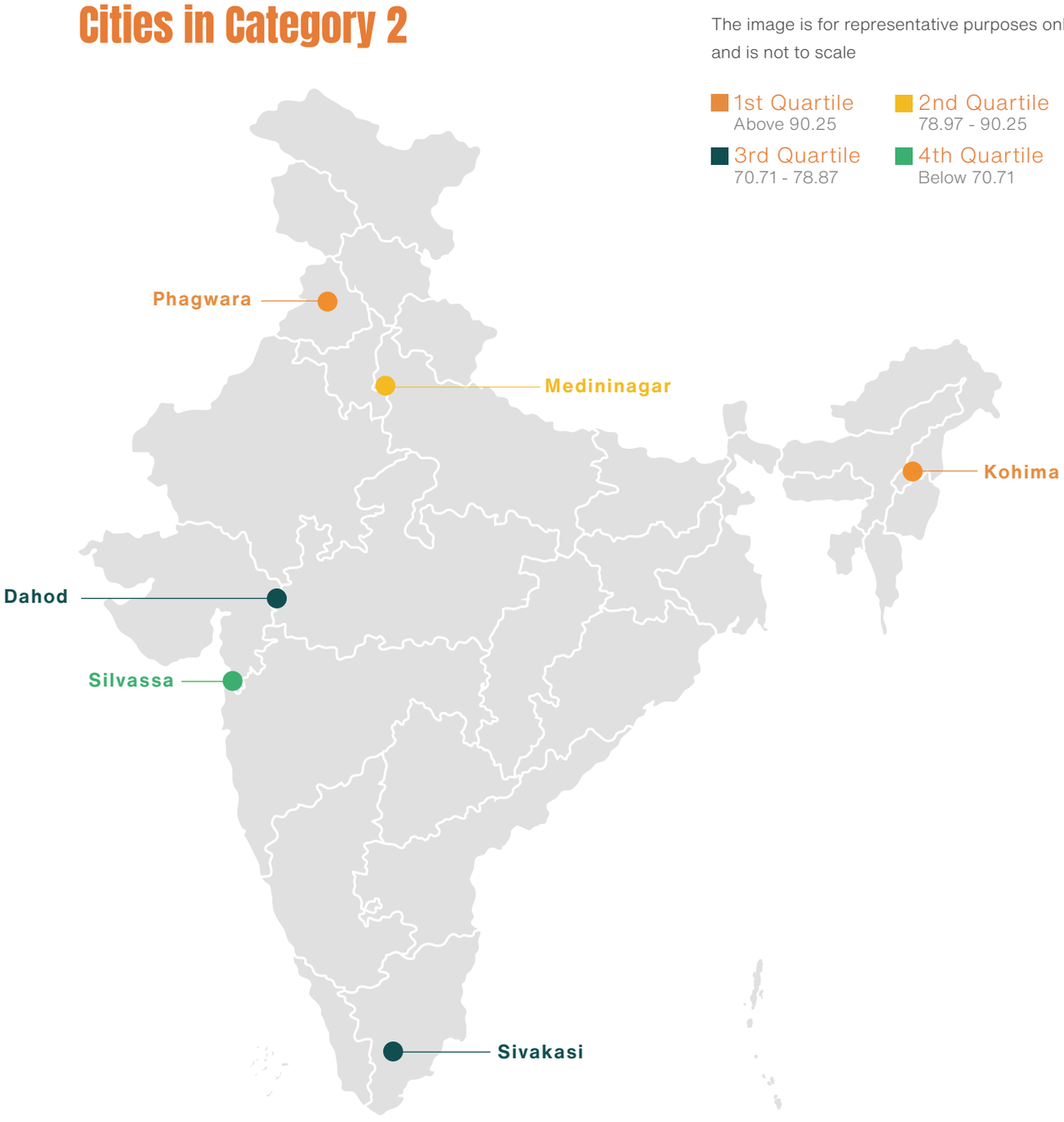


Figure 2: Cities in Category 2

This map showcases cities belonging to category 2, including a total of 6 municipalities. Among these municipalities, three of these municipalities namely Silvassa, Dahod, and Kohima are smart cities. The cities are stratified into quartiles based on their scores: the first quartile ranges above scores 90.25, the second from 78.87 to 90.25, the third from 70.71 to 78.87, and any scores below 70.71 are placed in the first quartile. Regarding the division, two cities are situated in the first quartile, one city each belongs to the second and third quartiles, and the remaining two cities are categorized in the fourth quartile.

Note: The image is for representative purposes only and is not to scale

Cities in Category 3

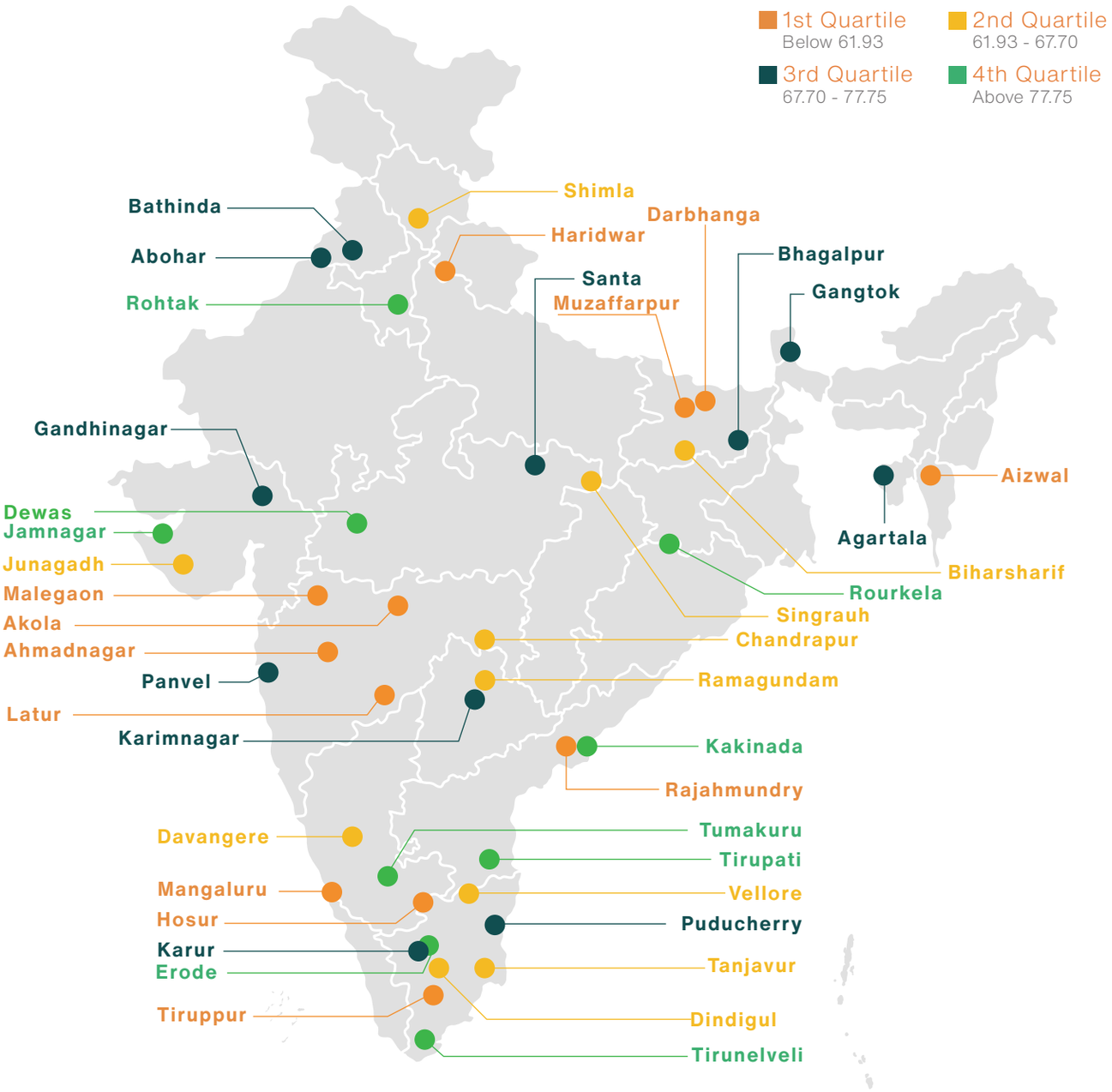


*Figure 3: Cities in Category 3**

This map illustrates cities under category 3, comprising a total of 51 municipalities, out of which 30 have been designated as smart cities. Each category of the cities is classified into quartiles - the first quartile ranges below 61.93, the second from 61.93 to 67.70, the third from 67.70 to 77.75, and any scores above 77.75 are categorized in the fourth quartile. Distribution-wise, 13 cities are part of the first quartile, another 13 fall into the second quartile, 12 are part of the third quartile, and the remaining 13 are classified in the fourth quartile.

* Certain cities couldn't be represented on map

Note: The image is for representative purposes only and is not to scale

Cities in Category 4

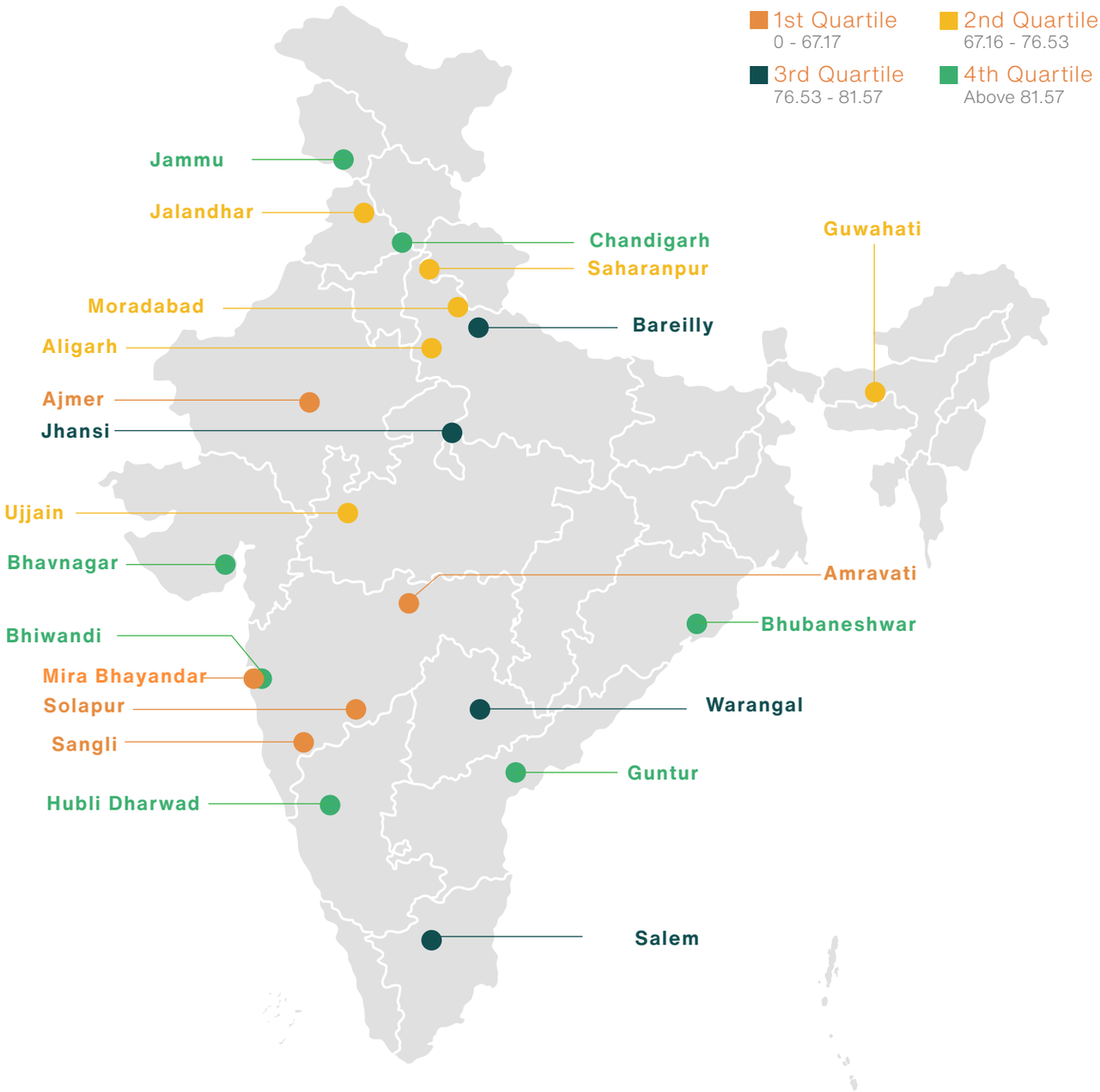


*Figure 4: Cities in Category 4**

This map depicts cities falling under category 4 with 28 municipalities out of which, 19 of them are classified as smart cities. The cities within each category are further organized into quartiles. Specifically, the first quartile ranges from 0 to 67.17, the second from 67.16 to 76.53, the third from 76.53 to 81.57, and any scores above 81.57 are assigned to the fourth quartile. As for the distribution, each quartile comprises a total of 7 cities.

Note: The image is for representative purposes only and is not to scale

Cities in Category 5

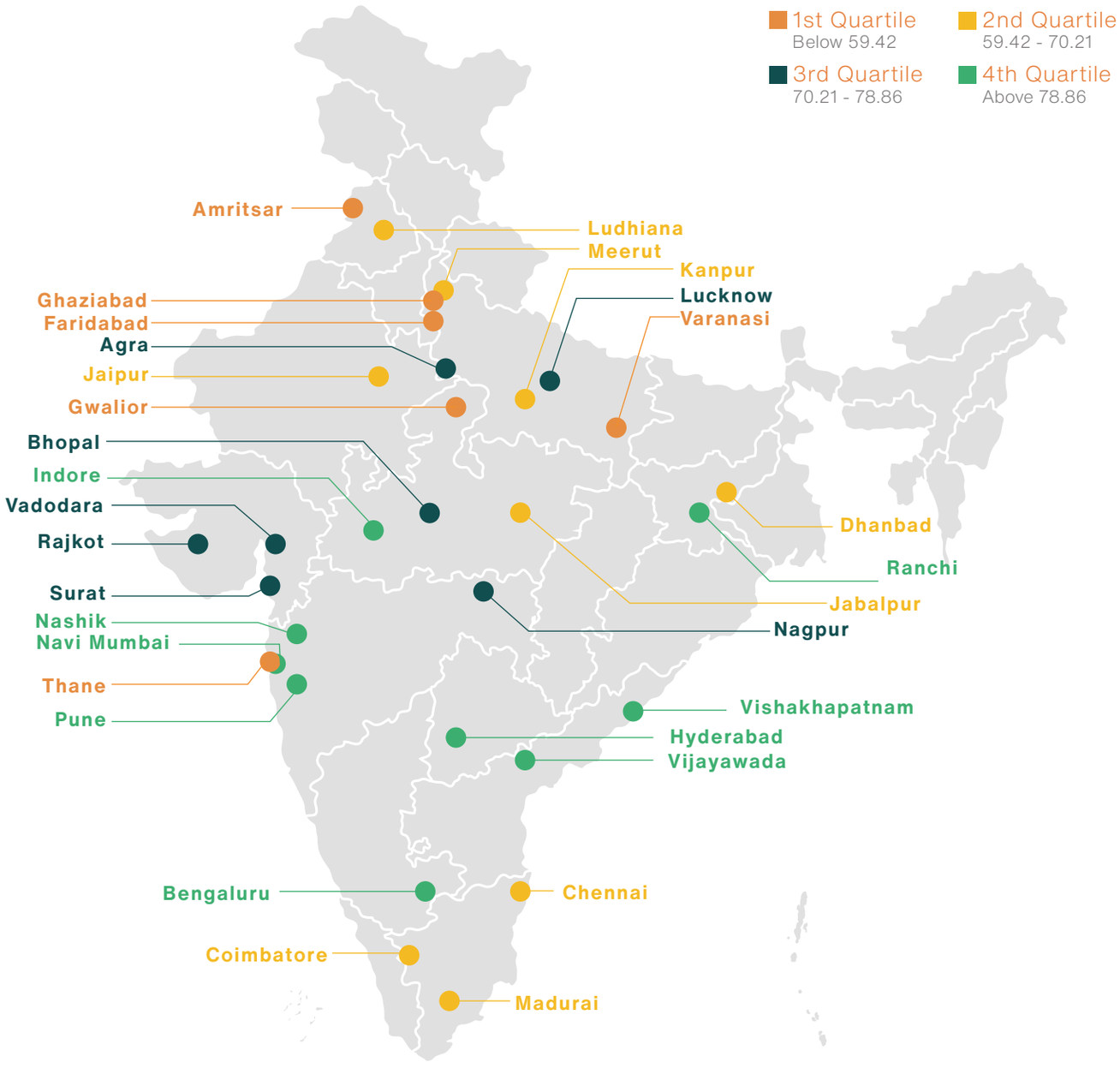


*Figure 5: Cities in Category 5**

This map presents cities under the parameters of category 5 which consists of a total of 42 municipalities, with 33 of them designated as smart cities. Each city category is classified into quartiles. The first quartile ranges below 59.42, the second quartile from 59.42 to 70.21, the third quartile spans from 70.21 to 78.86, and any scores above 78.86 are assigned to the fourth quartile. In terms of their distribution, 8 cities are part of the first quartile, another 9 are placed under the second quartile, 7 are located in the third quartile, and the remaining 9 are categorized within the fourth quartile.

* Certain cities couldn't be represented on map

Note: The image is for representative purposes only and is not to scale

Vertical & Sector Level Analysis

01 Services

Ensuring citizens' access to services is a foundational responsibility of governmental authorities, a challenge magnified by the swift pace of urbanization and constrained resources. This challenge is particularly acute in developing countries striving to meet developmental goals and elevate the quality of life for their residents. The insufficiency in infrastructural capacity,

The Services vertical aims to assess the effectiveness of municipalities in delivering services across six critical sectors:

01 Education

02 Health

03 Water & Wastewater

04 Solid Waste Management & Sanitation

05 Registration & Permits

06 Infrastructure

Identifying and addressing the obstacles that impede quality service delivery is of paramount importance, as underscored by the comprehensive evaluation of municipal performance in these vital service sectors.

With a score of 69.39, Pune emerges as the clear winner of this evaluation. Kohima received the lowest score of 23.10 out of all the municipalities.

Four of top 10 municipalities are located in Maharashtra, including Pune, Pimpri Chinchwad, Greater Mumbai and Navi Mumbai.

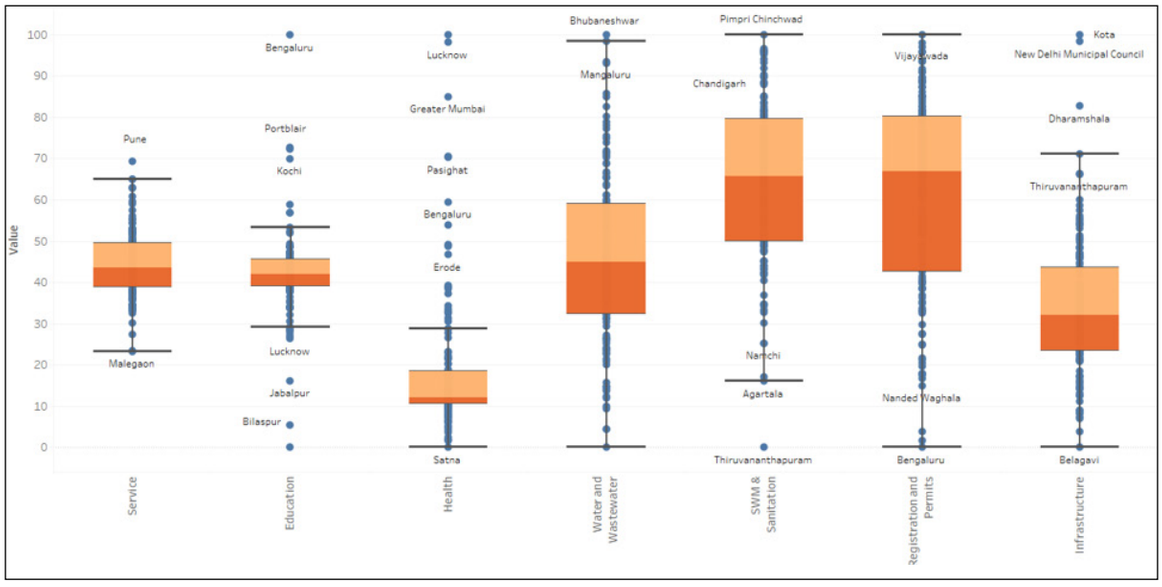


Figure 6: Services Vertical - Cities Performance

These results indicate a substantial and commendable delivery of services in a variety of categories, including solid waste management (SWM), sanitation, registration, and permits. In contrast, the average score for municipalities in categories 2 and 3 is the lowest, with an average of 39.73 and 44.16, respectively. These scores imply that cities classified under these specific categories encounter challenges or limitations in providing services, which may necessitate further examination and targeted improvements to enhance service delivery. Overall it is noted that most of the cities across sectors such as Education, Water and Wastewater, SWM & Sanitation and Registration and permits have shown better performance.

1.1 Education

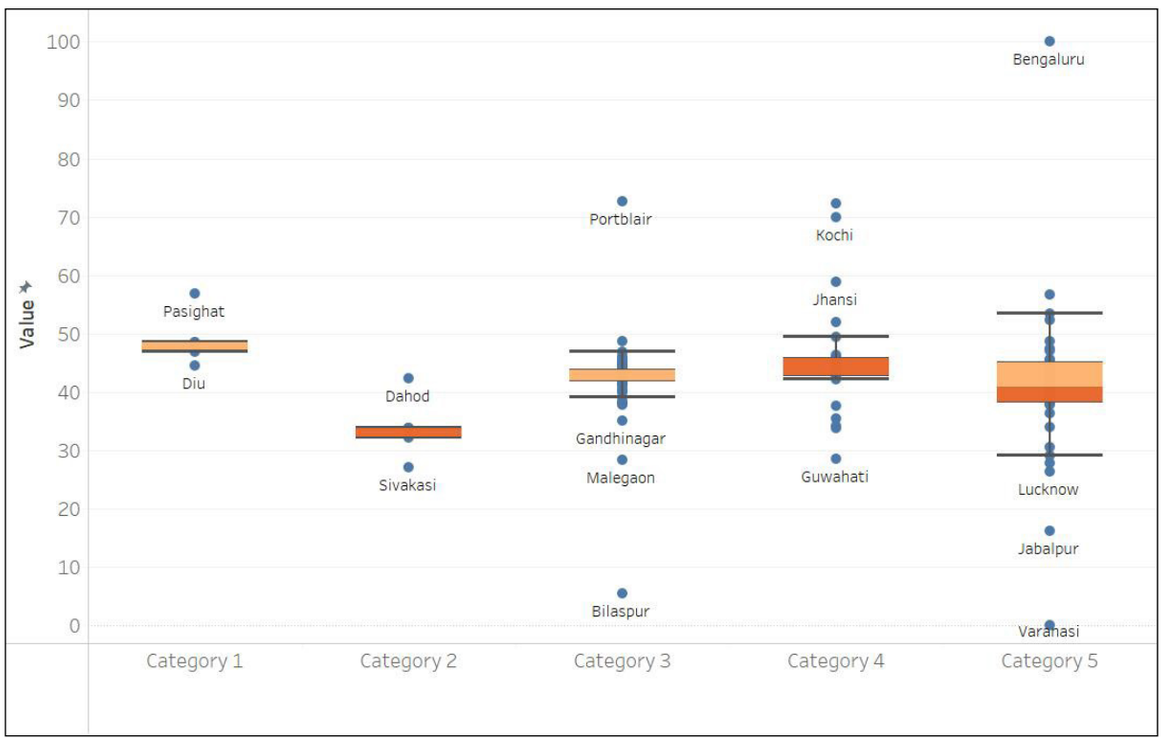


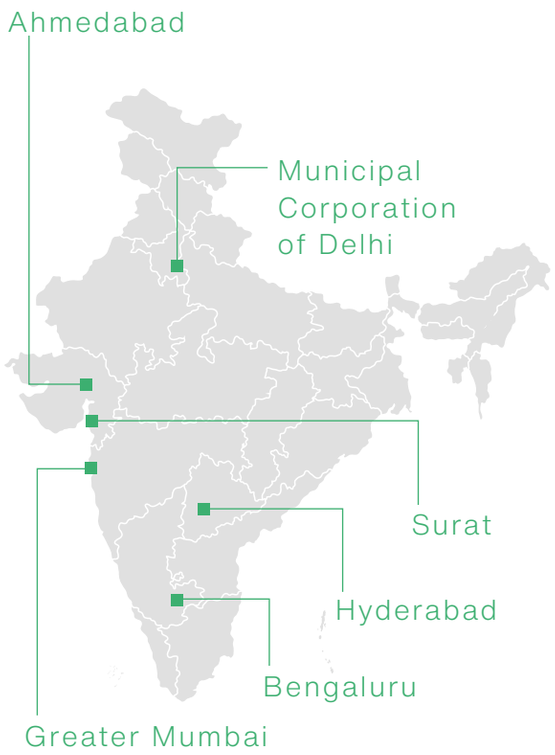
Figure 7: Education Sector – Category Wise Cities performance

The education sector evaluates the quality and effectiveness of the education system in municipal schools. Key indicators include teacher vacancy, pupil-teacher ratio, and financial commitment. High vacancy rates indicate a lack of resources, low ratios suggest better teacher-student interaction and deviations above average indicate increased investment or resource inefficiencies. In contrast to the 11th schedule, which specifies both Primary and Secondary Education for the Panchayat, the 12th schedule does not include Education as a municipal responsibility. “Promotion of cultural,

educational, and aesthetic elements" is mentioned (Entry 13, Schedule XII). Most of the academic functions rest with the education department. Overall, **Bengaluru has scored 100, it is closely followed by Portblair (72.73), Thiruvananthapuram (72.29), Kochi (69.99) and Jhansi (58.78) in sector evaluation.**

Whereas 14 municipalities mostly from category 5 indicating only large municipalities such as Bengaluru, Greater Mumbai, Municipal Corporation of Delhi, Surat, Ahmedabad and Hyderabad have reported spending more on education than the average ULB. This relects that their commitment to education exceeds the average commitment of ULBs. This could suggest that the large municipalities are able to prioritize education and are willing to allocate extra resources to provide quality education to their citizens. It's important to note that while a positive value is generally considered favourable, the actual impact and effectiveness of this higher expenditure on education would depend on how efficiently the funds are utilized and whether they lead to improved educational outcomes for the residents of Bengaluru.

Municipalities that have reported spending more on education than the average ULB are



This could suggest that the large municipalities are able to prioritize education and are willing to allocate extra resources to provide quality education to their citizens.

[1] At primary level the PTR should be 30:1 and at the upper primary level it should be 35:1. The Rashtriya Madhyamik Shiksha Abhiyan (RMSA) framework stipulates that the PTR at secondary level should be 30:1. Student-Teacher Ratio

On the other hand, it is reported that at least 22 municipalities have reported PTR ratio for grade (1-10) higher than 40. The value is higher than laid down by Right of Children to Free and Compulsory Education (RTE) Act, 2009 in its Schedule for primary, upper primary and secondary schools.[1] The 74th Amendment does not explicitly place Education under the ambit of local authorities. Nevertheless, some municipalities have made provisions for this.

1.2 Health

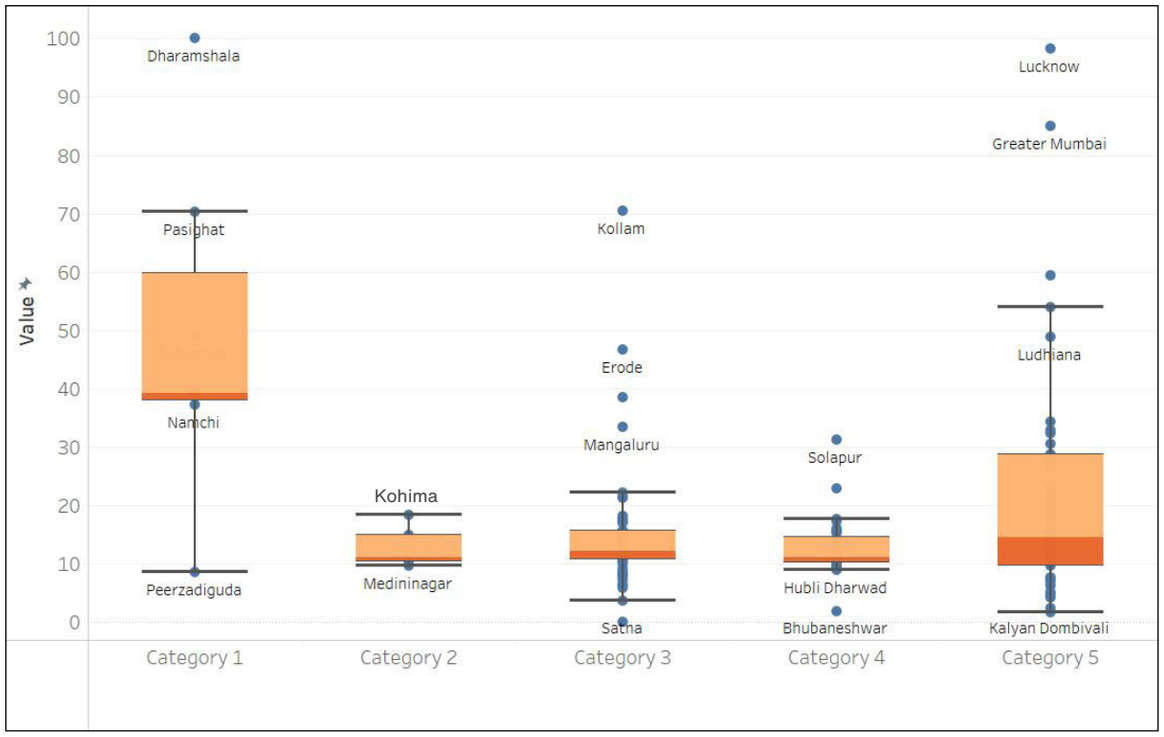


Figure 8: Health Sector – Category Wise Cities performance

The National Urban Health Mission (NUHM) was launched in India to address the challenges posed by urbanization, including unhealthy lifestyles, non-communicable diseases, seasonal illnesses, accidents, and air pollution, aiming to improve healthcare service delivery.

Additionally, the vulnerability of the urban poor and other minorities of the population is also critical. India has one of the highest rates of Out-of-Pocket Expenditure (OOPE), although the figures are declining. The OOPE as a percentage of Current Healthcare Expenditure stands at 47.1% in 2019-20.[2] Efforts in

[2] National Health Accounts Estimates for India (2019-20) released

various healthcare insurance schemes have relegated significant improvement. However, with a country as vast and diverse as India, there is more scope to improve universal healthcare.

The health sector evaluates a municipality's healthcare infrastructure, including primary healthcare institutions, doctor availability, vacancy rates, and healthcare expenditure. It also considers community healthcare workers and their role in underserved communities. This sector provides insights into the health system's capacity and resource allocation.

The performance of municipalities in this sector was possibly the least impressive of all the services measured under the vertical for Services. Existing disparities in healthcare services are also reflected in the performance of different municipalities in this vertical. Dharamshala, Lucknow, Greater Mumbai, Pasighat and Kollamare are among the top-performing municipalities with scores above 70. Kalyan Dombivali, Bhubaneshwar, Meerut and Thanjavur were among the municipalities that fared the lowest.

A value of more than 100 for multipurpose health care workers per lakh population have been reported in 14 municipalities only.

Bengaluru with

26,003

Pimpri Chinchiwad with

15,000

have reported the highest number of multipurpose healthcare workers out of the participating municipalities.

This suggests that in majority of the municipalities, there might be a shortage of these essential healthcare workers, which could potentially impact the delivery of healthcare services, especially in smaller towns and regions.

Whereas 20 municipalities mostly from category 5 indicating only large municipalities such as Bengaluru,

Ludhiana, Greater Mumbai, Municipal Corporation of Delhi, Surat and Pune have reported spending more on healthcare than the average ULBs. This reflects their commitment to health care exceeds the average commitment of ULBs. This indicates that these larger municipalities are demonstrating a higher commitment to healthcare by allocating more resources to the sector.

1.3 Water and Wastewater

The Water and Wastewater sector is crucial for clean water access and effective wastewater management. Key indicators include household coverage by piped connections, water supply efficiency, metered water supply connections, wastewater treatment, infrastructure development, non-revenue water (NRW) loss, and sustainable practices like wastewater reuse and recycling. These measures provide a comprehensive overview of the sector's performance and its impact on public health and environmental sustainability.

In this sector, 35 municipalities report

100 percent

household coverage by water connection, which is a significant achievement in ensuring access to safe water sources.

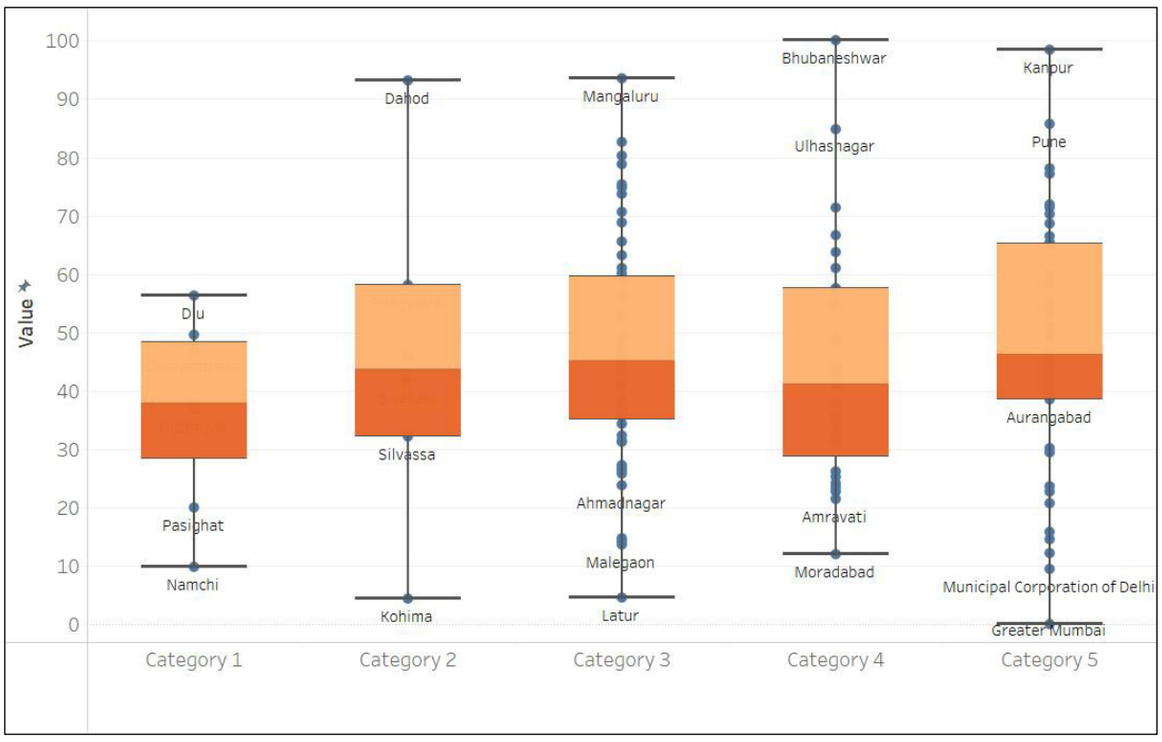


Figure 9: Water and Wastewater Sector – Category Wise Cities performance

1.4 SWM and Sanitation

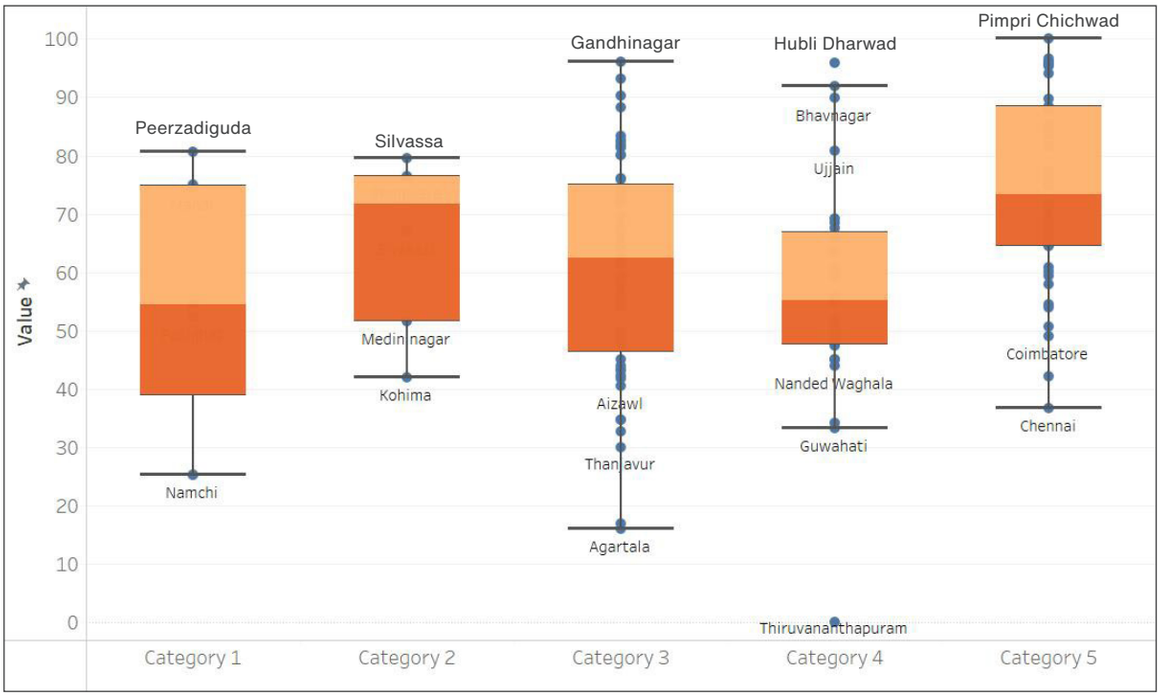


Figure 10: SWM and Sanitation Sector – Category Wise Cities performance

Among these municipalities, 53 per cent have households with metered water supply connections, and 17 of them have achieved this milestone. Furthermore, 20 municipalities have achieved a 100 per cent wastewater treatment rate, indicating their commitment to responsible environmental practices. Six of these municipalities including Mangaluru, Dahod, Rohtak, Madurai, Singrauli, and Aligarh, have gone a step further by treating and recycling all wastewater.

Non-revenue water (NRW) is an important metric, as it reflects potential financial losses for water utilities and environmental impacts. At least 58 municipalities report NRW rates exceeding 25 per cent, highlighting the need for improved water management practices in these areas to enhance efficiency and sustainability.

The Solid Waste Management (SWM) and Sanitation sector is crucial for assessing urban cleanliness and environmental sustainability. It uses ICT-based monitoring to track waste collection, transportation, and sanitation staff performance. It evaluates wet waste treatment, focusing on waste reduction and environmental preservation. The sector also assesses households and commercial establishments connected to closed sewage systems, ensuring responsible waste disposal. It also considers the total sewage treatment capacity and the number of households connected to sewage networks or septic tanks. The SWM and Sanitation sector provides a comprehensive overview of urban waste management practices, sanitation infrastructure, and environmental sustainability efforts, aiming to create cleaner, healthier, and

more sustainable urban environments. Pimpri Chinchwad, Pune, Ahmedabad, Vishakhapatnam, Gandhinagar, Surat and Hubli Dharwad have achieved high scores in sector evaluation.

Out of 134 municipalities, 81 have successfully implemented an ICT-based monitoring mechanism to streamline waste collection and transportation, Garbage Vulnerable Points (GVPs), and sanitation staff performance. This proactive approach enhances waste management and sanitation practices, contributing to more organized and sustainable urban living environments. The ICT-based monitoring system streamlines municipal operations, ensuring a smoother and more efficient waste management process.

In the assessment of Swachh Survekshan scores, a noteworthy observation has emerged. Specifically,

129
municipalities
have achieved a perfect score of
100

in the parameter "Garbage Collection," which pertains to the percentage coverage of areas (wards) under the door-to-door collection system. This accomplishment reflects a high level of efficiency and effectiveness in waste management practices within these municipalities.

Conversely, in the parameter 'Street Cleanliness', where the criterion is the cleanliness of 100 per cent of the wards within the Urban Local Bodies (ULBs), a contrasting trend is apparent. Out of the total 134 municipalities assessed, only a limited number, specifically 5, have managed to secure a score exceeding 70 in this domain. The majority of municipalities, on the other hand, have received a score of 75 on this parameter. This discrepancy suggests that while many ULBs have excelled in the systematic collection of garbage, there remains a substantial need for improvement in ensuring the cleanliness of streets and public areas within the municipalities, as reflected in the lower scores in this regard. Efforts to bridge this gap in street cleanliness should be a priority for local authorities moving forward.

1.5 Registration and Permits

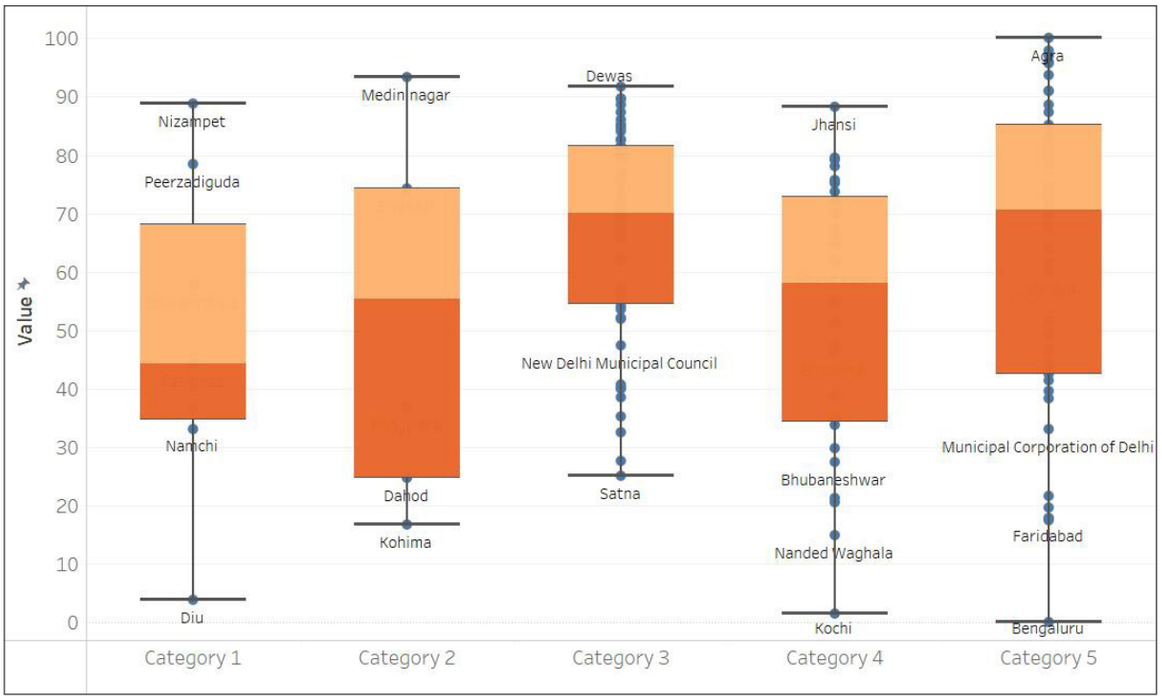


Figure 11: Registration and Permits Sector – Category Wise Cities performance

The registration and permits sector evaluate the administrative efficiency and accessibility of registration processes and permits issuance in municipalities. Key indicators include registration efficiency, online registration, ease of obtaining permits, online registration for permits and licences, and the number of licences awarded. The assessment helps identify areas for improvement in streamlining administrative procedures, reducing red tape, and promoting digitalization to facilitate economic activities within the municipality. The municipalities of Agra, Vijayawada, Hyderabad, and Surat emerged as top performers. Whereas Bengaluru, Diu, and Kochi scored the lowest.

Enabling the acquisition and registration of licences and permits represents a significant economic advantage for the municipality. Consequently, it establishes an effective and well-functioning regulatory framework. **The average number of days taken by the ULB to issue building and construction permits has been reported to be highest by Thane, i.e., 195 days, followed by Gandhinagar, Bengaluru, and Rajkot with 90 days, which means that the ULBs in these four cities are taking significantly longer to issue permits.** Moreover, it is reported that at least 54 of the participating municipalities have completely enabled online registration of building and construction permits. However, out of these, only 30 municipalities have completely digitized licences out of the

total number of licences awarded by a ULB. On registration efficiency of birth and death certificates, it is noted that, on average, it takes the highest time, i.e., more than 30 days, to issue death and birth certificates in Vadodara, Bengaluru, Aligarh, and Puducherry. The highest is 60, reported by Vadodara. But these municipalities, at the same time, have also demonstrated complete online issuance in terms of the registration efficiency of certificates. Burdensome procedures and stringent regulations can have negative consequences. A complex system that propagates obsolete services can have a significant negative impact on productivity. Nonetheless, sustaining such efforts through consistent revision and monitoring by municipalities to ensure best practices is of equal importance.

1.6 Infrastructure

The infrastructure sector is crucial for assessing a region's development and quality of life. Key indicators include safe road networks, energy-efficient street lighting, road maintenance expenditure, road density, and pedestrian-friendly infrastructure. Community services, such as community centers and parks, contribute to the well-being and social cohesion of the population, demonstrating a holistic approach to urban development within

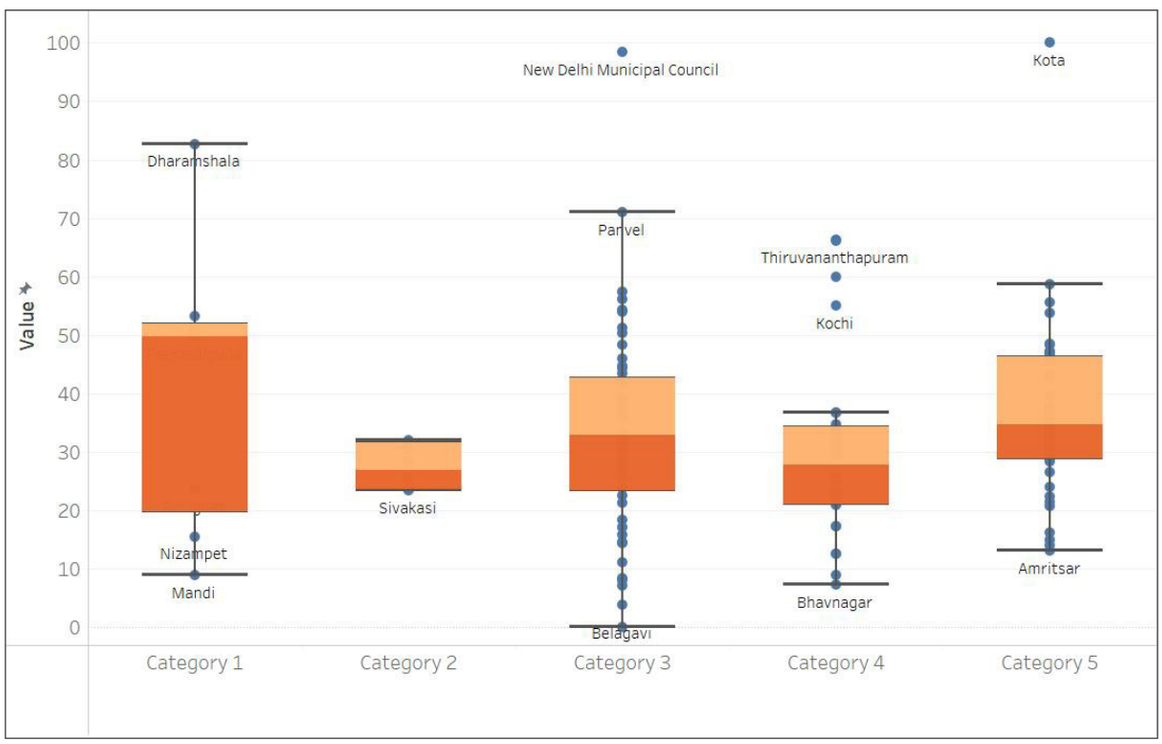


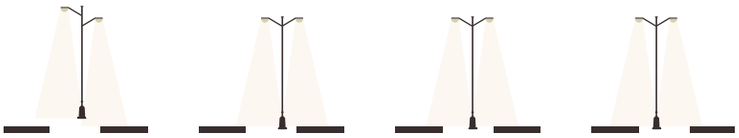
Figure 12: Infrastructure Sector – Category Wise Cities performance

the infrastructure sector. New Delhi Municipal Council, Kota, Dharamshala, Panvel, Jammu, and Thiruvananthapuram have scored the highest, with scores above 60. On the other hand, Belagavi, Gandhinagar, Davangere, and Bhavnagar have scored the lowest in sector evaluation.

Around

30 per cent of ULBs

have all of the roads under operation and maintenance with streetlights, whereas more than 50 per cent do not.



Streetlights play an important role in public safety and economic development, and if the usage of energy-efficient streetlights is promoted, it can help reduce energy consumption and save money. This can lead to significant cost savings for ULBs, especially those with large street light networks.

On the other hand, 20 municipalities have reported spending more on road maintenance than the average ULB. This reflects their commitment to road maintenance, which exceeds the average commitment of ULBs. This could suggest that the large municipalities are able to prioritize expenditure on road maintenance (carriage width, footpaths, cycle tracks, and on-road parking areas) and are willing to allocate extra resources to provide quality infrastructure to their citizens.

02 Finance

Finance stands as a pivotal metric in assessing the political and administrative autonomy of governance bodies, particularly within the context of municipal performance. The decentralisation of local governance, a fundamental initiative, was undertaken with the explicit goal of empowering municipal bodies both in the administrative and financial realms. The fiscal health of municipal bodies emerges as a critical determinant for their effective administration and the seamless delivery of services within urban landscapes.

A fiscally robust municipality is better equipped to attract and allocate resources strategically, thereby fostering essential urban infrastructure and planning initiatives. The overall performance of municipalities is intrinsically linked to their financial well-being, as it directly influences their capacity to enhance the quality of life for residents. In essence, financial stability and the judicious management of resources are imperative for municipalities to fulfil their mandate of effective governance and service delivery, ensuring a standardized and elevated quality of life within urban communities.

The Finance vertical has four sectors, namely

01 Revenue Management

02 Expenditure Management

03 Fiscal Responsibility

04 Fiscal Decentralization

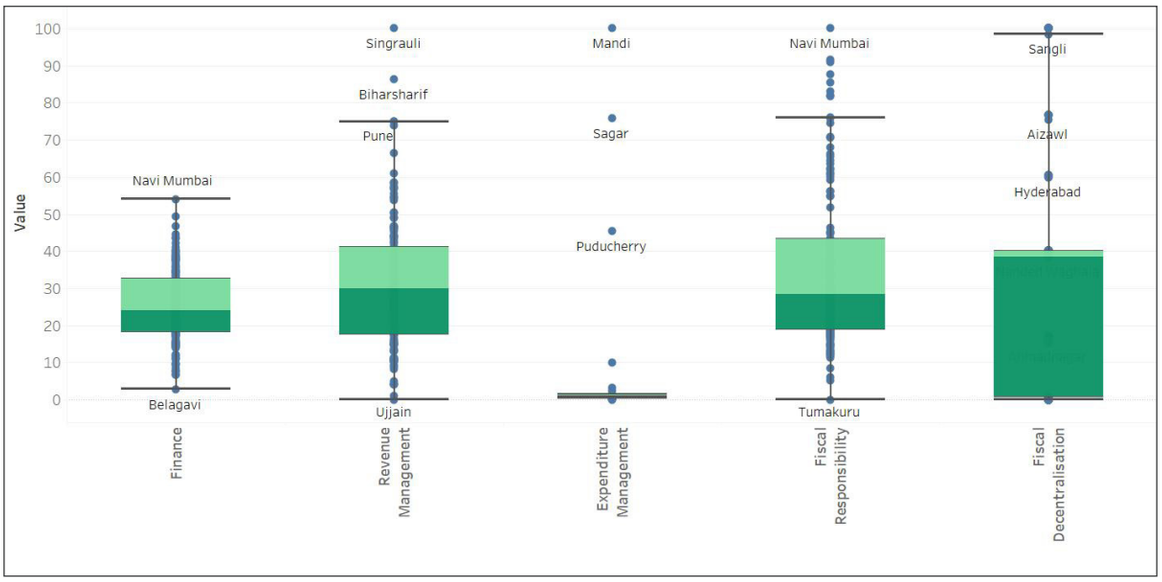


Figure 13: Finance Vertical - Cities Performance

In essence, a thorough evaluation of these four finance sectors not only fosters transparency and accountability but also serves as a catalyst for municipalities to function more efficiently, enabling them to deliver enhanced services, promote sustainable development, and elevate the overall quality of life for residents.

The examination of Finance vertical scores reveals a discernible concentration of top-performing municipalities in the central, western, and southern regions of the country. It is imperative to acknowledge, however, that while this regional pattern is evident for many municipalities, exceptions exist, and the overall distribution may not adhere strictly to uniformity.

Notably, Navi Mumbai in Maharashtra leads with a finance score of 53.99, followed closely by Sagar in Madhya Pradesh and Karur in Tamil Nadu, securing scores of 49.38 and 46.70, respectively.

On the other hand, Belagavi in Karnataka has a noticeably low score of 2.75, which demonstrates its financial difficulties. Other municipalities grappling with relatively low finance scores include Saharanpur in Uttar Pradesh (8.53), Lucknow in Uttar Pradesh (7.73), Ujjain in Madhya Pradesh (9.81), Ajmer in Rajasthan (7.57), and Kohima in Nagaland (6.69). These scores encompass diverse financial indicators, providing a comprehensive overview of aspects such as revenue management, expenditure efficiency, fiscal responsibility, and decentralization.

Targeted interventions are crucial for municipalities with lower scores, highlighting the effectiveness of focused financial strategies. Data-driven insights can help policymakers optimize resource allocation and foster financial stability tailored to the distinctive needs of each municipality.

2.1 Revenue Management

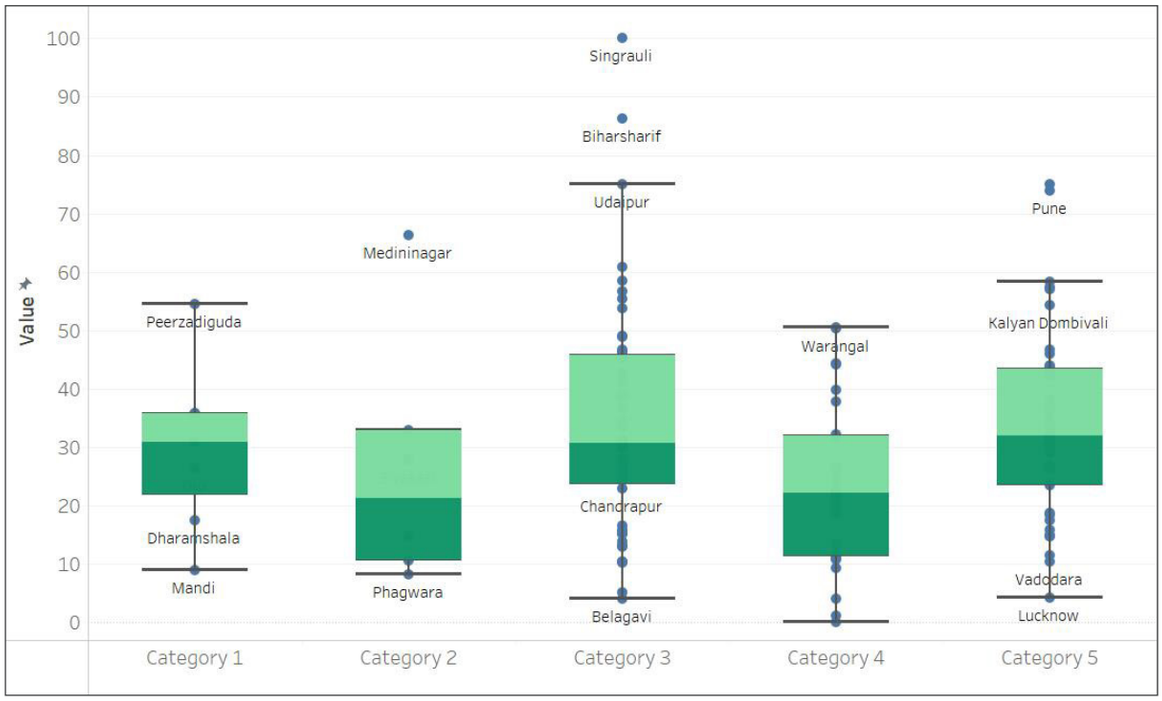


Figure 14: Revenue Management Sector – Category Wise Cities performance

The revenue management sector provides insights into how effectively a municipality manages its finances, generates revenue, and utilizes alternate financing sources to support its municipal functions and services. It encompasses aspects of revenue diversification, tax collection efficiency, financial transparency, and compliance with municipal regulations.

Municipalities have a varied performance in terms of generating their own revenue, with both positive and negative outliers. Municipalities such as Biharsharif, Medininagar Tirupati, Nagpur, Agartala, and Dhanbad have been successful in generating the entirety of their total revenue by themselves.

On the contrary, 50 per cent of the participating municipalities generate less than 23 per cent of the total revenue generated by themselves. In fact, 50 per cent of the participating municipalities generate less than 23 per cent of the total revenue generated by themselves.

A significant portion of these municipalities are dependent on tax revenue, with 22 municipalities generating 80 per cent of their total revenue through taxes.

11 municipalities—Sagar, Bhubaneshwar, Latur, Kochi, Jalandhar Ludhiana, Bhopal, Faridabad, Visakhapatnam, Mandi, and Biharsharif—are solely dependent on tax revenue to generate

the totality of their revenue. On the other hand, municipalities such as Gangtok, New Delhi Municipal Council, Amritsar, Udaipur, and Jamnagar are less dependent on tax revenue to generate income for the municipality.

Interestingly, tax collection efficiency is higher for those municipalities dependent on securing a significant portion (50 per cent and above) of their total revenue in terms of taxes.

Further, it is noted that only Medininagar, Chandigarh, Ranchi, the Municipal Corporation of Delhi, Pune, and Navi Mumbai have

100 percent

tax collection and coverage efficiency.

More than 50 percent of municipalities have reported less than 50 percent tax collection efficiency.

It has also been observed that 62 municipalities out of 134 are unable to raise earnings or borrowings from alternate sources of financing (excluding state and central grants). In fact, only 15 per cent of the municipalities have been able to raise less than 5 per cent of their earnings or borrowings through alternate sources of financing outside of state and central grants.

Box 2
Municipal Bonds: A Viable Alternative for Fiscal Sustainability

In contemporary urban governance, the imperative for urban local bodies (ULBs) to secure substantial investments has emerged as an indispensable requirement as a result of the burgeoning demand for urban services and infrastructural development. However, limited sources of revenue and escalating demands for urban infrastructure investments force ULBs to rely heavily on financial transfers from various sources. The Fourteenth Finance Commission has noted that local bodies are not even able to meet a fraction of their expenditure on the provision of basic services and are heavily dependent on the transfer of one fund or another. Consequently, municipal bonds, representing a cost-effective funding source, present a potential solution to this fiscal conundrum. To date, only a select few prominent Indian Municipal Corporations (MCs) have leveraged bonds as a financing mechanism.

The introduction of municipal bonds in India dates back to 1997 when the Bengaluru MC pioneered this approach, followed by the Ahmedabad MC in 1998. Subsequently, the Indian municipal bond market experienced robust growth until the mid-2000s, with nine MCs collectively raising approximately ₹1,200 crore, averaging ₹130 crore per corporation. However, the launch of the Jawaharlal Nehru National Urban Renewal Mission (JNNURM) in 2005, offering substantial grants to municipal corporations, abruptly halted municipal bond issuances.

In recent times, there has been a resurgence in municipal bond issuances in India, with nine MCs collectively raising around

₹3840 crore

during the period from 2017 to 2021

To incentivize this trend, the Government of India has offered financial incentives in the form of a lump-sum grant-in-aid for municipal bond issuances under the Atal Mission for Rejuvenation and Urban Transformation (AMRUT) Programme, at a rate of ₹13 crore for every ₹100 crore of bonds issued. A renewed emphasis through this initiative has led to issuance of fresh municipal bonds by nine MCs, namely Pune, Hyderabad, Indore, Bhopal, Vishakhapatnam, Ahmedabad, Surat, Lucknow, and Ghaziabad.

Recent instances of bond issuances have

unequivocally demonstrated the viability of bond financing as an alternative for resource mobilization for MCs.

If provisions for exchange listings, active participation of major credit rating agencies in the municipal rating sphere, and robust support from the Central government in the form of reform-linked financial incentives are set up, then the municipal bond market in India holds substantial potential. As the demand for infrastructure development continues to escalate within Indian cities, MCs must proactively explore avenues for revitalizing and nurturing alternative and sustainable resource mobilization through municipal bonds. To facilitate this growth, policy initiatives geared towards fostering a conducive financial investment environment through effective regulation, enhanced transparency, and improved governance are imperative.

Box 3
Local Governance and Fiscal Empowerment: Challenges and Solutions

Municipalities in India face significant challenges in achieving fiscal autonomy, which places them among the least empowered urban local bodies globally. Their restricted revenue generation capacity and taxing authority, combined with resource management challenges, insufficient human resources, and a lack of decision-making autonomy, have contributed to their poor financial condition[3].

The Reserve Bank of India's "Report on Municipal Finances" highlights the dependence of municipal bodies on fund transfers for the State and the Centre, and their revenue earning and raising capacity is limited. Municipal corporations in India struggle to generate sufficient taxes to cover their expenditures.

The own tax revenue of municipal corporations, comprising property tax, water tax, toll tax and other local taxes constituted only

31-34%

of total revenue during the FY18-FY20 period.

An analysis of budgetary data from 201 municipal corporations nationwide, as presented in the RBI report, reveals that their overall revenue receipts, encompassing own tax revenue, non-tax revenue, and transfers, amounted to a paltry 0.61% of the GDP in 2017-18 (actuals). This figure marginally increased to 0.72% of the GDP, according to budget projections for 2019-20. In stark contrast, countries like Brazil and South Africa demonstrate substantially higher municipal revenue as a percentage of GDP, with Brazil at 7% and South Africa at 6%.

Enhancing the financial stability of Indian municipalities necessitates a multifaceted approach. Initiatives such as reforming property taxation and establishing a resilient municipal bond market can pave the way for positive change in India's municipal finances. Additionally, vital structural changes must empower local governments. These structural adjustments should encompass devolving decision-making powers related to regional development matters to local authorities, enhancing the capacity of the local labour force through skill development, involving local governments in the recruitment process, empowering elected representatives while increasing accountability, fostering active citizen participation, establishing responsive grievance redressal systems, and striving for financial independence of municipalities[4].

[3] https://prsindia.org/theprsblog/examining-urban-local-governance-in-india-through-the-case-of-bengalurua?page=9&per-page=1
[4] https://idronline.org/how-can-we-empower-city-governments/

2.2 Expenditure Management

The expenditure management sector offers a comprehensive view of how efficiently a municipality allocates its financial resources across various categories of expenditures. It evaluates the effectiveness of grant utilization, the municipalities' focus on capital projects, their administrative cost management, and the distribution of expenses in relation to their own revenue and population.

Faridabad, Coimbatore, Peerzadiguda, Rohtak, Aizawl, Pimpri Chinchwad, Kalyan Dombivali, Mira Bhayandar, Vadodara, Kochi, Chandigarh, New Delhi Municipal Council, and Thiruvananthapuram have used 100 per cent of the central and state funding they received. This highlights their remarkable efficiency in managing both central and state funding, indicating a high degree of grant efficiency.

Moreover, it is observed that 79 municipalities, on average, have a state grant efficiency rate of 67 per cent, which exceeds the central grant efficiency rate of 59 per cent. This gap is a result of municipalities' differing degrees of proficiency in administering funding granted by state and central agencies.

Over a three-year period, the numbers recorded by Ulhasnagar, Kakinada, Peerzadiguda, Navi Mumbai, Coimbatore, Tiruchirapalli, Gandhinagar, Gurugram, Mira Bhayandar, and Mangaluru for the criteria of salary expenses relative to own revenue constantly surpass 80 per cent. This trend illustrates that, on average, a large amount of these ULBs' own revenue remains available after total salary expenditures have been covered. This demonstrates a great degree of financial management efficiency and a competent distribution of resources to meet a variety of municipal demands. Overall most of the cities have shown little or no variance in performance across this sector.[5]

> This reflects their commitment to prudent financial planning practises and a culture of transparency in their administrative procedures.

In addition, more than 50 per cent have lower capital expenditure per capita and expenditure per capita numbers. This pattern shows that budget limits, resource allocation prioritising, or efficiency concerns are prominent in these towns. It is essential to examine these data within the context of each municipality's financial health and long-term ambitions for growth.

[5] Most of the cities have shown little or no variance in performance across this sector.

2.3 Fiscal Responsibility

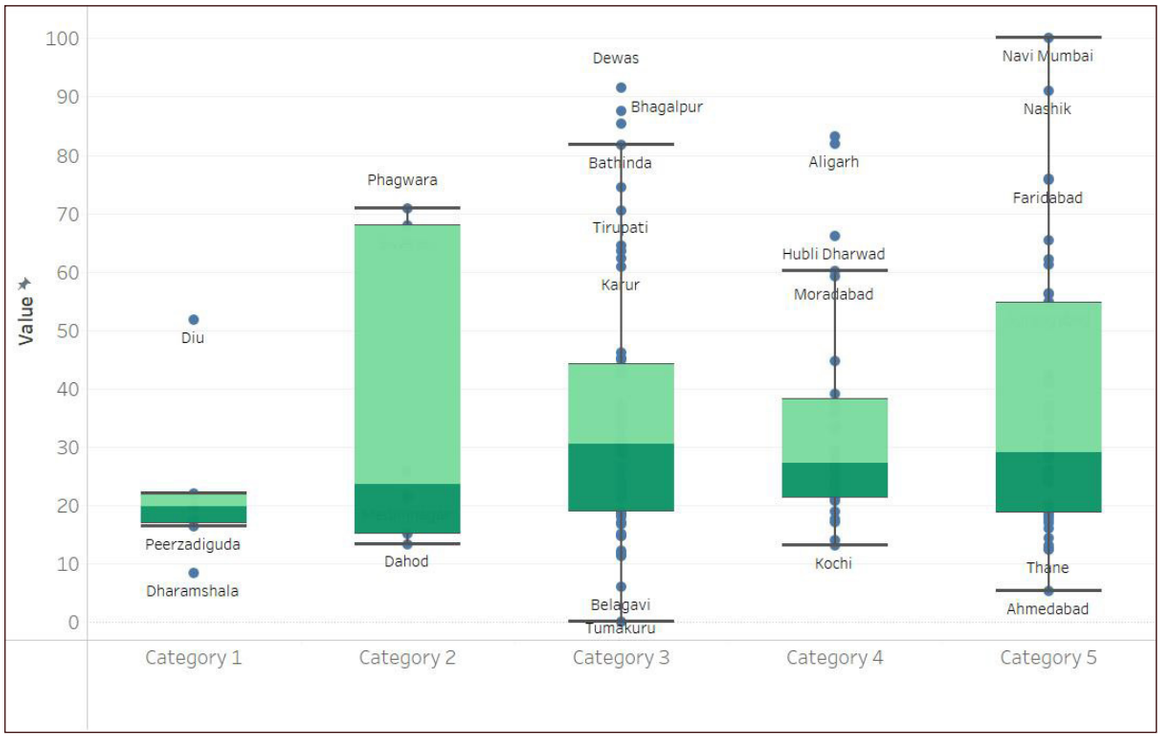


Figure 15: Fiscal Responsibility Sector – Category Wise Cities performance

The fiscal responsibility sector in the finance vertical evaluates municipal governance's financial prudence and transparency. It includes key indicators like budget deficit or surplus, participatory budgeting, absolute budget variance, external audits, and public sharing of ULB statistics. It also considers internal audits and risk assessments. Evaluating these indicators helps assess a municipality's financial management, community involvement, financial planning, and operational accountability.

It is noted that municipalities have consistently maintained a budget surplus exceeding 10 per cent over the past three years, demonstrating their ability to uphold fiscal prudence and financial stability.

Furthermore, 13 municipalities have embraced the commendable practice of allocating 100 per cent of the Urban Local Body (ULB) budget through participatory budgeting. This reflects a

commitment to involving local residents and communities in the decision-making process regarding the allocation of public funds at the local level, promoting inclusive and community-driven governance.

In terms of financial transparency and accountability, 54 out of 134 municipalities have published their external audited accounts (both internal and external) within the last fiscal year. Additionally, 73 noteworthy municipalities have taken comprehensive measures by making the financial and operational statistics of the ULB accessible to the public and have implemented internal audits and controls. These endeavours underscore a commitment to transparency and rigorous financial oversight within these municipalities.

2.4 Fiscal Decentralisation

The fiscal decentralisation sector assesses the financial autonomy of municipalities in conducting their affairs. This sector assesses municipalities based on tax collection and borrowing powers. Municipalities with more extensive tax collection and borrowing powers tend to have greater financial independence and the ability to make decisions tailored to their local priorities.

On the other hand, municipalities with limited powers in these areas may rely more heavily on funding and directives from higher levels of government. It is often seen as a way to promote local governance, efficiency, and responsiveness to community needs, but it also requires a balance between local autonomy and fiscal responsibility to ensure prudent financial management.

Notably, a select group of municipalities, including Ahmedabad, Bhavnagar, Coimbatore, Guwahati, Hubli Dharwad, Karur, Mira Bhayandar, Rajkot, Satna, Thanjavur, and Ulhasnagar, have achieved a perfect score of 100, underlining their exceptional performance across both assessed parameters.

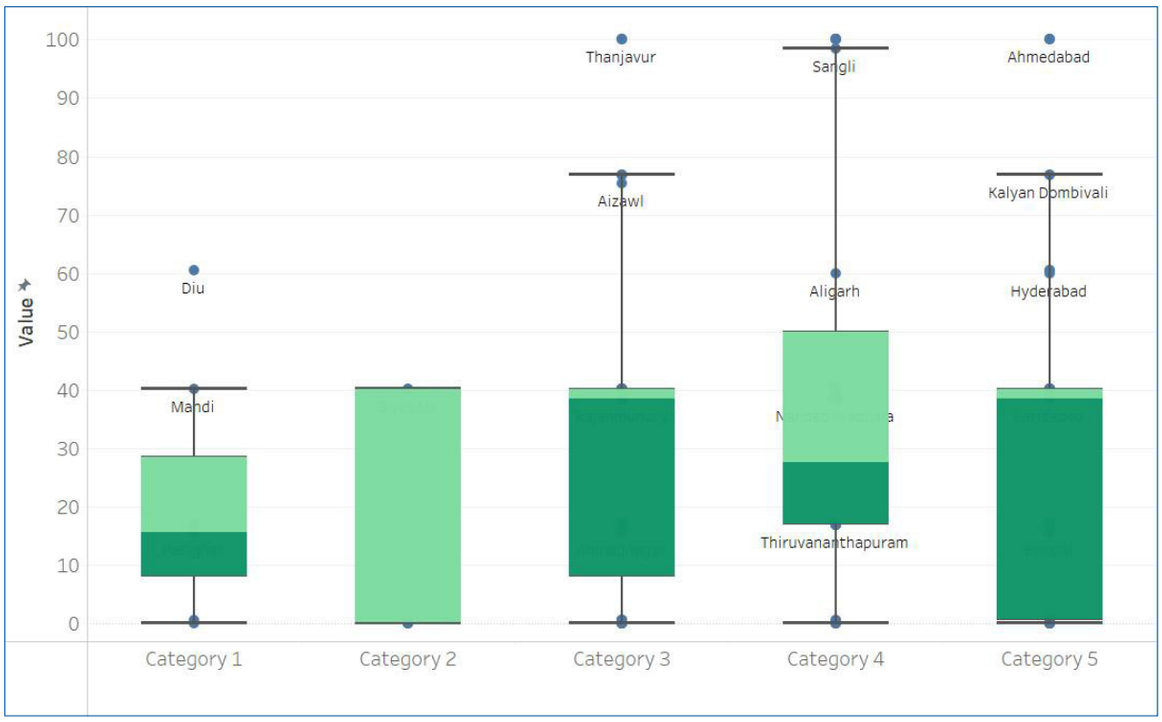
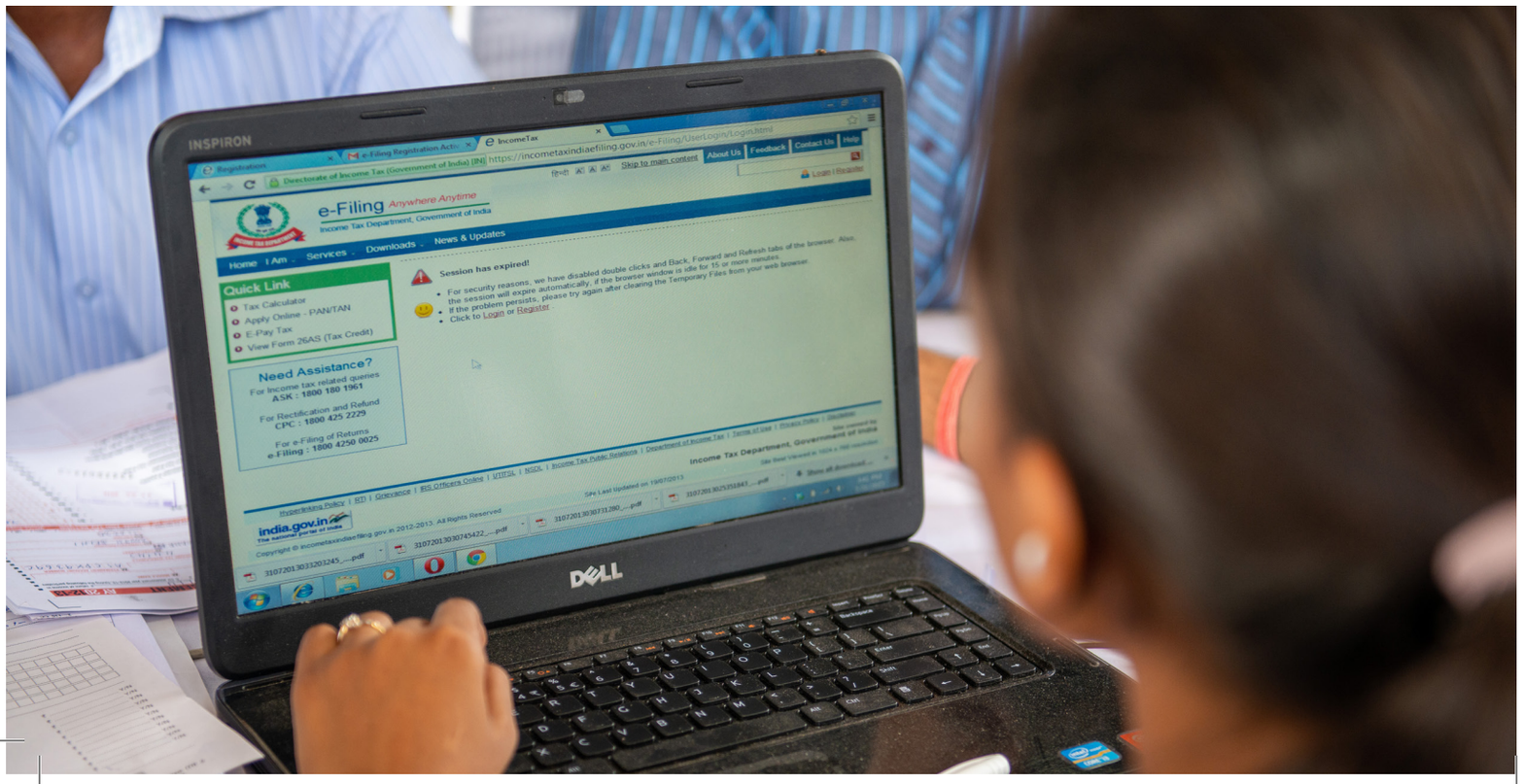


Figure 16: Fiscal Decentralisation Sector – Category Wise Cities performance

Among the 134 Urban Local Bodies (ULBs) assessed, 47 municipalities wield full tax collection powers, thereby enabling them to autonomously establish and collect revenue from diverse sources, including property tax, local body tax, professional tax, advertisement rights, entertainment tax, and other related levies. Conversely, a significant majority of 109 municipalities have conveyed their inability to exercise borrowing and fund investment powers independently, necessitating approval from the State, even accounting for adherence to debt-limitation policies. This divergence in fiscal decentralization underscores the imperative of nuanced policy measures to empower ULBs with the financial autonomy needed for robust and responsible governance.



03 Governance

Most scholars, policymakers, aid donors, and aid recipients recognize that good governance is fundamental to sustained economic development (Kaufmann & Kraay). Over time, the concept of good governance—which includes the crucial part played by the government in supporting growth initiatives and effectively managing a state's economy has developed, and discussions are now focused on the area of digital governance. In today's context, the significance of governance has never been greater; it becomes imperative that we thoroughly examine the constituent elements of governance that ultimately dictate its effectiveness. **The governance sector evaluates the effectiveness and transparency of municipal governance and administration, focusing on financial accountability, environmental stewardship, and employee integrity. It evaluates the adequacy of Urban Local Body staff, promotes gender equality, and examines leadership stability. It also gauges civic engagement, encourages transparency through complaint redressal mechanisms, and emphasises capacity building and adherence to citizen charters. The sector also aims to encourage accountable, participatory, and responsive local government systems.**

In determining the functions and efficiency of urban governance, the role of local governing structure and administration cannot be overlooked. Challenges surfacing due to the rapid expansion of Indian cities can only be addressed by urban governance that proves to be more efficient and incorporates inclusive and sustainable practices. As the role of local municipalities becomes increasingly essential, it also becomes more and more challenging. It is, therefore, necessary to measure governance practices across municipalities in India.

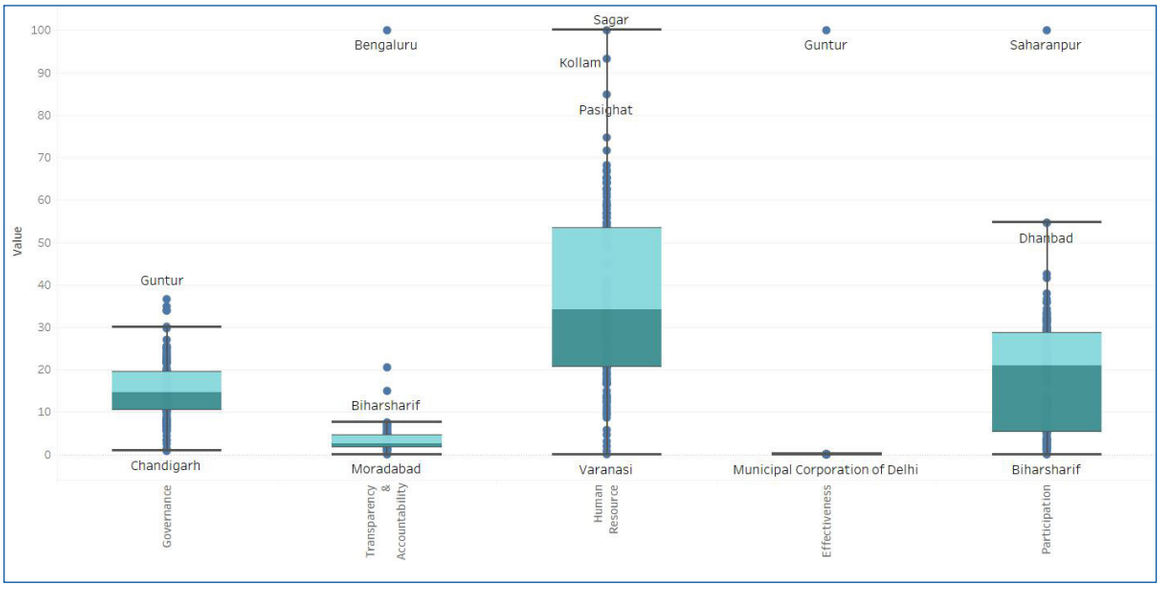


Figure 17: Governance Vertical - Cities performance

The vertical for Governance consists of four distinct sectors of transparency and accountability, human resources, participation, and effectiveness, expanding across 16 indicators.

Among the various verticals evaluated, governance stands out as the weakest performer. This is due to lower performance of cities across most of its sectors: Transparency and Accountability, Effectiveness and Participation as shown above. In contrast, the human resources sector demonstrates the highest performance, followed by participation, governance, transparency & accountability, and effectiveness. Guntur municipality of Andhra Pradesh emerges as the top-performing municipality largely attributed to its perfect score in the effectiveness sector. Following closely behind are Bengaluru, Sagar, and Saharanpur, which excel in transparency & accountability, human resources, and participation, respectively. Conducting a comprehensive analysis of the Governance sector's various components is essential to pinpoint shortcomings and understand the underlying reasons for the low scores.

3.1 Transparency and Accountability

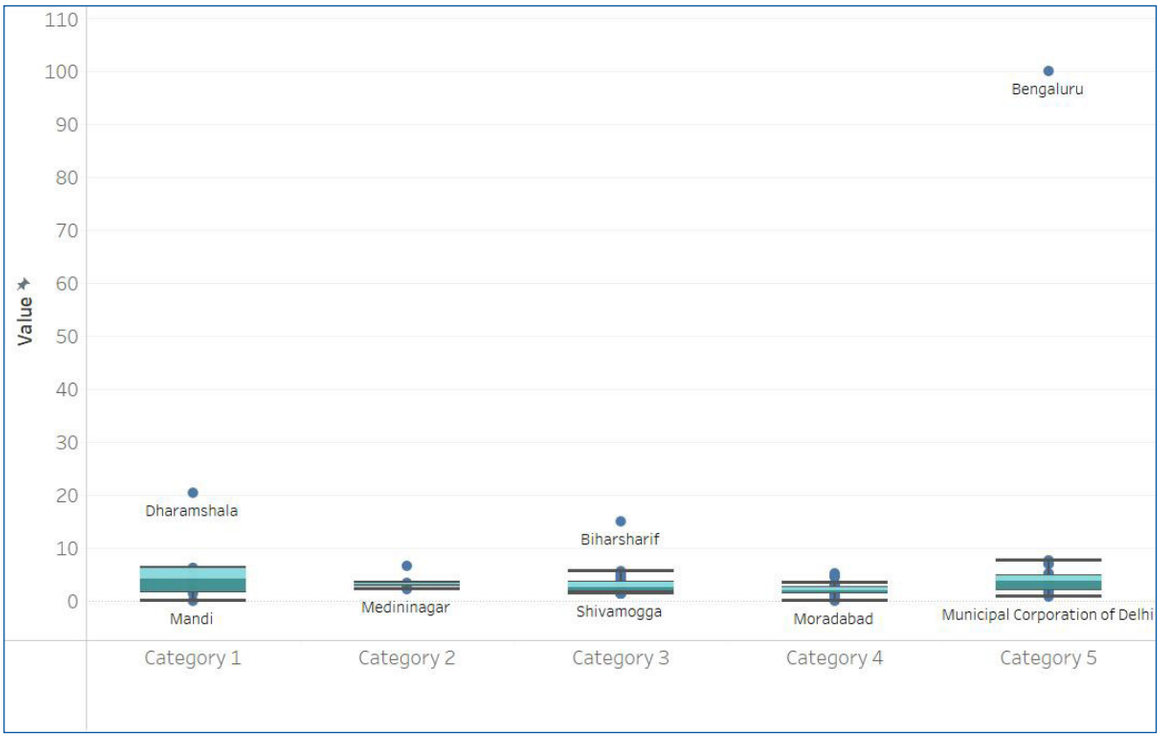


Figure 18: Transparencey & Accountability Sector – Category Wise Cities performance

Transparency and accountability represent the cornerstone of governance, embodying citizens' Right to Information. In a decentralized system, the proximity of decision-makers to local communities offers a potent opportunity for communities to demand greater accountability, transparency, and efficiency in the allocation of public resources for development. Principles of transparency and accountability have a profound influence on a genuine democracy. Moreover, a government's credibility is built on these vital factors. Unfortunately, governance practices frequently lack trust due to insufficient transparency levels.

A 2017 report on the Annual Survey of India's City Systems supports this notion. The absence of a structured platform for citizen participation and a systematic participatory process often results in disjointed citizen grievance redressal systems. Consequently, a lack of transparency in financial decisions and operations erodes trust, thereby weakening democracy. The scarcity of accessible data and information further exacerbates this predicament.

Bengaluru emerges as the top-performing municipality, securing a perfect score of 100. The key to Bengaluru's success lies in its proactive improvement in e-governance as a means to enhance information accessibility. Strikingly, there exists a substantial gap between the leading and second-best performers, with Dharamshala securing the second position with a score of 20.49.

When examining the data further, it becomes evident that out of the 134 municipalities, only 103 have published budget accounts for all reporting periods, while 78 have shared service-level performance reports across all periods.

Additionally,

21

Municipalities

have released Enviornmental Status Report with Action Plans

It is important that transparency and accountability go beyond mere bookkeeping and audits; it should include motivation and improvements.

Without these elements, there's a risk of this sector becoming entangled in a complex bureaucracy with diluted responsibility (UNDP, 2000). With the rise of digital governance, this sector can be strengthened to foster long-term growth through curbing corruption, better resource allocation, trust and participation.

3.2 Human Resources

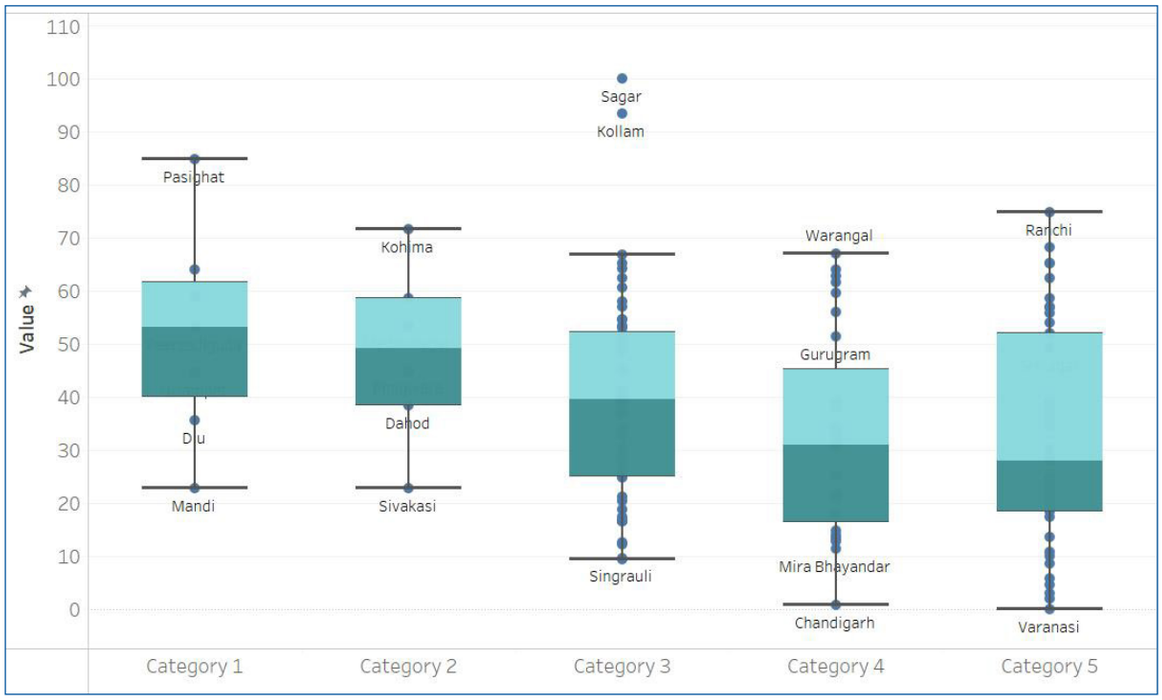


Figure 19: Human resources sector - category wise cities performance

Human resources hold paramount importance for both the economy and governance. A skilled and well-managed workforce drives economic growth through increased productivity, innovation, and efficient resource allocation. Quality human resources contribute to technological advancement and the development of new industries, encouraging economic sustainability. In the realm of governance, human resource management is vital. It enables the government to efficiently deliver services, implement policies, and maintain a motivated public workforce.

Effective governance depends on the abilities of the public servants as well as the youth, and a well-managed human capital system ensures their recruitment, training, and retention. Furthermore, talent attraction and retention contribute to a government's capacity to address complex challenges, instilling investor confidence and enhancing the nation's economic prospects.

Inadequacy in the capacity of Urban Local Bodies (ULBs) stemming from personnel unavailability with requisite skills can inhibit the administration's proper functioning. Consequently, problems arising from unstable leadership, gender disparity, and unempowered mayors also prevent cities' efficient management.

Sagar emerges as the top-performing municipality, boasting a perfect score of 100, closely followed by Kollam and Pasighat. It's worth noting that 64 municipalities have more than 50 per cent of elected women officials in their Urban Local Bodies (ULBs).

However, when it comes to the presence of permanent women workers, only Sagar and Kollam surpass the 50 per cent mark. Despite Sagar's remarkable overall performance, it falls short in the realm of gender equality within its human resources.

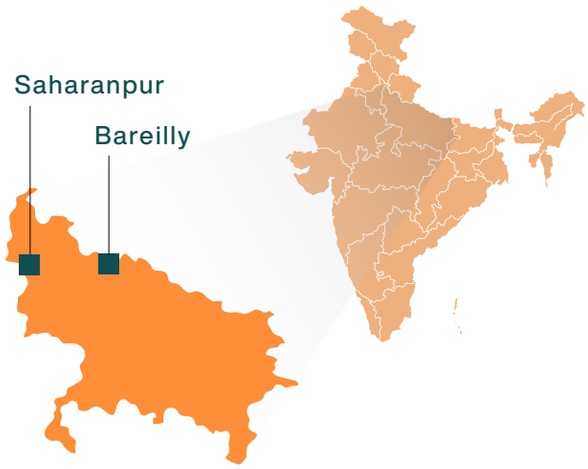
Recognizing the significance of bolstering women's employment in government jobs, the Madhya Pradesh government has taken proactive steps. These initiatives include the allocation of an additional seven leaves for women, expanding reservation opportunities for women employees, and revising the conditions for women's employment during night shifts, among others. It's important to underscore that women's employment in the public sector in India has largely remained stagnant at around 34 per cent and is even witnessing declines in some areas. Addressing this issue is pivotal to achieving a more balanced and equitable workforce. Overall, while this sector exhibits relatively favorable performance, there is a pressing need to enhance both the quality and quantity of its workforce. This improvement should be approached with a particular focus on gender representation and the appointment of authorities like commissioners and mayors, in proportion to the gravity of the challenges faced by the citizens.

3.3 Participation

To ensure local participation and decision-making to make government processes transparent to citizens, and towards decentralisation of planning and implementation functions, four reforms were introduced for implementation of the state government - Implementation of the 74th amendment, integration of city planning and delivery functions, enacting the community participation law, and enacting the public disclosure law (Shetty, 2016).

For a Municipal body to function effectively, it must ensure cooperation and participation from its citizens. This sector considers the most basic, and effective measure of citizen participation can be accounted for by analysing voter turnout and active setting up of ward committees i.e., committees chaired by the elected representative from the particular ward, may have representatives of the civil society as its members (Ministry of Housing and Urban Affairs).

This sector evaluation reveals that Saharanpur stands out as the top-performing municipality, achieving a perfect score of 100, closely followed by Dhanbad and Bareilly.



It is noted that both Saharanpur and Bareilly, two of the highest-performing municipalities, are located in the state of Uttar Pradesh. Furthermore, the overall average voter turnout across these municipalities is 60.14 per cent, with 60 municipalities exceeding this average turnout rate.

Citizen participation hinges on several crucial factors, including trust in governing bodies, equitable representation within local municipalities, the administrative capacity of these municipalities, and the level of political engagement within the region. Variations in these factors can lead to fluctuations in voter turnout and citizens' involvement in committees. Generally, a stable governing body, equipped with a well-defined action plan and a willingness to address citizens' concerns, tends to attract higher levels of participation.

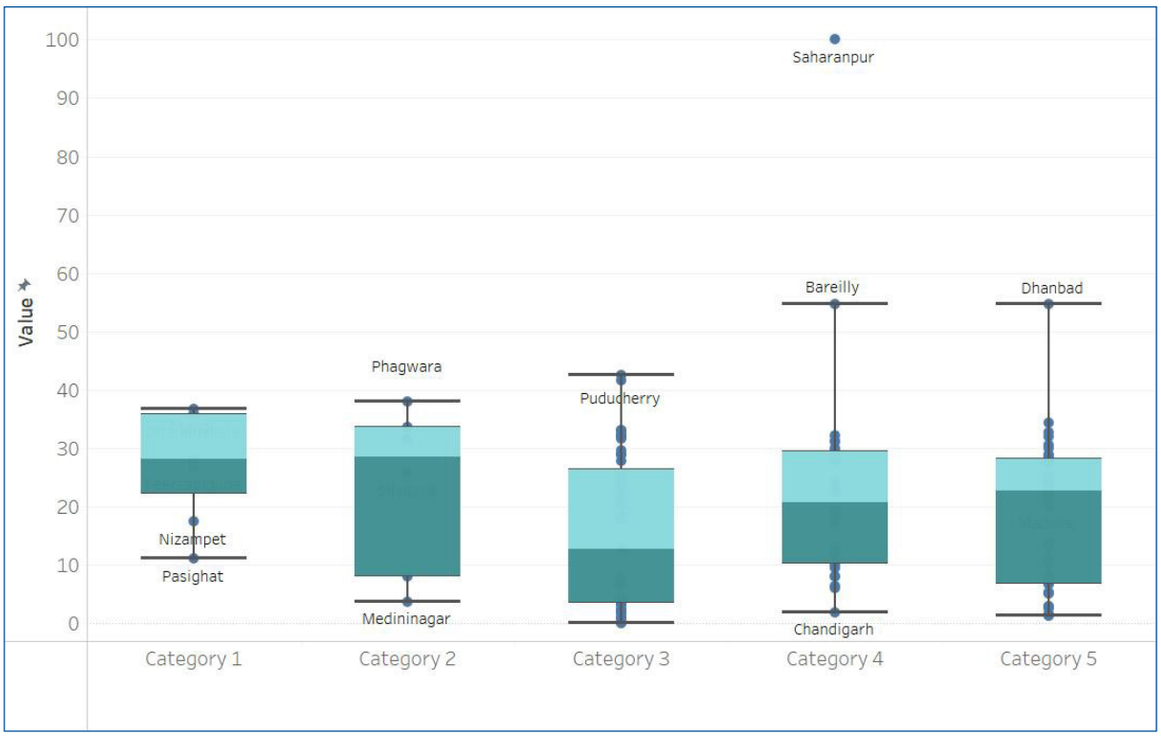


Figure 20: Participation sector: Category wise cities performance

3.4 Effectiveness

Effectiveness can be defined as the correct and lawful fulfilment of mandated tasks. Within the context of governance, it encompasses the efficient operation of mechanisms and processes that ensure the effective execution of governmental duties.

This sector takes into account various factors, including the Citizen's Charter. This Charter outlines the services provided by the municipal body within specific timeframes and plays a crucial role in establishing standards for service delivery, consultation processes, information transparency, and equitable service distribution. It serves as a critical platform for addressing governance-related concerns.

Guntur stands out as the top-performing municipality with a perfect score of 100, representing the sole positive outlier. In Andhra Pradesh, where Guntur is situated, the Prajavani e-governance initiative is a prominent public grievance redressal system that allows citizens to engage with the government without needing to visit government offices (Government of Andhra Pradesh., n.d.). **The active establishment of such grievance redressal systems, coupled with their integration into e-governance initiatives, facilitates seamless access to and exchange of information.**

Other leading municipalities, including Bhopal, Navi Mumbai, Ludhiana, Ranchi, Prayagraj, Biharsharif, Kollam, Tumakaru, Tirunelveli, Ramagundam, Shimla, and Thoothukudi, all achieve the maximum score of 0.8. However, these low scores reflect a notable deficiency in active channels operated by the Urban Local Bodies (ULBs) for citizens to register complaints. With the exception of Guntur, most municipalities lack these centres.

While
102
municipalities
possess a citizen's charter, the absence of these centres shows inefficiencies in the grievance redressal process.

Having a charter alone is insufficient for citizens to interact and resolve their issues unless there are accessible channels for them to do so. Additionally, a mere 27 municipalities have over 50 per cent of permanent workers undergoing training. These combined factors diminish the effectiveness of governance. Most of the cities have performed low on this sector.[6]

Grievance Redressal Mechanism is part and parcel of the machinery of any administration. No administration can claim to be accountable, responsive and user-friendly unless it has established

[6] The observed data indicates a minimal or negligible variance in performance within the cities under consideration across this specific sector. Consequently, the utilization of a boxplot was deemed unnecessary to visually represent the distribution of performance metrics.

an efficient and effective grievance redressal mechanism. In fact, the grievance redressal mechanism of an organization is the gauge to measure its efficiency and effectiveness as it provides important feedback on the working of the administration. (Ministry of Personnel, Public Grievances and Pensions). Aligned with this perspective, this sector takes into account various factors, including the Citizen's Charter. This Charter outlines the services provided by the municipal body within specific timeframes and plays a pivotal role in establishing standards for service delivery, consultation processes, information transparency, and equitable service distribution. It serves as a critical platform for addressing governance-related concerns.

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04 Technology

Technological advancement has become one of the most lucrative aspects of socioeconomic progress. Successful development outcomes cannot take place without facilitating reforms that enable technological progress. In this context, local governments play a crucial role as they are the front-line service providers to citizens. The adoption of suitable digital technology is essential for these governments to enhance the efficiency, effectiveness, and accountability of service delivery, particularly in remote areas where challenges exist.

In recent years, India has placed a strong emphasis on supporting digital infrastructure, ensuring access to digital services, promoting financial inclusion, and improving the quality of life. India has been at the forefront of employing technology to reform governance making it more efficient, inclusive, fast, and transparent (PIB, 2023). Furthermore, India has strategically integrated its digital transformation narrative into its G20 presidency agenda.

> With more than 2.5 lakh gram panchayats and over 2,000 municipalities and municipal corporations, India's local governance network stands unparalleled in terms of its scale, reach, and objectives (The Indian Express, 2023).

Overcoming communication and accessibility barriers through technology, while ensuring seamless coordination between people, processes, and technology at every level of government, can have a profound and positive impact on the Indian economy.

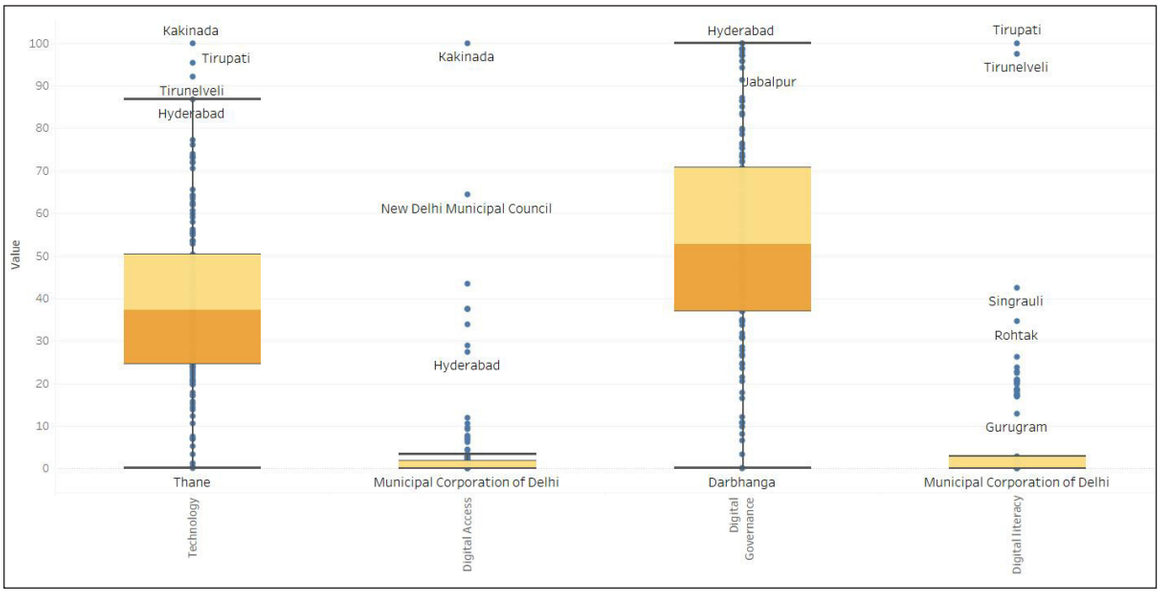

Figure 21: Technology Vertical : Cities Performance

Aligned with this, the Technology vertical assesses municipalities through the lenses of Digital Governance, Digital Access, and Digital Literacy, encompassing a total of thirteen key indicators. Kakinada has proved to be the best performing, followed by Tirupati, Tirunelveli and Hyderabad. This improvement in the overall score signifies progress in the sectors of digital governance, digital access, and digital literacy.

This progress contributes to the establishment of a more interconnected, empowered, and effectively managed nation, actively advancing on its path toward digital transformation. Since, Technology plays an instrumental role in empowering citizens, promoting inclusivity, sustaining smart cities and enhancing the quality of life for their residents, fluctuation in the components of this pillar has significant implications for the realization of good governance objectives, particularly in terms of active citizen engagement and the dissemination of public information within urban local bodies.

4.1 Digital Governance

Digital Governance or e-governance pertains to incorporating information and communication technology (ICT) for providing government services, exchanging information, communication transactions, integrating discrete services and systems between Government and citizens, Government and Businesses, along with back-office procedures and interactions within the entire Government Framework (Saugata Bose, 2008).

E-governance should not be limited to merely computerizing government departments to provide services digitally, instead, it should be seen as initiatives that encompass key aspects of governance, including a focus on citizens, service orientation, transparency, accountability, traceability, and other essential principles. Successful digital governance encompasses norms, institutions, and standards to regulate the development and use of digital technologies to ensure equality by addressing multidimensional issues (Bera, Rahut, & Yao, 2023).

The shift towards e-governance, which grants citizens more convenient access to government services, has been powered by the widespread embrace of digital technology. This digital transformation has brought about significant improvements in efficiency, transparency, and a citizen-centric approach to governance. Many local governance bodies have acknowledged the pressing necessity to digitize their governmental frameworks. By prioritizing citizen services and establishing efficient systems that facilitate interaction between local governments and residents, it becomes possible to address region-specific challenges and promote the expansion of digital services through the seamless flow of information at the local level. The sector of digital governance employs indicators like the adoption of ULB initiatives, adoption of command-and-control systems, use of e-tendering systems, adoption of Open data policy, formation of City Data Alliance and so on.

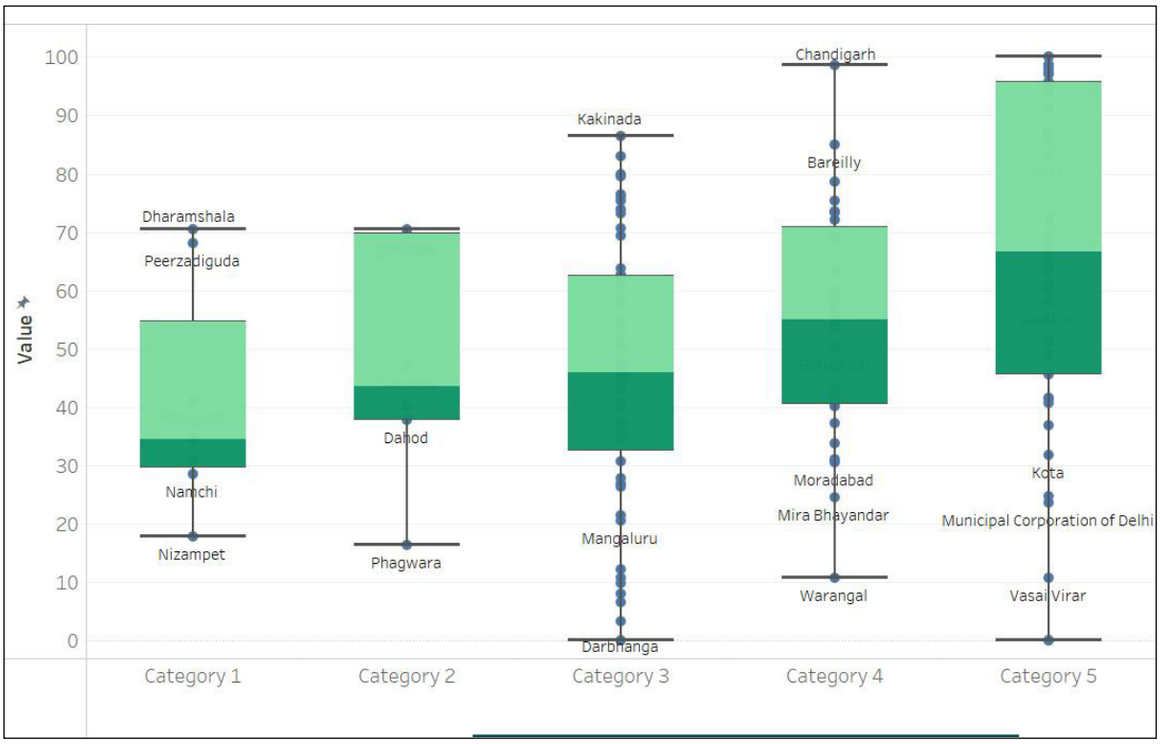

Figure 22: Digital Governance sector: Category wise cities performance

With a perfect score of **100,** only two municipalities, Hyderabad and Ranchi, have effectively implemented robust digital governance practices.

Both of these municipalities have perfect scores in all indicators. Other notable top performers in this domain include municipalities from cities such as Pimpri-Chinchwad, Chandigarh, Indore, Vishakhapatnam, Ahmedabad, Nagpur, and Pune.

An analysis of the sector reveals that Urban Local Bodies (ULBs) have been proactive in adopting e-governance initiatives such as web portals, online grievance redressal, and online public service delivery, with an impressive 62.6 per cent of municipalities having all of these in place. However, the weakest performance lies in the adoption of an Open Data Policy, with a significant 70.8 per cent of municipalities not having embraced this policy, along with the establishment of Data Alliances, where a striking 83.5 per cent lack such alliances. This suggests that municipalities have shown readiness to adopt fundamental initiatives but have yet to progress toward inter-regional and inter-ministerial collaborations that would facilitate improved data access and protection.

E-governance holds the promise of greater transparency and enhanced service efficiency. However, the inability to implement all components of digital governance, such as efficient information exchange and the integration of services and systems between the government and citizens, can undermine the intended benefits of e-governance.

Box 4
National e-Governance Plan (NeGP): Empowering Communities Through Digital Governance

The National e-Governance Plan (NeGP) is a multi-stakeholder initiative, approved by the Cabinet in May 2006, aims to provide affordable public services to local communities. It prioritizes accessible critical services and rural entrepreneurship. NeGP strives for efficient, transparent, and convenient service delivery to citizens, businesses, employees, and civil society. It focuses on defining service standards and transitioning from translation to transformation, emphasizing service delivery improvement rather than hardware and software procurement (Ministry of Communications, Government of India, 2010).

Several Indian states have embraced digital governance endeavours aligned with the NeGP's vision. Punjab's Sewa Kendras, for instance, center around optimizing manpower and resources involved in service delivery, thus facilitating efficient and cost-effective service provision to various departments. This portal has facilitated 3.06 lakh transactions from 2021 till date. Odisha's Mo Sarkar represents a unique initiative initiated by the Odisha government to instil professionalism and sustained behavioural changes in public offices and officials through a random feedback mechanism. This mechanism directly links the government with citizens, verifying the effective and timely redressal of complaints in a professional manner. Haryana's Antyodaya Saral Portal aims to revolutionize citizen service delivery in the state through the complete digitization of over 600 services. The vision for Antyodaya-SARAL, along with initiatives like Telangana's MeeSeva, Kerala's e-District Kerala, Maharashtra's Aaple Sarkar, Tamil Nadu's TNeGA (Tamil Nadu e-Governance Agency), Rajasthan's Bhamshah Yojana, constitutes a unified platform to deliver, monitor, and track Government-to-Citizen (G2C) services/ schemes across the state, including citizen grievance redressal and infrastructure projects. Andhra Pradesh's "Real-Time Governance Initiative" is notable for addressing citizen grievances, monitoring infrastructure projects, and providing live updates on incidents and weather and climatic events across the state.

Within the National e-Governance Plan (NeGP), a "Mission Mode Project" (MMP) represents an individual project with a specific focus, such as banking, land records, or commercial taxes. They have well-defined objectives, scopes, implementation timelines, milestones, measurable outcomes, and service levels. Notable examples include e-courts, e-panchayat, DigiLocker, e-hospital, National Agriculture Market (e-NAM), e-tourist visa and so on. Goa Online, an initiative under the Department of Information Technology,

Goa, falls under MMP. This project, overseen by the Department of Electronics & Information Technology (DeitY), and implemented by the State Government through designated agencies, aims to progressively deliver all public services electronically at the district/sub-district level. This initiative boasts over 7 lakh registered users and over 23 lakh e-transactions.

This Initiatives boasts over

7 Lakhs

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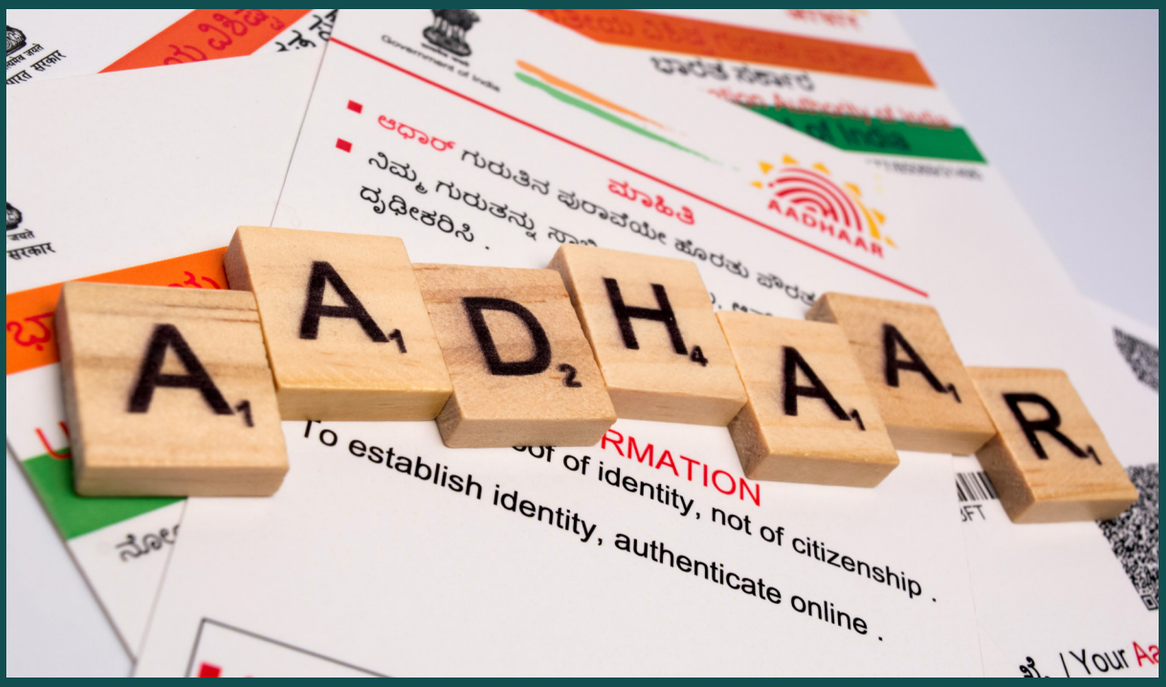
23 Lakhs

e-Transactions

Similarly, Gujarat's e-Dhara initiative seeks to modernize land revenue administration, making it more responsive to citizens' needs and conducive to overall development.

In 2021, the National e-Governance Service Delivery Assessment was conducted to evaluate the effectiveness of states and union territories in e-Governance service delivery. The report highlights that Tripura and Uttarakhand in the Northeast, Jammu and Kashmir along with Andaman and Nicobar Islands in Union Territories, and Rajasthan, Punjab, and Tamil Nadu among the remaining states stand out as the top performers in providing the majority of the 56 analysed services online. Whereas regions like Goa, Daman and Diu, Dadra and Nagar Haveli, Sikkim provide the least number of identified mandatory services online. (Ministry of Personnel. Public Grievances & Pensions).

While India has a considerable distance to cover before India successfully transitions into a digital India, major cities have spearheaded commendable efforts, driving the country's digital revolution forward.



4.2 Digital Access

The **Digital Access** sector assesses internet accessibility and utilization in India, which has witnessed significant expansion over the years. Key initiatives, including the Center for Digital Financial Inclusion and the Bharat Inclusion Initiative (launched by BMGF, JP Morgan, Dell Foundation, and Omidyar Network), along with the G20's recognition of financial inclusion, have prompted India to shift its focus beyond mere connectivity to emphasize access and inclusivity. Digital access encompasses various connectivity components, including access to digital devices, frequency and depth of usage, essential skills, cultural considerations, and the availability of relevant content in local languages. (UN, 2023)

The UN e-Government Development Index, 2022, which measures online services, telecommunication connectivity, and human capacity, places India at the 105th rank out of 193 countries.

India's position slipped nine points since the 2018 survey, where India had leapt 22 places to rank 96. Digital access is particularly vital for India, as the total internet subscribers have almost doubled from 42 crores to 82 crores in the last quinquennium. Moreover, the average data consumption per month per user has risen from about 0.27GB/month to more than 14GB/month from 2014 to 2021. As per the Mobile Broadband Index (MBiT) 2023 report by Nokia,

Indians now consume nearly 20GB of data per month on average. This is expected to reach 46GB by 2027. The surge in urbanization, the growing number of internet users, and the widespread adoption of digital services have placed greater demands on municipal services in India. Addressing these evolving needs by establishing robust public digital platforms at the municipal level is imperative. This strategic move can catalyse digital transformation, significantly enhance the quality of services, and elevate levels of accountability in public administration, right from the grassroots. Such initiatives pave the way for citizen-centric

governance, empowering residents with easy access to essential services and information, thereby contributing to more efficient and responsive operations. Most of the cities performance across this sector is low.[7]

The sector of digital access encompasses two critical factors: the total number of Wi-Fi hotspots and the total number of unique Wi-Fi sessions provided by Urban Local Bodies (ULB). Kakinada emerges as the top-performing city, achieving a perfect score of 100, followed by New Delhi Municipal corporation and Bengaluru. However, it's alarming to note that a staggering 95 municipalities have scores below 1 on this sector. These findings collectively point to a slower pace in digital service expansion. It also suggests the persistence of challenges related to the digital divide, signalling the need for continued attention and targeted improvements.

Kakinada's remarkable performance can be attributed to its concerted efforts in enhancing digital infrastructure and facilitating access. These initiatives align with the Andhra Pradesh government's initiatives like the installation of Interactive Flat Panels[8] and collaborations between Infosys and Jawaharlal Nehru Technology University -Kakinada, ensuring the seamless implementation of digital programme[9].

The concept of digital inclusion is deeply rooted in digital access, which holds substantial implications for the successful execution of policies. Disparities in accessing online platforms and services can exacerbate societal inequalities. Achieving meaningful access is paramount for driving social, political, and economic empowerment. Therefore, bridging the digital divide must extend beyond basic internet connectivity, striving to attain meaningful accessibility and inclusion for all.

[7] No boxplot is made where variation in values of cities is low
[8] https://indianexpress.com/article/india/smart-tvs-andhra-pradesh-govt-schools-revamped-8324505/
[9] https://indianexpress.com/article/india/smart-tvs-andhra-pradesh-govt-schools-revamped-8324505/

4.3 Digital Literacy

Access to the Internet is not sufficient by itself. Access needs to be meaningful, serving the practical online needs individuals have. Even if one possesses a proper device with adequate features to connect, one needs to have access to the skillset needed for using the devices as well as digital literacy skills. Without the capacity to use digital devices as well as to find, use, and adapt information retrieved from the online world and through digital platforms, in addition to creating content and sharing it online, connectivity alone does very little. (United Nations)

In the contemporary world, technology has assumed a central and progressively vital role in our daily lives. This necessitates equipping individuals with the necessary skills to effectively utilize digital technologies, online platforms, and services, including the Internet and computer devices. As a result of the growing emphasis on digitization, it is necessary to avoid the potential disparity in access to various technological services particularly among those lacking digital literacy. Municipalities must prioritize digital literacy to ensure that both their officials and citizens can fully engage with and benefit from digital services and governance tools.

Digital literacy empowers municipalities to bridge the digital divide, enhance transparency, and efficiently deliver services in an increasingly technology-driven world and fosters inclusive development.

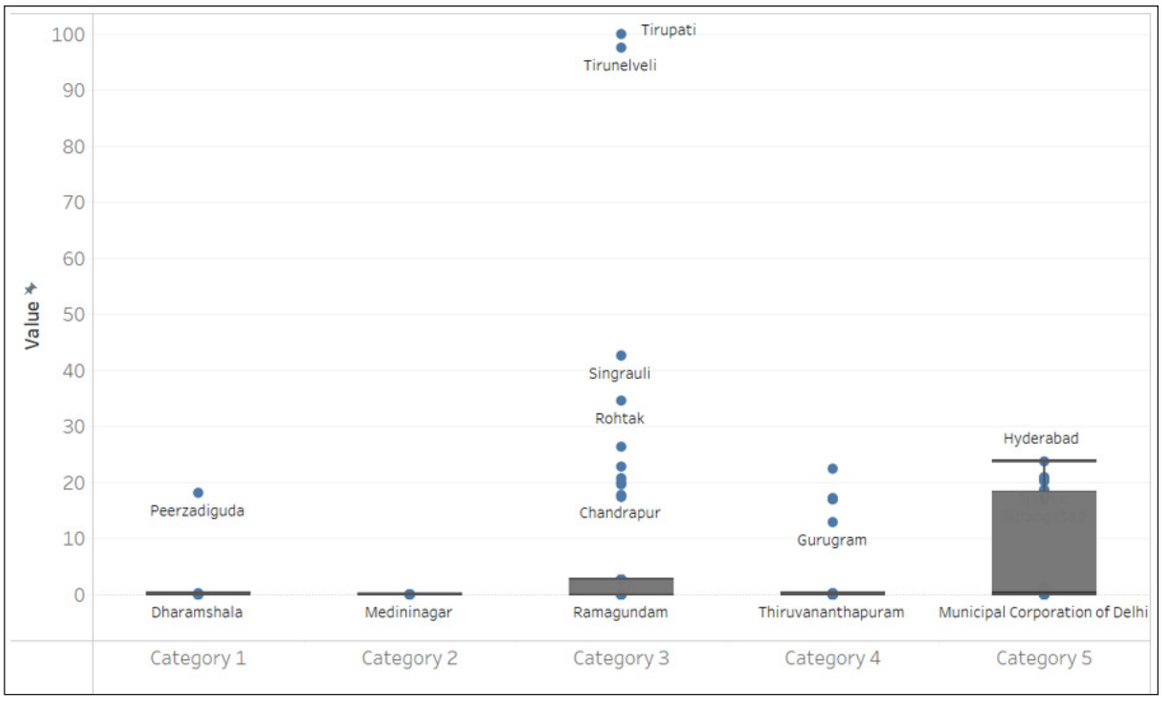


Figure 23: Digital Literacy sector: Category wise cities performance

Within this domain, we can evaluate key performance indicators related to digital literacy initiatives, such as the number of participants in these programs and the presence of digital literacy centres within specific municipalities.

The sector of Digital Literacy assesses the digital centres and the number of individuals who have successfully completed digital literacy courses offered by ULB (Urban Local Bodies) or smart city initiatives.

Among these metrics, Tirupati stands out as the top performer in our evaluation, achieving a perfect score of 100, and has the highest enrolment in digital literacy courses. Following closely behind, Tirunelveli secures the second position with a commendable score of 97.54 and leads in the number of digital literacy centres. In both municipalities, a collaborative effort between the government and private entities in organizing digital literacy camps,[10] coupled with a generally high literacy rate, plays a significant and remedial role in fostering digital literacy.

[10] https://thecsrjournal.in/csr-news-electrosteel-computer-literacy-programme-tirupati-district/

05 Planning

As cities experience rapid and irreversible expansion, they encounter significant challenges related to resource allocation and capacity to effectively oversee the urbanization process. The population projection indicates that the country's urban population will increase by 416 million by the year 2050. In light of Sustainable Development Goal 11, which aims to encourage inclusivity, safety, resilience, and sustainability in cities and human settlements, it is important to proactively manage urbanization in a deliberate and sustainable manner.

Urban planning emerges as a crucial managerial instrument that dictates the trajectory of development for a city or metropolitan region within the framework of its existing characteristics. This strategic approach enables urban areas to adeptly react to dynamic developments, navigate the intricacies of transformation, and enhance the overall standard of living of the communities.

It's imperative to note that urban planning is not a fixed or constant procedure; rather, it necessitates continuous adaptation to align with the evolving circumstances and demands of the urban population. Additionally, the planning of urban settlements has major implications for the economic development, society, environment, and welfare of communities residing within them.

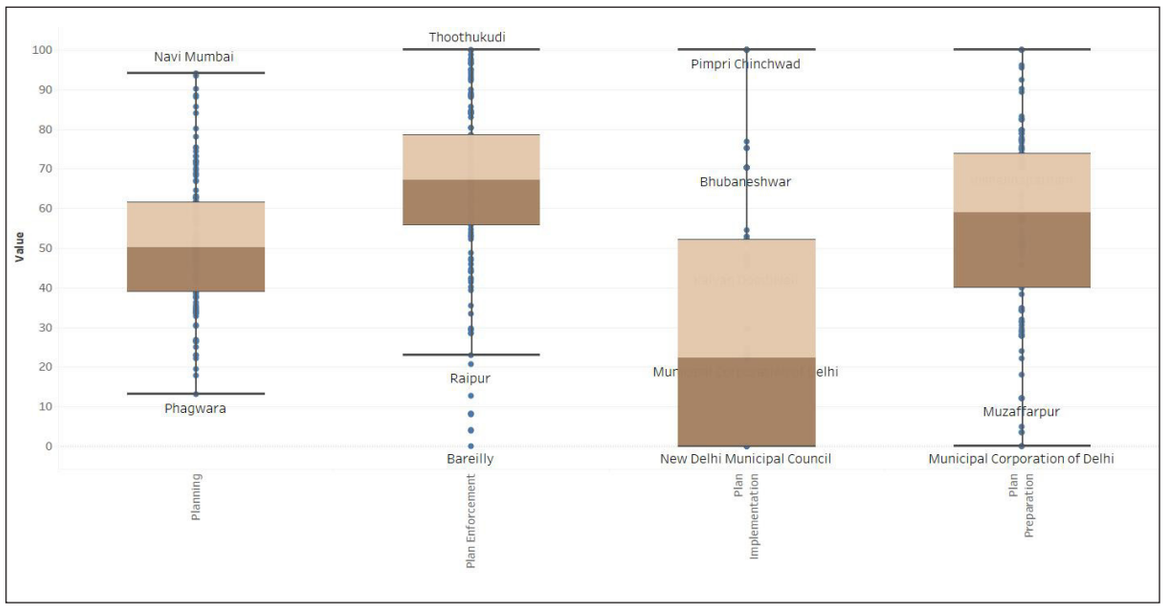


Figure 24: Planning Vertical : Cities Performance

The planning vertical is classified into three sectors – Plan preparation, Plan Implementation, and Plan Enforcement. These sectors play a crucial role in realising the plan into action. Overall, the planning vertical indicates a considerable performance.

The top ten performing municipalities belong to category five with a population of more than ten million, such as Navi Mumbai, Surat, Indore, Pune, Bhopal, Pimpri Chinchwad, Ahmedabad, Hyderabad, Vadodara, and Kollam. It is observed that significant efforts are put into the preparation and enforcement of the plan as compared to the implementation of the plan, as a result, most urban planning initiatives do not give the desired outcomes.

5.1 Plan Preparation

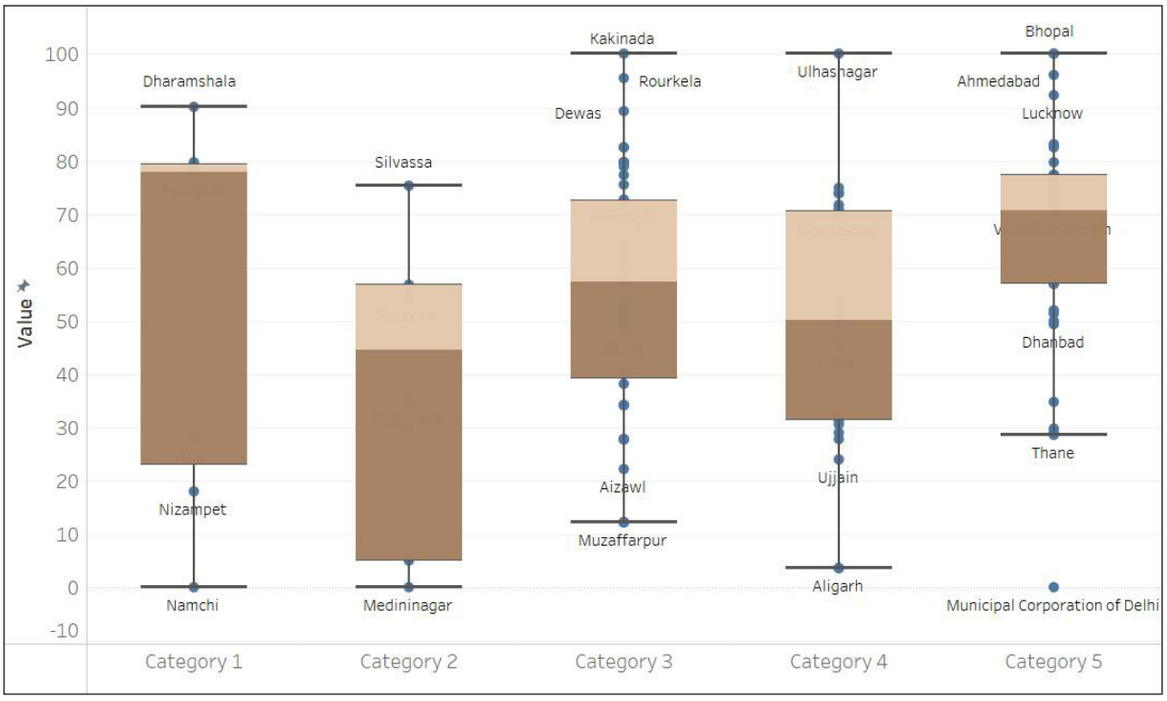


Figure 26: Plan Preparation sector: Category wise cities performance

Plan Preparation is fundamental for the development and expansion of urban areas, as it plays a major role in shaping the character of urban development with a focus on enhancing service delivery and the provision of municipal amenities.

This stage serves to identify the existing deficiencies within the available physical and social infrastructure, allowing for the formulation of strategies aimed at amending these deficiencies. Urban policies such as the Atal Mission for Rejuvenation and Urban Transformation (AMRUT) actively advocate for the integration of technology into the domain of urban planning. This integration involves the incorporation of modern tools like Geographic

Information Systems (GIS), which serve as instrumental components of planning support systems. These systems, in turn, provide decision-making frameworks that combine computer and information technology, urban growth models, and computer-based visualization techniques. The overarching goal is to facilitate community-based planning processes and enhance the efficiency of urban development initiatives.

Kakinada, Bhopal, Vadodara, and Ulhasnagar exhibited outstanding performance with a score of 100, followed closely by Ahmedabad (96.09) and Rourkela (95.50).

On the contrary, Medininagar of Jharkhand, Namchi of Arunachal Pradesh, and Municipal Corporation of Delhi have the lowest performance with a score of 0, indicating the need for concrete efforts by the municipalities. The plan preparation sector evaluates the following four indicators: –

1. Does the city have an updated development plan?

2. Is the current development plan of the city built on a GIS platform?

3. Is the land-use masterplan preparation and implementation done by qualified town planners?

4. Total area under town planning scheme

94
municipalities
have an updated development plan in the last ten years.

Most of these municipalities belong to categories 3 and 5 cities, such as Kakinada, Rourkela, Dewas, Portblair, Vadodara, Bhopal, Ahmedabad, Lucknow and many more. Having an updated development plan is the first step to a well-organised plan because it demonstrates the efforts of the urban local bodies in addressing the existing gaps in governance and also in strategizing measures to resolve emerging gaps as per the growing urban needs and demands. While only 59 municipalities have their current development plan for the city built on a GIS platform, a robust tool that contributes to and enables various kinds of planning tasks like spatial analysis of land use or land suitability, transport modelling, etc. It is also observed that among these 59 municipalities, most of them belong to category 5 implying that GIS platform is mostly utilised in cities with large population of more than 10 million people. On a positive note, 113 municipalities have qualified town planners for the land-use master plan preparation and implementation. 16 municipalities have 100 per cent town area under town planning scheme and most of them belong to category 3 cities with population between 1 to 5 million.

5.2 Plan Implementation

The entire process of planning and the effectiveness of planning is mostly dependent on plan implementation. In simple words, implementation is the act of putting something into action. The formulation of planning policies and strategies is frequently informed by a predefined set of goals and aims. Nevertheless, the implementation of these planned initiatives tends to depend upon the actions of the beneficiaries and other stakeholders involved in these policies and strategies in the context of their socio-economic background. To realize the advantages of urban planning, it necessitates legislative support to facilitate access to land, housing, and other essential amenities, and this legislative backing can significantly impact the attainment of the envisioned objectives during the plan preparation phase. Among the municipalities, 8 of them exhibited a score of 100 – Agra, Ahmedabad, Indore, Navi Mumbai, Pimpri-Chinchwad, Pune, Surat, and Vishakhapatnam. Conversely, there are 42 municipalities which scored 0 in this sector. Significant efforts need to be made by municipalities to make plan implementation more efficient.

Plan implementation sector assesses four parameters such as land-titling law, land-pooling law, single window clearance, and whether cities incentivise for green buildings. O**ut of 134 municipalities, only 36 have land-titling law and most of them belong to category 5 cities such as Faridabad, Vijayawada, Jaipur, Kanpur, etc.** Lack of land-titling

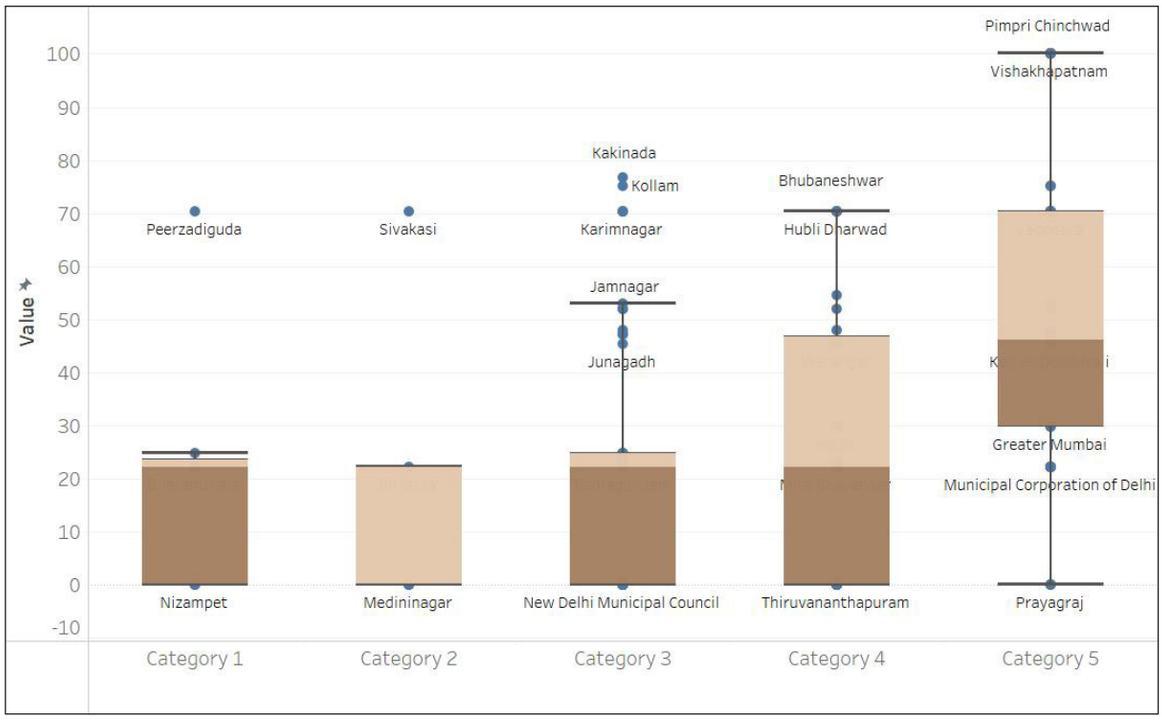


Figure 26: Plan Implementation sector: Category wise cities performance

or unclear titling in municipalities can create significant challenges in the development of infrastructure or other amenities. This can further lead to delays in the construction. It is a prerequisite to have clarity on land titles for executing new projects.

For land-pooling laws, only 47 municipalities have it, with most of them belonging to category 5 and 4 cities like Bengaluru, Chennai, Amritsar, Aligarh, Jhansi, and many more. Land pooling has several strategic advantages for urban development bodies. It involves low expenditures as compared to traditional land acquisition methods, and the procedure for recovering costs is inherently less risky. This is because landowners themselves shoulder the financial burden associated with enhancing urban amenities, and at the same time, they also benefit from the subsequent profit in land values resulting from improved infrastructure. Additionally, there is a possibility of fewer conflicts in this kind of arrangement because there is no permanent transfer of land ownership; instead, landowners collaborate with development authorities, and as a result, they are not displaced from their land due to the development process. (RAI & BURMAN, 2022)
76 municipalities have single-window clearance in place for building and construction projects (that undertake affirmative action, such as affordable housing). Single-window clearance system for citizens is crucial for better service delivery of urban local bodies and maintaining transparency in urban governance. Incentivising cities for green buildings is a constructive step in transitioning towards achieving sustainability. However, as per data, only 22 ULBs provide incentives to cities for constructing green buildings. ULBs need to increase and strategize more efforts to promote sustainable development in planning.

5.3 Plan Enforcement

The effectiveness of urban planning endeavours remains constrained unless there is rigorous enforcement of planning policies and procedures at the ground level. Hence, it is imperative to regulate urban planning initiatives through assessments of their socioeconomic and environmental implications. The absence of well-established regulatory frameworks has the potential to encourage urban development in an informal setup, thereby aggravating pre-existing urban issues. To enable municipal authorities to effectively carry out plan enforcement, the presence of a robust municipal workforce operating at the ground level is extremely crucial.

Among these municipalities, Thoothukudi city of Tamil Nadu stands out with a perfect score of 100, closely followed by Indore and Navi Mumbai, which achieved commendable scores of 99.72 and 98.87, respectively. While on the other hand, Bareilly (0), Madurai (3.95), and Phagwara (4.18) are the bottom-most performing ULBs in this sector.

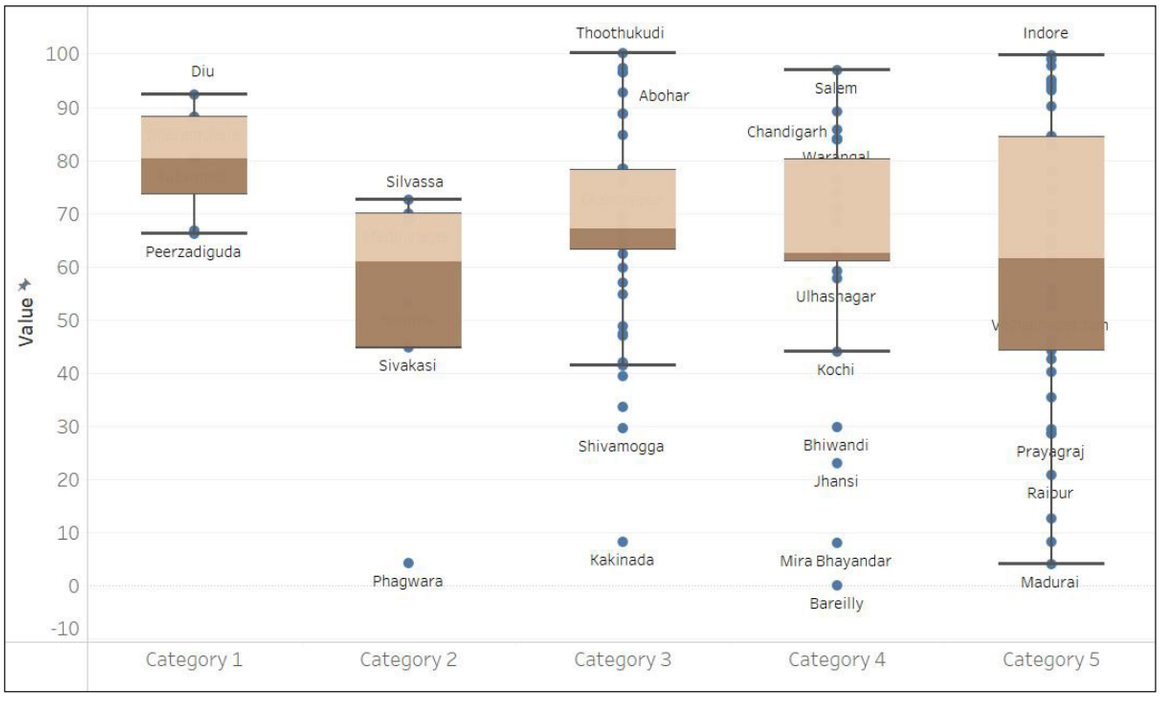


Figure 27: Plan Enforcement sector: Category wise cities performance

Plan enforcement comprises three parameters – plan violation, penalty efficiency, and land under encroachment. 12 cities have a high percentage of plan violations, at almost 90 per cent to 100 per cent and most of them belong to category 5 cities such as Ludhiana, Prayagraj, Varanasi, Faridabad, Kalyan Dombivali, Lucknow, Vishakhapatnam, Bareilly, Phagwara, Kakinada, Jhansi and Shivamogga indicating substandard efforts in regulating plan violations.

On a positive note, there are 20 cities where the percentage of plan violations is 0 such as Aizawl, Vadodara, Guntur, Dhanbad, Vellore, Nagpur, Amravati, and many others showing outstanding achievement and efforts in the regulations.

The Penalty Efficiency of municipalities is measured by the number of penalties levied compared to the total number of plan violations in cities. There are 28 cities which have a penalty efficiency of 100 per cent. Among them, 13 are cities with more than 10 million population –

There are 28 cities which have a penalty efficiency of

100 per cent.

Among them,

13 Cities

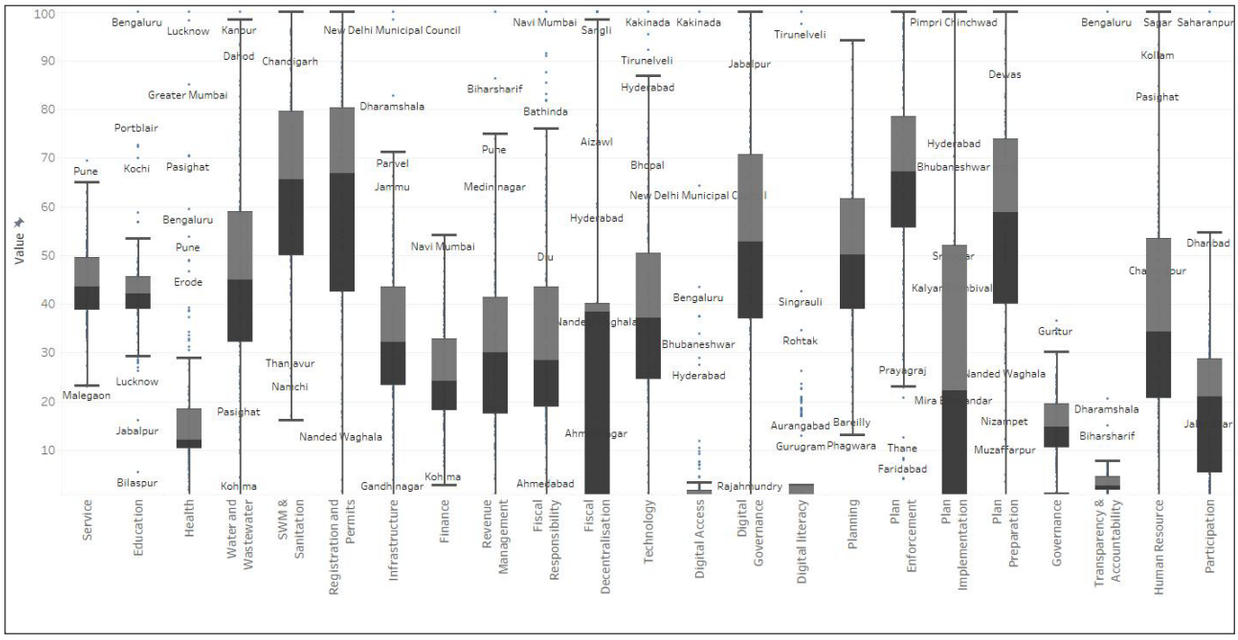
with more than 10 million population

Lucknow, Kalyan Dombivali, Vishakhapatnam, Madurai, Nashik, Pune, Thane, Bhopal, Hyderabad, Jabalpur, Surat, Navi Mumbai and Indore. On the other hand, there are about 11 cities which have ULBs that have a 0 per cent penalty efficiency – Phagwara, Faridabad, Kakinada, Dindigul, Ranchi, Sivakasi, Tiruppur, Srinagar, Junagadh, Kochi, and Ahmedabad. These cities require concrete interventions to have better penalty efficiency.

In three cities, 100 per cent of the land is under encroachment with Madurai and Thane having populations exceeding 10 million, and Mira Bhayandar falling within the population range of 5 to 10 million. On a more positive note, there are 32 cities where there is absolutely no land encroachment. Most of these cities have populations ranging from 50 thousand to 10 million, including places like Warangal, Amravati, Aizawl, Malegaon, and Gandhinagar. This suggests that smaller population cities tend to have lower levels of land encroachment compared to large metropolitan areas.

Key Findings

Significant variance has been observed across verticals



Municipalities in the North-Eastern states, and northern and eastern states such as Uttar Pradesh and Bihar, tend to score lower in Services, Finance, and Planning.

It is apparent from the above figure that the median scores for Services and Planning vertical such as Registration of permits, SWM and Sanitation, plan enforcement, plan preparation, tend to be relatively high.

In contrast, the median scores for finance and its sectors, particularly expenditure management and economic opportunities, are significantly lower, with scores between 0 and 30 out of 100 for a large number of cities. In addition, while planning's pillars have scored high, except cities performance lags on Plan implementation.

Most municipalities have a satisfactory performance in the sectors of Services and Planning, with Registration & Permits observing one of the highest overall performances for municipalities in sectors. A majority of municipalities score above the median score for two sectors within Governance, namely Transparency & Accountability and Participation.

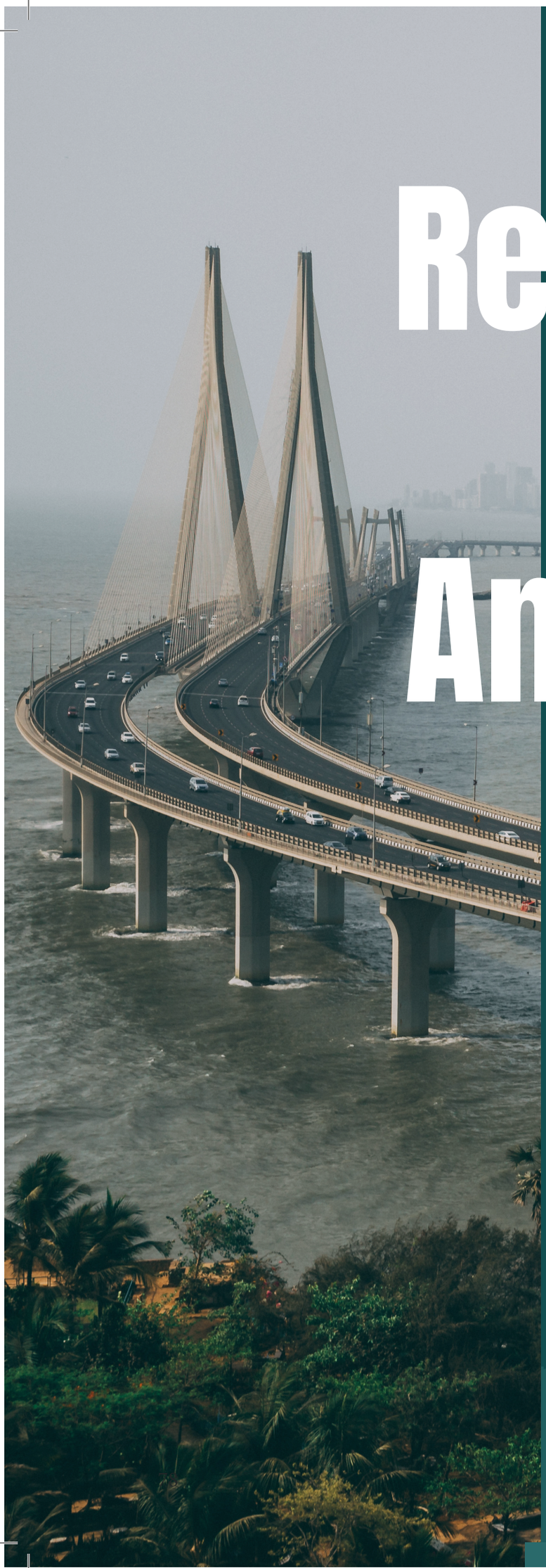
The median scores for the sectors of Governance and Finance are among the lowest, as compared to other verticals. A majority of municipalities score below the median score for two sectors, namely Participation (Governance), Health (Services) Digital Access & Digital literacy (Technology) and Plan Implementation (Planning).

Vertical Performance of Municipalities: A Closer Look

Overall performance of municipalities on all verticals was evaluated, and the results reveal a number of areas in need of immediate improvement. With a score of 0.03, "**effectiveness**" has the lowest average score, indicating that municipalities may struggle to execute their responsibilities effectively. "**Expenditure Management**" follows closely behind with an average score of 0.99, indicating potential inefficiencies in how financial resources are allocated and managed. Also receiving a low score of 2.59, "**Transparency and Accountability**" highlights the need for greater transparency in municipal operations and enhanced mechanisms for holding officials accountable.

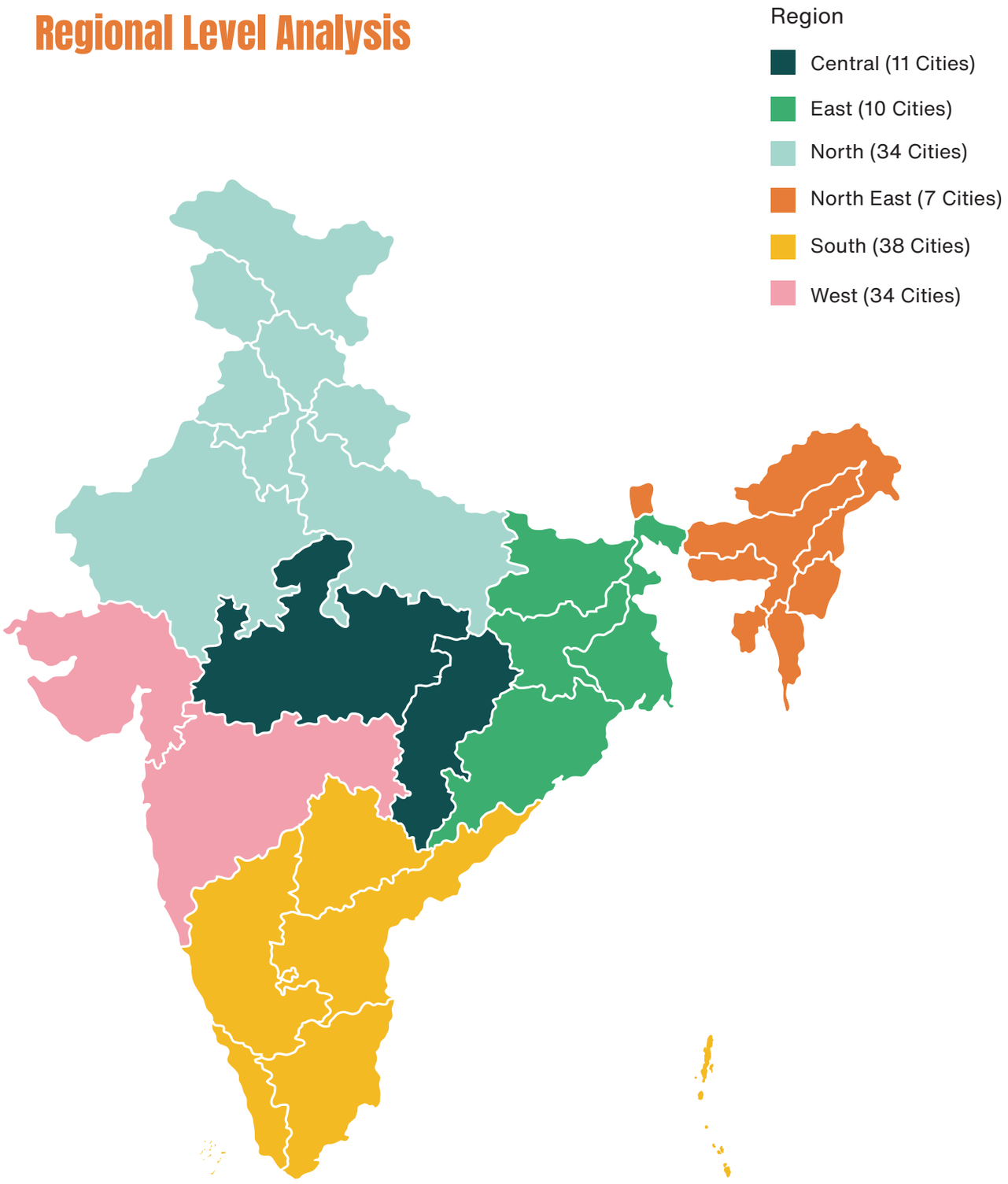
While low scores in "**Digital Access**" and "**Digital Literacy**" may initially suggest disparities in equitable access to digital resources, it's important to view these results as opportunities for improvement. The potential for enhancement lies in refining the measurement metrics and quality indicators used in assessing these sectors. As cities invest in and strengthen their digital infrastructure and programmes, citizens will be better equipped with essential skills, thereby contributing to a more positive and inclusive digital landscape.

These findings highlight the pressing need for municipalities to prioritise these areas in order to improve their overall performance and better serve their communities. Municipalities and their residents will greatly benefit from enhanced effectiveness, financial management, transparency, digital access, and digital literacy.



Regional Level Analysis

Regional Level Analysis



*The image is for representative purposes only and is not to scale

The performance of smart cities varies across the country due to their diverse development and geographical distribution. To understand these disparities, six distinct regions have been identified: North, South, West, Central, East, and North-East. This categorization helps evaluate the varying degrees of regional performance in different parts of the country.

1. Central

Sector	Regional Average	Cities scoring above national average	Performers
Finance	31.24	8	Sagar ULB (Madhya Pradesh) emerged as the top performer due to its good performance on expenditure and revenue management. It is closely followed by Raipur ulb (Chhattisgarh) and Satna ulb (Madhya Pradesh)
Governance	13.60	5	ULBs in Madhya Pradesh emerged as top performers in this vertical. All ULBs of MP except Bhopal, Gwalior and Singrauli perform well in the region.
Planning	56.11	6	Most of the ULBs in Madhya Pradesh emerged as top performers except Ujjain, Satna and Singrauli. This is due to their good performance on domains of plan preparation and enforcement.
Service	42.53	4	Raipur (Chhattisgarh), Singrauli and Indore (Madhya Pradesh) emerged as the top performer due to its good performance on SWM and sanitation and registration and permits.
Technology	50.68	7	Indore,Bhopal (Madhya Pradesh) and Raipur (Chhatisgarh) perform well in the region. This is due to the ULBs good performance on digital governance.

2. East

Sector	Regional Average	Cities scoring above national average	Performers
Finance	28.20	7	Most of the ULBs of Bihar perform well. Bhagalpur (Bihar) emerged as top performer, followed with Biharsharif (Bihar) due to its relative better performance on fiscal responsibility and decentralisation.
Governance	14.91	4	ULBs of Jharkhand perform well on this vertical with Ranchi and Dhanbad leading in the region , followed closely by Muzaffarpur Bihar) and Rourkela (Odisha).
Planning	48.48	4	ULBs of Odisha perform well on this vertical. Rourkela, Bhuvaneshwar (Odisha) and Bhagalpur (Bihar) emerged as the top performers due to their relative better performance in all domains of planning - preparation, implementation and enforcement.
Service	42.30	4	Most of the ULBs of Bihar perform low on this vertical. Portblair (Andaman and Nicobar islands, Bhuvaneshwar (Odisha) and Ranchi (Jharkhand) emerged as the top performers due to its relative better performance on SWM and sanitation and Education.
Technology	38.70	5	Mixed performance of all ULBs is observed in the region with Bhubaneswar (Odisha), Ranchi (Jharkhand) and is closely followed closely by Muzaffarpur (Bihar) and Rourkela (Odisha). Region lags mostly behind in digital access and digital literacy.

3. North

Sector	Regional Average	Cities scoring above national average	Performers
Finance	22.36	11	Udaipur (Rajasthan) has performed well due to its performance on revenue manage and fiscal decentralisation. It's closely followed by ULB of Mandi (Himachal Pradesh), Aligarg (Uttar Pradesh), Faridabad (Haryana)
Governance	13.83	11	Overall ULBs of Uttar Pradesh have performed well on this dimension - Saharanpur, Bareilly, Lucknow and Jhansi. This is due to higher performance on the domain of participation and human resources
Planning	47.72	16	Overall stagnant performance is observed in this vertical as all the ULBs have less difference in terms of performance on health domains with Jaipur (Rajasthan), Dharamshala, Mandi (Himachal Pradesh) and Agra (Uttar Pradesh) and leading in the planning dimension.
Service	44.59	16	Dharamshala (Himachal Pradesh), Lucknow (Uttar Pradesh) and Ludhiana (Punjab) ULBs have emerged as top performers with good performance on domains of service vertical
Technology	38.99	16	NDMC (Delhi), Chandigarh and ULBs of Uttar Pradesh such as Bareilly, Varanasi, Lucknow and Agra perform well on this vertical. This is due to higher performance on the digital governance.

4. South

Sector	Regional Average	Cities scoring above national average	Performers
Finance	23.90	16	Most of the north eastern cities have shown lower performance in this sector , with the exception of ULBs such as Guwahati (Assam) and Aizawl (Mizoram).
Governance	15.48	19	Kohima (Nagaland) , Pasighat (Arunachal Pradesh) and Agartala (Tripura) perform well on this vertical.
Planning	51.94	20	Most of the ULBs perform lower on planning due to lower performance on plan implementation
Service	46.78	24	Pasighat (Arunachal Pradesh) , Agartala (Tripura) and Gangtok (Sikkim) have emerged as top performers with good performance on domains of service vertical.
Technology	40.39	16	Kohima (Nagaland) , Pasighat (Arunachal Pradesh and Agartala (Tripura) perform well on this vertical but overall all ULBs lag behind in digital literacy.

5. North East

Sector	Regional Average	Cities scoring above national average	Performers
Finance	22.28	3	Overall satisfactory performance is observed in this sector as all the ULBs have less difference in terms of performance on vertical with Karur (Tamil Nadu) , Hubli Dharwad (Karnataka) and Tirupati (Andhra Pradesh) leading in the region.
Governance	21.09	6	Most of the ULBs in the region lag behind in governance due to lower performance on transparency and accountability and effectiveness domai . Only ULBs such as Guntur (Andhra Pradesh) ,Bengaluru (Karnataka) and Kollam (Kerala) lead in domain of the region.
Planning	37.41	0	Most of the ULBs in the region perform well on the planning vertical ,with Hyderabad (Telangana), Kollam (Kerala) and Erode (Tamil Nadu) leading in the region.
Service	36.56	1	Overall stagnant performance is observed in this vertical as all the ULBs have less difference in terms of performance on health domains with Erode (Tamil Nadu), Hyderabad (Telangana) and Vijayawada (Andhra Pradesh) leading in the region.
Technology	36.40	3	Most of the ULBs of Andhra Pradesh i.e Kakinada, Tirupati and Vishakhapatnam lead in the region, closely followed by Tirunelveli (Tamil Nadu) and Hyderabad (Telangana) perform well on this vertical. Most of the ULBs in the region lag behind in digital access and digital literacy.

6. West

Sector	Regional Average	Cities scoring above national average	Performers
Finance	26.57	18	Jamnagar (Gujarat) and ULBs of Maharashtra have performed better in this domain with Navi Mumbai ,Mira Bhayandar and Kalyan Dombivali emerging as top performing in the vertical.
Governance	15.51	17	Most of the ULBs of Maharashtra perform well on governance vertical. Navi Mumbai, Ahmadnagar and Nashik (Maharashtra) emerge as top performers in this vertical.
Planning	55.53	18	Navi Mumbai (Maharashtra) ,Pune (Maharashtra) and Surat (Gujarat) emerge as top performer in this vertical with best performance across all domains of planning.
Service	44.17	15	Surat ,Jamnagar ,Ahmedabad (Gujarat) and ULBs of Maharashtra such as Pune, Pimpri Chinchwad and Greater Mumbai emerge better in this vertical with best performance being observed in domain of solid waste management, water and waste water and registration of permits.
Technology	34.41	14	Navi Mumbai, Nagpur, and Pune (Maharashtra) followed by ULBs of Gujarat Ahmedabad, Vadodara and Rajkot perform well in this vertical .

Way forward

The study is an effort to evaluate and analyse the performance of urban local bodies in India across a spectrum of responsibilities, ranging from the provision of essential public services as well as more intricate aspects of urban planning. As previously discussed, the primary objective of the 74th Amendment to the Indian Constitution was to decentralize power to local governing bodies in order to devolve the principles of development directly to the people.

Each region has its own historical evolution that has significantly shaped its society, economy, and, consequently, its political structure. Nonetheless, even within these regions, smaller districts and, subsequently even more localized units of human habitation encounter a multitude of issues, which are aimed to be addressed by the decentralization of democracy. Indian cities, however, are not adequately empowered to confront the formidable challenges associated with delivering public services and effectively managing the urbanization process that invariably accompanies rapid economic growth. The provision of guaranteed financial transfers, coupled with a degree of financial autonomy and the development of capacities for urban planning and management, can contribute significantly to empowering these cities.

In theory, the 74th Amendment incorporates the establishment of Metropolitan Planning Committees (MPCs) under Article 243ZE. These committees are entrusted with the responsibility of spatial development planning, resource allocation for water and other physical resources, integrated infrastructure development, and environmental conservation. In addition to developmental planning, MPCs are also tasked with determining the investments required from both the Central and State governments in these domains. The challenge, however, lies in the fact that this provision has been scarcely implemented by most metropolitan cities. Even in cases where MPCs have been legally constituted, their functionality remains weak in most metropolitan areas, thereby aggravating the spatial challenges prevalent in these densely populated cities today. Furthermore, the issue of financing is a critical concern.

Under the 74th Amendment, urban local bodies have limited avenues for obtaining finances and are heavily reliant on allocations from the State and Central governments for their operational needs. The second challenge emerges from the lack of genuine democratization in the realm of local urban governance. The 74th Constitutional Amendment mandates ward committees in urban planning, but its implementation is ongoing due to a lack of effective implementation and lack of autonomy. Even when laws are enforced, local governing bodies struggle with informed decision-making. To unlock the transformative potential of this legal mandate, proactive engagement from citizens and institutions across the state, market, and society is crucial. This comprehensive approach fosters a cooperative environment and ensures stakeholders collaborate in the effective implementation of the amendment. This approach can help Indian cities overcome challenges and embark on sustainable urban development, ensuring a positive future outlook.

Methodology

01 Population & Household Projections 2021

The population figures for the majority of cities in the 2001 and 2011 were sourced from census. Then Population projections for the year 2021 were calculated using the formula outlined in the Urban Outcome Framework-part 1.

Pit = Pil + [{(Pil- Pib)/(Pjl-Pjb)}(Pjt-Pjl)]

Pit Population projection for the city in the target year (2021)

Pil Population of the city in the launch year (2011)

Pib Population of the city in the base year (2001)

Pjl Population of the state to which city belongs in the launch year (2011)

Pjt Population of the state to which city belongs in the target year (2021)

Pjb Population of the state to which city belongs in the base year (2001)

01 Population Projected for 2021 at state level was taken from here main.mohfw.gov.in/sites/default/files/Population Projection Report 2011-2036 - upload_compressed_0.pdf

02 For certain cities where projected population of 2021 was corrected by cities or made available in public domain , there values were changed

03 Household Projection Calculation: The average household size in urban areas, as per the information from the Ministry of Housing and Urban Affairs, Government of India, is 4.8. This data is sourced from [https://mohua.gov.in/upload/uploadfiles/files/Housing_in_. Projected value was divided by 4.

02 Raw Data corrections

2.1 Substitution of values

From the 107 cities that partook in the previous cycle, data entries marked as Not-filled (NF), Not-Available (NA), Awaited (AW), and Not-Applicable (N/A) were replaced for the cities that had provided data in the previous cycle but refrained from doing so in the current year. A cumulative total of 3354 substitutions were made for the report on the municipal performance of cities. Subsequent to these substitutions, the count of cities with an approval rate exceeding 50% witnessed an increment from 119 to 134 for the latter.

2.2 Identification of discrepancies

Data entries are aligned with the preceding cycle's data for the 107 cities, and static data points such as the city's total area, aggregate green cover, etc. were determined. Cities exhibiting extreme values (exceeding absolute 3 sigma) were earmarked, and individualized interactions were facilitated to prompt them to amend their data points. Correspondence was dispatched to the Chief Secretaries of the respective States containing the list of data points. As a result, numerous cities have responded by providing either rectified values or clarification regarding the discrepancies.

2.3 Mismatch value correction

A meticulous verification was conducted comparing the data entries provided by the cities and the data depicted in the associated supporting documentation. This procedure was necessary in instances where cities had supplied a data entry that deviated from what was presented in the supporting documents. This process also necessitated rectification of identified Unit of

Measurement (UOM) discrepancies. Consequently, on behalf of the cities, a cumulative total of 844 data entries were rectified under the evaluation study on cities.

2.4 Treatment of Zero Values

A specific pattern observed in the data entries supplied by the cities revealed that the cities often declared the data point value to be zero. From a statistical perspective, this creates difficulty in treating the data point for calculation, as it induces skewness in the distribution. Through domain expertise, data points which conventionally cannot be zero were singled out and excluded from the master sheet, thereby being treated as 'null values'. These will be addressed at the imputation stage. Such examples include the quantity of banks, ATMs, school enrollments, etc. It is noteworthy to mention that for categorical variables, i.e., the questions that required binary input, zero values for those data points have been treated as is.

2.5 Treatment of Outliers

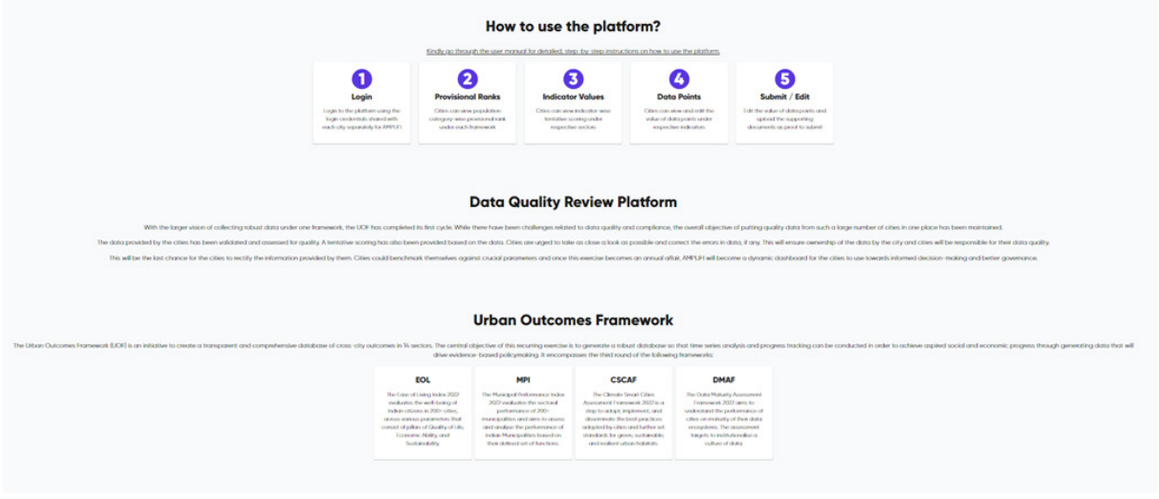
Outliers are data points that deviate markedly from the overall pattern of a given dataset, often referred to as anomalous or extreme values located substantially away from the mean of the distribution. A datum is deemed an outlier if it surpasses the absolute three standard deviation threshold in a log-normally distributed dataset. The data set here was plotted on log normal distribution to check the fit of the deviation.

The identification of outliers is undertaken for very data point subsequent to the classification of cities into distinct population strata, with the objective of mitigating the potential distortions caused by disproportionate figures in highly populous urban conglomerates such as Delhi, Mumbai, or Kolkata. Figure 1 provides a graphical representation of a log-normal distribution comprising various data points. The Interquartile Range (IQR) was also employed to distinguish outliers within the dataset.

The detected outliers underwent individualised handling with insights from subject-matter expertise. Instances where outlier authenticity was confirmed remained incorporated within the dataset, such as the population statistics for the Greater Mumbai and Municipal Corporation of Delhi. Conversely, inauthentic outliers were excised from the dataset, reclassified as "null values" and earmarked for subsequent handling. For instance, a claim made by the city of Patna regarding the presence of 25,000 ATMs with a mere 100 operational bank branches is an implausible circumstance and was, therefore, flagged as such. This process was consistently applied across all data points for the totality of the 225 cities that provided data.

2.6 Data Quality Peer Review Platform

All the issues listed above were shared with the cities along with raw data and the computed indicators thorough the Data Quality Peer Review Platform. Cities were able to rectify the data points by submitting the supporting document.



03 Indicator level Data Imputation

Data imputation involves the substitution of missing data employing a statistical methodology. Additionally, the methodology encompasses data normalization, a crucial step in ensuring equitable treatment of diverse indicators. The normalization process standardizes the range and scale of variables, enabling fair aggregation and comparison across indicators. Furthermore, the calculation involves distinct treatment of positive and negative indicators. Positive indicators, denoting desirable outcomes, are directly incorporated into the framework, contributing positively to the final score. Conversely, negative indicators, signifying areas requiring improvement, undergo a transformation that inversely contributes to the score, thereby accurately reflecting areas of concern. This dual-handling approach guarantees a comprehensive evaluation of municipal performance, encompassing both strengths and areas in need of enhancement.

04 Dealing with missing values

In the process of formulating the treatment across various city/Urban Local Body (ULB) categories, the handling of missing values, outliers, and distinct NA indicators like "NA," "AW," and "#NA" is pivotal. This note elucidates the methodology employed to address missing data and outliers categorically, elucidating the rationale behind this approach. To ensure data accuracy, we adopted a meticulous strategy tailored to the attributes of each city/ULB category. Initially, missing data were identified and grouped based on their indicators. A multi-phased imputation process followed, utilizing suitable statistical methodologies including mean/mode imputation, regression-based imputation, and data augmentation approaches, however the approaches were not used due to complexity of data based on outliers found. Outliers underwent identification through established techniques such as Z-score analysis and interquartile range (IQR) methods. Flagged outliers were rigorously examined and either rectified using domain-specific insights . Finally it was decided that through the implementation of this category-specific methodology, the consistency of category-centric trends was maintained, mitigating biases that may arise from imputation practices. The tailored handling of missing values and outliers within distinct city/ULB categories ensures the resulting score precisely captures the intricacies of urban datasets. This approach forms the bedrock of the municipalities evaluation's dependability and impartiality, establishing it as a pivotal instrument for informed urban development decisions and effective policy-crafting. In case of this study, missing values after removing cities with less than 45 % missing values, identification of missing values across sectors was less.

05 Quartile delineation for Categories

Quartiles are statistical measures that divide a data set into four equal parts. Each quartile represents a specific point or set of points in the dataset, indicating the relative position of values. Categorizing scores into quartiles for each population categories offers a valuable approach for contextualized assessment and comparison. This method allows for a nuanced understanding of performance by considering unique characteristics within each category. Quartiles facilitate relative comparisons, identifying outliers and variations within specific groups. This approach enhances communication and reporting, making it easier for stakeholders to interpret results and policymakers to target interventions effectively. Additionally, it ensures fair comparisons within categories, avoiding bias from diverse characteristics.
The dynamic monitoring capability of quartiles over time provides insights into trends and changes within each category, supporting informed decision-making. Before calculating quartiles, scores of each population category were capped with respect to highest performance of city within each category.

Quartile Boundaries for Each Category: Determine quartile boundaries for each category based on the Municipal Performance scores within that category. There will be different quartile boundaries for each category.

Assign Quartiles within Each Category: For each city, compare its Municipal Performance score to the quartile boundaries. Here's a general description of how to categorize:

Here are the four quartiles:

01 First Quartile (Q1): This contains the lowest 25% of the Municipal Performance scores. The value at the boundary between the first and second quartiles is often referred to as the 25th percentile.

02 Second Quartile (Q2): This is the median of the dataset and represents the middle 50%. The value at the boundary between the second and third quartiles is also the 50th percentile.

03 Third Quartile (Q3): This contains the next 25% of the Municipal Performance scores, excluding the highest values. The value at the boundary between the third and fourth quartiles is the 75th percentile.

04 Fourth Quartile (Q4): This includes the highest 25% of the Municipal Performance scores.

Appendix 1

Finance

Sector	Indicator	Unit	Description (Formula)	Indicator treatment
REVENUE MANAGEMENT	Own Revenue Vs Total Revenue (Three-year Average)	Percentage	((Total own revenue generated for 2018-19 / Total revenue generated for 2018-19) + (Total own revenue generated for 2019-20 / Total revenue generated for 2019-20) + (Total own revenue generated for 2020-21 / Total revenue generated for 2020-21))*100 / 3	Missing Value Imputation, Category Average
	Tax Revenue Vs Total Own Revenue (Three Year Average)	Percentage	((Total tax revenue generated for 2018-19 / Total own revenue generated for 2018-19) + (Total tax revenue generated for 2019-20 / Total own revenue generated for 2019-20) + (Total tax revenue generated for 2020-21 / Total own revenue generated for 2020-21))*100/ 3	Missing Value Imputation, Category Average
	Tax Coverage Efficiency	Percentage	(Number of properties covered under tax net / Total number of properties in ULB)*100	Missing Value Imputation, Category Average
	Properties Mapped on GIS	Percentage	(Total number of properties mapped on GIS (Geographic Information Systems) / Total number of properties within the ULB) *100	Missing Value Imputation, Category Average

Sector	Indicator	Unit	Description (Formula)	Indicator treatment
REVENUE MANAGEMENT	Tax Collection Efficiency (Three Year Average)	Percentage	((Total amount of property tax collected by the ULB for 2018-19 / Total amount of property tax billed by the ULB for 2018-19) + (Total amount of property tax collected by the ULB for 2019-20 / Total amount of property tax billed by the ULB for 2019-20) + (Total amount of property tax collected by the ULB for 2020-21 / Total amount of property tax billed by the ULB for 2020-21))* 100 / 3	Missing Value Imputation, Category Average
	Is the ULB Mandated to Review Property Tax Rates from Time to Time as per the Applicable Municipal Act?	Number	Yes -1, No-0	AW, NF, NA - awarded zero
	If yes, When was the Last Revision due as per the Act? Has it Been Carried Out? And When?	Number	Indicator Dropped	AW, NF, NA - awarded zero
	Accrual Based Double Entry Accounting System	Number	Yes -1, No-0	AW, NF, NA - awarded zero
	Alternate Sources of Financing Raised by ULB (PPP, Municipality bonds, CSR, Land Monetisation, Open Market Borrowings, Value Capture Finance, External Financing)	Percentage	(Amount of earnings/ borrowings raised by the ULB from alternate sources of financing (excluding state and central grants) / Total revenue generated) * 100 Alternate sources of funding include- PPP, Municipality bonds, CSR, Land Monetization, Open Market Borrowings, Value Capture Finance, External Financing from Donor driven projects	Missing Value Imputation, Category Average

Sector	Indicator	Unit	Description (Formula)	Indicator treatment
REVENUE MANAGEMENT	Budget Efficiency for the Last Three Years (Actual- Budgeted)	Percentage	((Value of total actual revenue of the ULB for 2018-19 / Value of budgeted revenue (revised estimates) of the ULB for 2018-19) + (Value of total actual revenue of the ULB for 2019-20 / Value of budgeted revenue (revised estimates) of the ULB for 2019-20) + (Value of total actual revenue of the ULB for 2020-21 / Value of budgeted revenue (revised estimates) of the ULB for 2020-21))*100	Missing Value Imputation, Category Average
EXPENDITURE MANAGEMENT	Central Grants Expenditure Efficiency (Three Year Average)	Percentage	((Value of central grants spent for 2018-19 / Value of central grants received for 2018-19) + (Value of central grants spent for 2019-20 / Value of central grants received for 2019-20) + (Value of central grants spent for 2020-21 / Value of central grants received for 2020-21))*100	Missing Value Imputation, Category Average
	State Grants Expenditure Efficiency (Three Year Average)	Percentage	((Value of state grants spent for 2018-19 / Value of state grants received for 2018-19) +(Value of state grants spent for 2019-20 / Value of state grants received for 2019-20) + (Value of state grants spent for 2020-21/ Value of state grants received for 2020-21)*100	Missing Value Imputation, Category Average
	Capital Expenditure Vs Total Expenditure (Three Year Average)	Percentage	((Value of the capital expenditure for 2018-19 / Value of the total expenditure for 2018-19) + (Value of the capital expenditure for 2019-20/ Value of the total expenditure for 2019-20)+ Value of the capital expenditure for 2020-21/ Value of the total expenditure for 2020-21))*100	Missing Value Imputation, Category Average

Sector	Indicator	Unit	Description (Formula)	Indicator treatment
EXPENDITURE MANAGEMENT	Establishment Expenditure Vs Total Expenditure (Three Year Average)	Percentage	((Value of the establishment expenditure for 2018-19/ Value of the total expenditure for 2018-19) +(Value of the establishment expenditure for 2019-20/ Value of the total expenditure for 2019-20) + (Value of the establishment expenditure for 2020-21/ Value of the total expenditure for 2020-21))*100	Missing Value Imputation, Category Average
	Salary Expenses Vs Total Own Revenue (Three Year Average)	Percentage	(((Total own revenue for the ULB for 2018-19 - Total Salary expenses for the ULB for 2018-19) / Total own revenue for 2018-19)+(Total own revenue for the ULB for 2019-20 - Total Salary expenses for the ULB for 2019-20) / Total own revenue for 2019-20) +(Total own revenue for the ULB for 2020-21 - Total Salary expenses for the ULB for 2020-21) / Total own revenue for 2020-21))*100	Missing Value Imputation, Category Average
	Preparation of Budget Estimate	Number	Yes -1, No-0	AW, NF, NA - awarded zero
	Capital Expenditure per capita (Three Year Average)	Ratio (INR/ person)	(Capital expenditure per capita (Actuals) 2018-19 + Capital expenditure per capita (Actuals) 2019-20 + Capital expenditure per capita (Actuals) 2020-21)/3	Missing Value Imputation, Category Average
	Establishment Expenditure per capita (Three Year Average)	Ratio (INR/ person)	(Establishment expenditure per capita (Actuals) 2018-19 + Establishment expenditure per capita (Actuals) 2019-20 + Establishment expenditure per capita (Actuals) 2020-21) * /3	Missing Value Imputation, Category Average

Sector	Indicator	Unit	Description (Formula)	Indicator treatment
EXPENDITURE MANAGEMENT	Budget Deficit / Surplus (Three Year)	Percentage	(Percentage of budget deficit/surplus of 2018-2019 + Percentage of budget deficit/ surplus of 2019-2020 +Percentage of budget deficit/surplus of 2020-21)/3	Missing Value Imputation, Category Average
FISCAL RESPONSIBILITY	Participatory Budgeting	Percentage	Percentage of the proportion of the ULB budget allocated through participatory budgeting for 2018-2019 + Percentage of the proportion of the ULB budget allocated through participatory budgeting for2019-2020 +Percentage of budget deficit/surplus of 2020-21)/3	Missing Value Imputation, Category Average
	Average Absolute Budget Variance	INR	(Absolute(Total expenditure of 2018-2019 - Amount of budgeted expenditure (revised) of 2018-2019) + Absolute(Total expenditure of 2019-2020 - Amount of budgeted expenditure (revised) of 2019-2020) + Absolute(Total expenditure of 2020-2021 - Amount of budgeted expenditure (revised) of 2020-2021)) / 3	Missing Value Imputation, Category Average
	External Audit (Last Three Years)	Number	(Response for (Yes-1, No-0) of 2018-19 + Response for (Yes-1, No-0) of 2018-19+ Response for (Yes-1, No-0) of 2018-19)/3	AW, NF, NA - awarded zero
	Data Sharing	Number	Yes-1, No-0	AW, NF, NA - awarded zero
	Internal Audit	Number	Yes-1, No-0	AW, NF, NA - awarded zero
	Publication of Audited Accounts	Number	Were the audited accounts (internal and external) published? Yes-1, No-0	AW, NF, NA - awarded zero

Sector	Indicator	Unit	Description (Formula)	Indicator treatment
FISCAL RESPONSIBILITY	Tax Collection Powers	Number	(Property tax (Yes-1,No-0) + Local body tax (Yes-1/No-0) + Professional tax (Yes-1,No-0) + Advertisement rights (Yes-1,No-0) + Entertainment tax (Yes-1,No-0))/5	AW, NF, NA - awarded zero
	Borrowing Powers	Number	Yes-0, No-1	AW, NF, NA - awarded zero
	Credit Rating	Number	Average of 3 year credit rating	AW, NF, NA - awarded zero

Governance

Sector	Indicator	Unit	Description (Formula)	Indicator treatment
EFFECTIVENESS	Establishment Expenditure vs Total Human Resources	Number	(Value of the establishment expenditure / Total staff (permanent plus contractual) - Average establishment exp. per staff by all municipalities	AW, NF, NA - awarded zero
TRANSPARENCY & ACCOUNTABILITY	Budget Publication	Number	Has the ULB published its budgets and accounts for the following periods? (1. 2018-19 (Yes-1, No-0)+ 2. 2019-20 (Yes-1, No-0) + 3. 2020-21(Yes-1, No-0)/3)	AW, NF, NA - awarded zero
	Publication of Performance Reports	Number	Are service-level performance reports regularly published in public domain by the ULB every year? (Yes-1, No-0)	AW, NF, NA - awarded zero

Sector	Indicator	Unit	Description (Formula)	Indicator treatment
TRANSPARENCY & ACCOUNTABILITY	Published of Environmental Status Report	Number	Has the ULB published an environmental status report with action plans for the following periods? (1. 2018-19 (Yes-1, No-0)+ 2. 2017-18 (Yes-1, No-0) + 3. 2016-17(Yes-1, No-0)/3)	AW, NF, NA - awarded zero
	Number of Municipal Employees Registered under Corruption Cases in the Last Year	Percentage	Total number of employees (permanent) that were registered with corruption cases / Total staff (permanent) on roll with the authority *100	Missing Value Imputation, Category Average
HUMAN RESOURCE	Adeqecy of ULB Staff	Percentage	Total staff (permanent) on roll with the authority) / Total staff (permanent) sanctioned for the authority) *100	Missing Value Imputation, Category Average
	Gender Equality	Percentage	(((Total number of women working (permanent) in the ULB / Total staff (permanent) on roll with the authority) *100) + Percentage of elected women officials in the ULB) / 2	Missing Value Imputation, Category Average
	Leadership Stability	Number	Number of commissioners (or equivalent designation) in the ULB	AW, NF, NA - awarded zero
	Average Tenure of Mayor in the Last Five Years	Number	5/Number of mayors in the ULB	AW, NF, NA - awarded zero
	Is the Mayor Directly Elected?	Number	Yes -1, No-0	AW, NF, NA - awarded zero
PARTICIPATION	Voter Turnout: Voter Turnout in Municipal Elections	Percentage	Number of citizens who voted during the last municipal elections / Total number of population that was eligible to vote during the last held municipal elections *100	Missing Value Imputation, Category Average
	Community Involvement	Percentage	Total number of ward committees formed / Total number of administrative wards *100	Missing Value Imputation, Category Average

Sector	Indicator	Unit	Description (Formula)	Indicator treatment
EFFECTIVENESS	Citizen Charter	Number	Does the ULB has a citizen charter? (Yes -1, No-0)	AW, NF, NA - awarded zero
	Capacity Building	Percentage	Total number of staff that underwent training / Total staff (permanent plus contractual) available with the authority * 100	Missing Value Imputation, Category Average
	Presence of Ombudsman	Number	Is an ombudsman present for service level related queries and grievance redressal? (Yes -1, No-0)	AW, NF, NA - awarded zero
	Complaint Redressal	Number	How many active channels are being run by the ULB where citizens can register complaints	AW, NF, NA - awarded zero

Planning

Sector	Indicator	Unit	Description (Formula)	Indicator treatment
PLAN PREPARATION	Does the City have an updated development plan? (Updated in the last ten years)	Number	Yes -1, No-0	AW, NF, NA - awarded zero
	Is the current development plan of the city built on a GIS platform?	Number	Yes -1, No-0	AW, NF, NA - awarded zero
	Is the Land-Use Masterplan Preparation and Implementation done by Qualified Town Planners?	Number	Yes -1, No-0	AW, NF, NA - awarded zero
	Has the Town Planner Implemented Plan through Town Planning Schemes (TPS Schemes)	Number	Yes -1, No-0	AW, NF, NA - awarded zero
	Total area under town planning sceme	Percentage	(proportion of area under tps/ total area of the ulb)*100	Missing Value Imputation, Category Average

Sector	Indicator	Unit	Description (Formula)	Indicator treatment
PLAN IMPLEMENTATION	Land-Titling Law	Number	Yes -1, No-0	AW, NF, NA - awarded zero
	Land-Pooling Law	Number	Yes -1, No-0	AW, NF, NA - awarded zero
	Single-Window Clearance	Number	Yes -1, No-0	AW, NF, NA - awarded zero
	Does the City Incentivise Green Buildings?	Number	Yes -1, No-0	AW, NF, NA - awarded zero
PLAN ENFORCEMENT	Plan Violations	Percentage	Number of plan violations / Total number of plans sanctioned *100	Missing Value Imputation, Category Average
	Penalty Efficiency	Percentage	Number of penalties levied on plan violations / Number of plan violations *100	Missing Value Imputation, Category Average
	Land under Encroachment	Percentage	Total ULB land under encroachment / Total area of city *100	Missing Value Imputation, Category Average

Services

Sector	Indicator	Unit	Description (Formula)	Indicator treatment
EDUCATION	Vacancy of Teachers in Municipal Schools	Percentage	((Total sanctioned staff strength of teachers in municipal schools for grade 1-10 - actual staff strength of teachers in municipal schools for grade 1-10) / Total sanctioned staff strength of teachers in municipal schools for grade 1-10) *100	Missing Value Imputation, Category Average
	Teacher-Pupil Ratio	Ratio	Actual staff strength of teachers in municipal schools for grade 1-10 / Total number of students enrolled in municipal schools for grade 1-10	Missing Value Imputation, Category Average
	Deviation of Expenditure on Education from Average	INR	Total expenditure on education by the ULB - Average expenditure on education by all ULBs	Missing Value Imputation, Category Average

Sector	Indicator	Unit	Description (Formula)	Indicator treatment
HEALTH	Number of Municipal Primary Healthcare Institutions	Per Lakh of Pop.	Total number of municipal primary healthcare institutions managed or run by ULB*100k)/Population	Missing Value Imputation, Category Average
	Vacancy of Doctors, Nurses and Lab Assistants	Percentage	((Total sanctioned staff strength of doctors, nurses and lab assistants in municipal hospitals - Actual staff strength of doctors, nurses and lab assistants in municipal hospitals) / Total sanctioned staff strength of doctors, nurses and lab assistants in municipal hospitals) *100	Missing Value Imputation, Category Average
	Deviation of Expenditure on Healthcare from Average	INR	Total expenditure on healthcare by the ULB - Average expenditure on healthcare by all ULBs	Missing Value Imputation, Category Average
	Number of Multipurpose Healthcare Workers	Per Lakh of Pop.	Number of multipurpose healthcare workers * 100k / Population	Missing Value Imputation, Category Average
WATER & WASTEWATER	Household Covered by Piped Connection	Percentage	(Number of households covered with piped water connection / Number of households) * 100	Missing Value Imputation, Category Average
	Deviation of Total Water Supplied from Service Level Benchmark	Number (lpcd)	Average amount of water supplied - Service Level Benchmark (135)	Missing Value Imputation, Category Average
	Number of Households with Metered Water Supply Connection	Percentage	(Number of households with metered water supply connection / Total Households) *100	Missing Value Imputation, Category Average
	Amount of Wastewater Treated	Percentage	(Amount of wastewater treated / Amount of wastewater generated) *100	Missing Value Imputation, Category Average
	Coverage of Stormwater Drainage Network	Percentage	(Total length of covered storm water drains / Total road length) *100	Missing Value Imputation, Category Average

Sector	Indicator	Unit	Description (Formula)	Indicator treatment
WATER & WASTEWATER	Coverage of Sewerage Network	Percentage	(Total length of sewerage network/ Total road length) *100	Missing Value Imputation, Category Average
	Extent of NRW	Percentage	((Total water produced and put into transmission and distribution system - Total water sold)/(Total water produced and put into transmission and distribution system))*100	Missing Value Imputation, Category Average
	Wastewater Reuse and Recycle	Percentage	(Amount of Secondary/ Tertiary treated wastewater recycled and reused / Amount of wastewater treated)*100	Missing Value Imputation, Category Average
SWM AND SANITATION	Garbage Collection: Percentage Coverage of Area (Wards) Under Door-to-Door Collection System	Percentage	Swachh Survekshan Score	Missing Value Imputation, Category Average
	Street Cleanliness: 100 percent Wards are Clean in the ULB	Percentage	Swachh Survekshan Score	Missing Value Imputation, Category Average
	ICT Based Monitoring Mechanism in Place for : Ward wise Collection and Transportation (C&T) including Emptying Litter Bins from Commercial Areas (No Spill Over), Monitoring of Garbage Vulnerable Points (GVPs) and Sanitation Staff.	Number	Binary Question Yes/No	AW, NF, NA - awarded zero
	Waste Treatment: Percentage of Wet Waste Treated either by Decentralized or Centralized Planning?	Percentage	As provided by city	Missing Value Imputation, Category Average

Sector	Indicator	Unit	Description (Formula)	Indicator treatment
SWM AND SANITATION	What percentage of Households/ Commercial Establishments/ CTs/ PTs; are Connected to a Closed System such as Sewerage, Septic Tank + Soakpit, Twin-pit System etc., (no Open System/ Connection/ Flow/ Discharge)	Percentage	As provided by city	Missing Value Imputation, Category Average
	Total Sewage Treatment Capacity of the ULB	Percentage	(Total installed sewage treatment capacity / Total sewage generated)*100	Missing Value Imputation, Category Average
	Total number of Households Connected to Sewerage Network / Septic Tanks	Percentage	(Total number of households connected to sewerage network / septic tank / Number of Households)*100	Missing Value Imputation, Category Average
REGISTRATION AND PERMITS	Registration Efficiency: a. Birth Certificates b.Death Certificates (Avg. No. of Days)	Number	(Average number of days taken by the ULB to issue a birth certificate + Average number of days taken by the ULB to issue a death certificate) / 2	AW, NF, NA - awarded zero
	Registration Efficiency: a. Birth Certificates b.Death Certificates (Online Issuance)	Percentage	(((Number of birth registrations completed online / Total number of birth registrations completed) + (Number of death registrations completed online / Total number of death registrations completed)) / 2)*100	Missing Value Imputation, Category Average
	Ease of Obtaining Permits (Avg. No. of Days)	Number	Average number of days taken by the ULB to issue building and construction permits	AW, NF, NA - awarded zero
	Online Issuance of building and construction permit registrations	Percentage	(Number of building and construction permits issued online / Total number of building and construction permits issued)*100	Missing Value Imputation, Category Average
	Number of licenses awarded by the municipality	Number	Total number of types of licenses provided	AW, NF, NA - awarded zero

Sector	Indicator	Unit	Description (Formula)	Indicator treatment
REGISTRATION AND PERMITS	Online Presence of licsenses: Number of Licesenses with Online Application Facility as a Proportion of Total Licesenses awarded by ULB	Percentage	(Number of types of licenses with online application facility / Total number of types of licenses provided)*100	Missing Value Imputation, Category Average
INFRASTRUCTURE	ULB Roads Provided with Street Lights	Percentage	(Road length of ULB provided with street lights / Total road length)*100	Missing Value Imputation, Category Average
	Energy Efficient Street Lighting	Percentage	(Total number of energy efficient street lights/ Total number of street lights)*100	Missing Value Imputation, Category Average
	Deviation of Expenditure on Road Maintenance (Carriage Width, Footpath, Cycle Tracks, and On-Road Parking Areas)	Number	Value of total expenditure on road maintenance - Average value of total expenditure on road maintenance	AW, NF, NA - awarded zero
	Road Density	Per Lakh of Pop.	Total road length of city *100k/ Population	Missing Value Imputation, Category Average
	Footpath Coverage	Percentage	(Total length of footpaths along the street network / Total road length)*100	Missing Value Imputation, Category Average
	Community Services Number of a. Community Centre b. Crematorium c. Parks d. Music, dance and drama centre e. Care centre for physically /mentally challenged f. Burial grounds/ Cremation ground g. Fitness centres/ GYM h. Working women – men hostel i. Night Shelter j. Old Age Home k. Orphanage/ Children's Centre	Number	[Number of (Community Centre+ Crematorium+ Parks+ Music, dance and drama centre+ Care centre for physically / mentally challenged+ Burial grounds/ Cremation ground+ Fitness centres/GYM+ Working women / men hostel+ Night Shelter+ Old Age Home+ Orphanage/ Children's Centre) *100k / Population] / Total number of data points (11)	AW, NF, NA - awarded zero

Technology

Sector	Indicator	Unit	Description (Formula)	Indicator treatment
DIGITAL GOVERNANCE	Does the ULB have the Following e-Governance Initiatives: Web Portal ▪ Online Grievance Redressal ▪ Online Grievance Redressal on mobile ▪ Online public service delivery ▪ Online public service delivery on mobile	Number	Response: ((Web portal (Yes-1, No-0) + Online grievance redressal on mobile (Yes-1, No-0) + Online grievance redressal (Yes-1, No-0) + Online public service delivery on mobile (Yes-1, No-0) + Online public service delivery (Yes-1, No-0))/5	AW, NF, NA - awarded zero
	How many of the services are being managed through a command and control system? Eg. SCADA, ICCC etc.	Number	Environmental Pollution (Yes-1, No-0) + Flood Monitoring (Yes-1, No-0) + Grievance Redressal (Yes-1, No-0) + MIS (Yes-1, No-0) + Revenue Collection (Yes-1, No-0) + Solid Waste Management (Garbage Collection and Transportation) (Yes-1, No-0) + Streetlights (Yes-1, No-0) + Traffic Management (Yes-1, No-0) + Wastewater (Yes-1, No-0) + Water (Yes-1, No-0))/10	AW, NF, NA - awarded zero
	Number of Tenders Finalized through e-Tendering in the Last Financial Year	Percentage	(Total number of tenders awarded through e-tendering / Total number of tenders awarded) *100	Missing Value Imputation, Category Average
	Value of Tenders Finalized through e-Tendering in the Last Financial Year	Percentage	(Total value of tenders awarded through e-tendering / Total value of tenders awarded) * 100	Missing Value Imputation, Category Average
	Does the City have an Open Data Policy?	Number	Yes-1, No-0	AW, NF, NA - awarded zero
	Has the City Appointed a City Data Officer (CDO)?	Number	Yes-1, No-0	AW, NF, NA - awarded zero

Sector	Indicator	Unit	Description (Formula)	Indicator treatment
DIGITAL GOVERNANCE	Has the City Formed a City Data Alliance?	Number	Yes-1, No-0	AW, NF, NA - awarded zero
	Does the City have Presence on an Open Data Portal?	Number	Yes-1, No-0	AW, NF, NA - awarded zero
DIGITAL ACCESS	Internet Access	Number/ square meter	Total number of Wi-Fi hotspots provided by ULB/ Total area of the ULB	Missing Value Imputation, Category Average
	Average Number of WiFi Users per Hotspot Provided by Municipal Corporation or Smart City Company	Per Lakh of Pop.	(Total number of unique Wi-Fi sessions provided by ULB/ Population)*100k	Missing Value Imputation, Category Average
DIGITAL LITERACY	Does the ULB-Run Digital Literacy Programmes?	Number	Yes-1, No-0	AW, NF, NA - awarded zero
	Number of Digital Literacy Centres Run by the ULB?	Per Lakh of Pop.	(Number of digital literacy centers / Population)*100k	Missing Value Imputation, Category Average
	Number of People who have Completed Digital Literacy Courses Provided by ULB or Smart City Company as a Proportion of Total Population in Slums	Per Lakh of Pop.	(Number of people who have completed digital literacy courses provided by ULB or smart city company / Population)*100k	Missing Value Imputation, Category Average

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