

# Fifteen years of Performance Assessment System (PAS)

February 2025



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Center for Water and Sanitation (CWAS)-CRDF-CEPT University

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# Acknowledgements

The Performance Assessment System project has now completed 15 years, marking a significant milestone in its journey. This report reflects on the evolution of PAS, documenting its outcomes, achievements, and impact over the years. The report charts the Project's journey and identifies future directions for its sustainability. This report is based on review of various project documents and detailed discussions with team members.

We extend our heartfelt gratitude to Mr. A.K. Jain (Retd. IAS, Additional Chief Secretary, Government of Maharashtra) and Mr. K. Srinivas (Former Secretary, Urban Development and Urban Housing Department, GoG; currently Secretary, Ministry of Housing and Urban Affairs, MoHUA, GoI) for their support in initiating the PAS project in Gujarat and Maharashtra. We also sincerely acknowledge the valuable guidance from the Project Advisory Committee chaired by Mr. D.M. Sukhtankar (Retd. Chief Secretary, Government of Maharashtra) and committee members including Mr. C.K. Koshy (Retd. Additional Chief Secretary, Government of Gujarat), Mr. Om Mathur, Mr. N Bhattacharjee and the Principal Secretaries of Urban Development Departments of Gujarat and Maharashtra.

We are grateful to the state governments of Gujarat and Maharashtra for their steadfast support throughout the past fifteen years. We also extend our appreciation to the state governments of Jharkhand, Chhattisgarh, Telangana, and Assam for their engagement and support. We look forward to their continued support.

This project has benefited from the support of CWAS team and our partner institutions—Urban Management Centre and All India Institute of Local Self Government. Finally, and importantly we express our sincere gratitude to the Gates Foundation for their unwavering trust and partnership spanning over a decade and a half.

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# 1 Fifteen years of PAS: Transforming urban water and sanitation services

The Performance Assessment System (PAS) began as a project in 2009. It has now grown into a comprehensive program, establishing itself as one of India's largest water and sanitation services databases with time series data for cities over many years. The transformative reform agenda in the national flagship programmes of India, such as AMRUT and Swachh Bharat Mission (SBM), have benefitted from using PAS information for Service Level Benchmarks (SLB). Investments in these programs have supported local governments in achieving SLB standards.

Globally, there is increasing recognition of the need for WASH monitoring systems that are rooted in the local context. PAS exemplifies that such systems are achievable and can thrive in developing countries. Since its inception in 2009, the PAS project initiated a journey to assess water and sanitation service (WSS) levels in two states of India covering 414 cities and covering a population of nearly 67 million. Today in 2025, it supports more than 800 cities of India covering a population of 115 million. The project helped to initiate a benchmarking framework for monitoring WSS sectors in developing countries. It aligns with the Government of India's (GoI)

service level benchmarks (SLBs) initiative to measure water and sanitation service performance. It has evolved to create new pathways for municipal services and provides robust evidence for effective decision-making. It is recognized as a platform that helps both state and urban local governments to assess and monitor service improvements. It also supports the analysis needed for making decisions on future infrastructure investments.

The project was initiated with the philosophy of “You can't improve what you don't measure” to fundamentally transform the perception and management of water and sanitation services in India. It was envisaged as a benchmarking system that can be used as a data -driven governance and support system for the national government, state governments and city governments. The PAS project aimed to bring about a change in the then prevalent monitoring which was often focused on “laying pipes” rather than measuring “service improvements”. Unlike the previous small and one-time efforts at performance benchmarking of India's water and sanitation sector, the PAS project aimed to achieve scale and sustainability.

This summary report highlights that the PAS initiative has far exceeded its original objectives, driving transformative changes in urban water and sanitation service delivery. It stands out for its large-scale approach and commitment to long-term engagement.

Financial incentives linked to the publication of service-level benchmarks have helped sustain and replicate the PAS system. The 13th, 14th and 15th Finance Commissions endorsed Service Level Benchmarking (SLB) for urban WASH and introduced performance-based grants. It actively collaborates with state and city governments, focusing on use of PAS information. PAS is designed to align with local contexts while staying flexible to adapt to evolving policies, drive innovation, and embrace change.

Over time, the PAS project has leveraged new opportunities to work with municipalities, enhancing services through development of tools,

frameworks and new projects. It has leveraged support to municipalities from improving services to assessing the creditworthiness of the city/ assessing capital markets, and cities' readiness for Environment, Social and Governance (ESG) assessments.

Many key decisions, from developing national/ state policy to preparing city level plans, are supported through PAS. The details and information are also being used by various stakeholders, including government agencies at various levels, researchers, regulators, finance institutions, consultants, students and civil society organisations.

The PAS project has now completed 15 years, marking a significant milestone in its journey. This report reflects on the evolution of PAS, documenting its outcomes, achievements, and impact over the years. It highlights key milestones, captures valuable lessons learned, and outlines a roadmap for sustaining and strengthening its use in future

## 1.1 Understanding PAS approach and framework

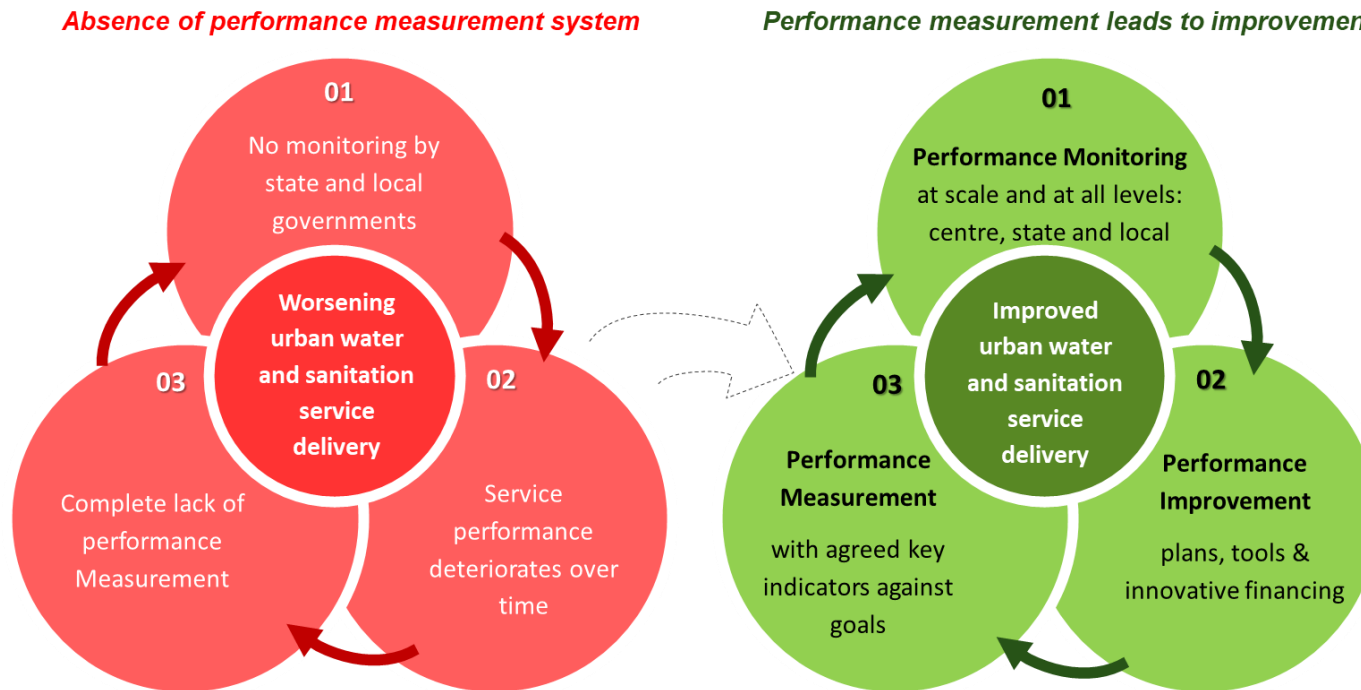
A decade ago in India, the primary focus was infrastructure investment rather than ensuring consistent service delivery. While substantial investments were being made, many communities still lacked access to essential services. Cities possessed relevant data, but it was often confined

to paper records, limiting its utility for analysis and decision-making. In addition, inadequate financial and human resources hindered proper maintenance, perpetuating a vicious cycle of underperformance in urban water and sanitation services. The Journey of the PAS project started with

an intention to break this vicious cycle with a data-driven system focusing on measuring, monitoring and improving water and sanitation services. The PAS Project worked with state and local governments to develop a reliable and sustainable performance assessment system for urban water and sanitation services. It focused on addressing the significant gaps in

understanding quality, service levels and coverage, including access for the underserved and poor households. The components of the project included Performance measurement, Performance monitoring, **and Performance improvement**. It measures service delivery regarding improved equity, efficiency and financial sustainability.

**Figure 1 Performance Assessment System approach: Moving to a virtuous cycle**



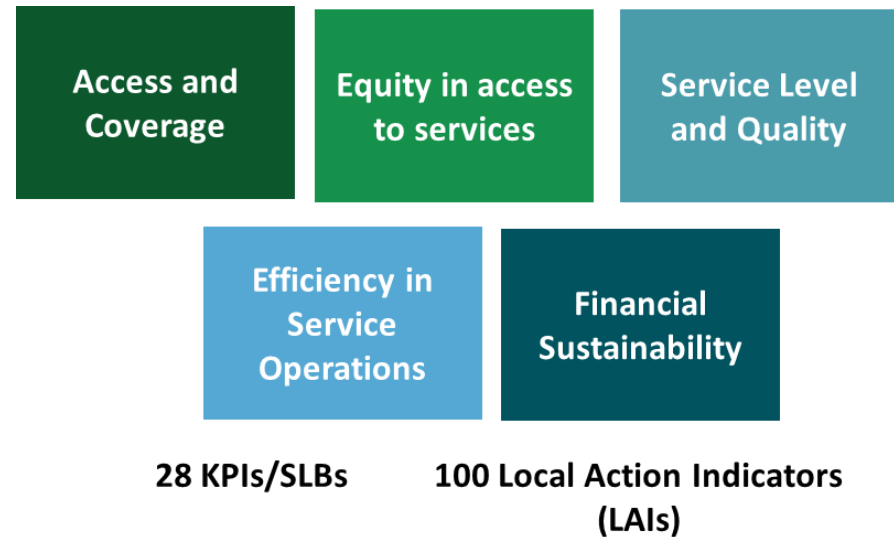
CEPT University received research grants from the Bill and Melinda Gates Foundation (BMGF). The project was implemented by CEPT University (CEPT), with the Urban Management Centre (UMC) and the All-India Institute of Local Self Governments (AIILSG) as its partners in Gujarat and Maharashtra, respectively.

### Development of PAS framework

The performance measurement framework of the PAS has been constantly adapted and improved over time. Its initial design was based on an extensive review of previous benchmarking efforts, both global and Indian. Noteworthy among them are the International Benchmarking Network for Water and Sanitation Utilities (IBNET), the American Water Works Association (AWWA) and the International Water Association (IWA) and a few efforts in India to measure performance for WSS in selected cities in the past<sup>1</sup>. The process of performance measurement framework development was consultative, involving the exchange of ideas and engagement with state agencies, city officials, sector experts and resource persons. Initially, simple Excel based checklists were developed for data collection and tested in 14 ULBs in Gujarat and 18 ULBs in Maharashtra.

<sup>1</sup> Water and Sanitation Program (WSP) funded report by CRISIL Infrastructure Advisory Services on Phase II Benchmarking of UWSS (2003-04): this study was done for 10 cities. Ministry of Urban Development in Government of India and Asian Development Bank's Benchmarking of Water Utilities (2007): this study was for 20 Indian cities. CMAG's (City Managers Association of Gujarat) 'Urban indicators and performance measurement' funded by USAID

Figure 2 Five themes of PAS-SLB framework



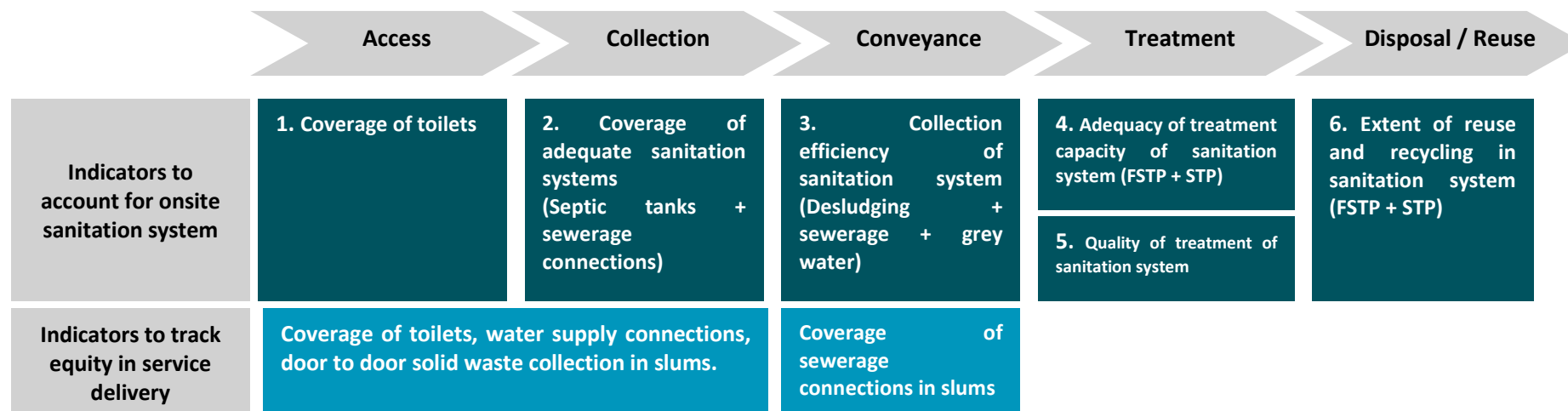
A revised framework was subsequently used for statewide rollout, covering all cities of Gujarat (166 cities) and Maharashtra (248 cities). PAS framework was aligned with the Government of India's (GoI) service level benchmarks (SLBs) initiative. The SLB initiative focused on the collation of standardised indicators; implementation of Management Information Systems (MIS) at the city and state level; and development of Performance Improvement Plans (PIPs), addressing the need for both internal monitoring for decision-making and reporting to higher levels of government. In addition to SLB indicators, the PAS framework captures

and WBI for Gujarat (2000): this initiative was for 10 cities. National Institute of Urban Affairs Study sponsored by CPHEEO (1999-2000) to determine the status of water supply, sanitation and solid waste management services in 300 Class I towns and cities in India.

aspects of equity and a range of local action indicators. Identification of the Key Performance Indicators (KPI) for equity and 100 Local Action Indicators (LAI) that came to be known as the SLB+ or the SLB-PAS framework. The framework shown in Figure-2 has five thematic areas - 1) Access and Coverage, 2) Equity in access to services, 3) Service level and quality, 4) Efficiency in service operation, 5) Financial sustainability in service operation as shown in figure 2. The KPIs and LAIs are divided into these five themes. Using these indicators, the actual status of water and sanitation across the five respective themes can be assessed for the city.

Identifying and defining the SAN Benchmarks to capture the performance of on-site sanitation systems was a significant milestone in the PAS journey. It enabled the project to assess sanitation beyond only sewerage projects. The PAS measurement framework is applicable to developing countries where the proportion of the population living in slum areas is high, and where cities depend on on-site sanitation systems. PAS-SLB framework not only has 28 SLBs, also known as key performance indicators of water and sanitation, but also has a) SANBenchmarks, b) four Key Performance Indicators (KPI) for equity, and c) around 100 Local Action Indicators (LAI). The LAIs developed help the cities to identify steps in the areas of improvement.

Figure 3 SANBenchmarks and Equity indicators



### **PAS portal and online monitoring tool**

The evolution of performance measurement framework was linked to development, its implementation and continuous improvement.. In the first year, data was collected through paper-based questionnaires and field visits supported by regional workshops. From 2011, an online system on the PAS portal ([www.pas.org.in](http://www.pas.org.in)) was developed for monitoring service level benchmarks (SLB). It includes an online performance assessment tool and facilitates dissemination of PAS information and resources. It provides open access to performance results and generates dashboards that enable state and ULB governments to review performance indicators at the state and local levels. The PAS information covers four sectors: water supply, wastewater, solid waste and storm water management. Time series results for Performance Indicators on these four sectors are available on the PAS web portal.

The online portal was made available in local languages in the states of Gujarat and Maharashtra (Hindi, Gujarati and Marathi). A comprehensive set of guidelines was prepared, and a series of capacity building workshops

were held for city and state officials. This has resulted in a significant reduction in the time taken for annual performance assessment, as cities could fill in the information from their own offices. The portal also incorporates over 200 validation rules to review and verify the information entered by cities. This online portal was developed and maintained under an industry-academic partnership with Tata Consultancy Services (TCS), the premier information technology company with operations across India and globally.

The PAS portal is designed to seamlessly integrate into state or national-level portals. It aligns with the data requirements of other platforms, such as the 15th Finance Commission, AMRUT, SBM, and Smart City portals. Cities can use PAS information across these programs. The PAS approach is versatile and can be adapted to develop new frameworks. PAS online module has been simplified for Pan-India application. Information from the PAS portal has been helpful for a variety of purposes.



## 1.2 Performance measurement to improvement of services

The PAS project has fostered a culture of performance assessment in urban water and sanitation management. This process takes time, as interest and confidence in data-driven decision-making are built through consistent use and demonstrated impact. Performance improvement extends beyond capital investments, encompassing policy advocacy and procedural reforms. By linking performance assessment to tangible service improvements, PAS has sustained city-level engagement. In Gujarat and Maharashtra, better-performing cities were identified through PAS assessments, and their successful practices were documented to serve as models for others. PAS has facilitated peer-to-peer learning, enabling city officials to exchange knowledge and adopt best practices through exchange visits.

To translate performance indicators into real-world service enhancements, PAS has provided technical assistance to over 35 cities, focusing on targeted sectoral improvement plans. Rather than solely emphasizing infrastructure development, PAS-supported plans have aimed at enhancing service levels in key areas, such as water-loss reduction, achieving open defecation-free status, septage management, consumer grievance redressal, cost recovery, and strengthening information systems.

Over the past fifteen years, states and cities have significantly improved water and sanitation service delivery. The City Sanitation Action Plan and City Solid Waste Action Plan under the Swachh Bharat Mission (SBM) and the City Water Balance Plan under AMRUT have been designed to bridge gaps in Service Level Benchmarks (SLBs). Swachh Survekshan, the annual survey under SBM, incorporates protocols aligned with SLB achievements. Furthermore, these flagship programs have prioritized individual tap water connections and the progression toward 24/7 water supply, reflecting the broader goal of universal water coverage.

Under SBM and AMRUT, cities have expanded infrastructure coverage for water and sanitation services, monitored by PAS-SLB. In Gujarat, supported by the Swarnim Jayanti Mukhya Mantri Shaheri Vikas Yojana (SJMMSVY) alongside AMRUT and SBM, PAS helped cities track progress and identify areas for improvement. Performance improvement can be measured through time-series PAS data from states like Gujarat, Maharashtra, Chhattisgarh, and Jharkhand.

The key information at a glance on the performance of cities and states is covered under PAS data systems.

**Table 1 Improvement in services from 2009 to 2023**

Key Information	2009	2023
<b>Area and Population coverage by PAS Portal</b>		
Geographical coverage	414	802
Population coverage	67.0 million	115.8 million
Number of Households	14.3 million	26.4 million
<b>Water Supply</b>		
Total Households served with water supply network	7.8 million	20.8 million
Households with water supply connections	55%	79%
Volume of water supplied (MLD)	11,349 MLD	21,581 MLD
Number of cities supplying >100 lpcd	91 ULBs	257 ULBs
<b>Sanitation – Toilet and sewerage coverage</b>		
Total Households with own toilet at household level	8.4 million	25.3 million
Households with access to toilet	59%	96%
Total properties with sewerage connection	5.2 million	14.2 million
Coverage of sewerage connection	37%	54%
<b>Used water management in cities</b>		
Volume of wastewater generated	5,338 MLD	13,553 MLD
Volume of wastewater treated at secondary STP	2,233 MLD	6,613 MLD
Volume of wastewater recycled and reused	93 MLD	1920 MLD
<b>Solid Waste Management in cities</b>		
Coverage of Door-to-Door solid waste collection	73%	94%
Volume of solid waste generated	29,675 TPD	45,581 TPD
Volume of solid waste processed at ULB	2,567 TPD	32,988 TPD
% solid waste processed to total solid waste generated	9%	72%
<b>Financial Sustainability for UWSS Services</b>		
Cost recovery of urban water and sanitation services (UWSS)	54%	61%
Collection efficiency of urban water and sanitation services	47%	50%

### **Access and Coverage**

The access and coverage of municipal water supply, sanitation, and solid waste management services have improved significantly in the selected PAS states. It reveals the impact of monitoring services as well as the impact of national flagship programme of AMRUT and SBM that translated in improved service delivery. For instance, Maharashtra cities have improved their water supply coverage from 52% in 2009 to 80% in 2023- and a two-fold increase in wastewater service coverage to 50% in the same period. States like Jharkhand and Chhattisgarh have also recorded a 12-14% increase in network coverage between 2016 and 2023. Similarly, states have also improved the service delivery in slums as well. However, there are still gaps in slums for municipal water supply connection and access to household level toilets.

### **Quality of urban water and sanitation services**

The capital investment under the ongoing national missions of AMRUT, SBM and SMART Cities has led to extension of water supply and sanitation network. . The states have to now focus on improving service quality. The average water availability in the four PAS states has risen to 111 lpcd in 2009-10 to 121 lpcd in 2023. The average duration of water supply has also increased from 2.4 hours a day to 3.2 hours a day. In Gujarat, the Sardar Sarovar Project has contributed to maintaining per capita water supply levels in the range of 109 lpcd to 132 lpcd over the past fifteen years.

Maharashtra has made significant progress in consumer-end water metering under the Maharashtra Sujal Nirmal Abhiyan (MSNA) and other national missions, increasing water supply metering coverage from 25% in 2009 to 61% in 2023. In sanitation, cities have steadily expanded sewer networks, with Gujarat achieving coverage levels of 80%. Under SBM, the quality of solid waste management services has improved tremendously. The efficiency of municipal solid waste (MSW) processing has increased from 9% (2009) to 72% (2023). PAS's sanitation benchmarks have also underscored the effectiveness of onsite sanitation solutions. Additionally, the number of cities with used-water treatment facilities has grown significantly, with 155 cities across the four PAS states now having treatment plants, up from just 23 cities in 2009. In addition, 250+ fecal sludge treatment plants are operationalised to treat the septage in 2023.

### **Efficiency in service operations**

Despite extending network coverage and increasing water supply quality, cities need to focus on reducing NRW and reuse of treated wastewater. The major challenges cities facing are on measuring the NRW. The reliability of NRW data from cities remains a challenge, as most cities lack meters at source and distribution centres, which are essential for calculating real transmission losses. Currently, only 10% of cities (79 out of 802) have meter coverage above 50% at the consumer level. The reforms related to data system strengthening to measure the NRW should be the

need of hour. In addition to reducing NRW, there should also be a focus on reusing treated wastewater. States have improved wastewater treatment by establishing sewage treatment plants; now, the emphasis should shift to reusing treated wastewater. Though, a significant improvement is observed for the reuse of treated wastewater at 29% in 2023, as compared to only 4% in 2009, there is still a long way to achieve circular economy of water.. The focus of new capital investments in the sector should be on wastewater reuse by retrofitting existing STPs. Appropriate technologies for wastewater reuse should be incorporated into new or planned STPs.

#### **Financial sustainability for urban water and sanitation services**

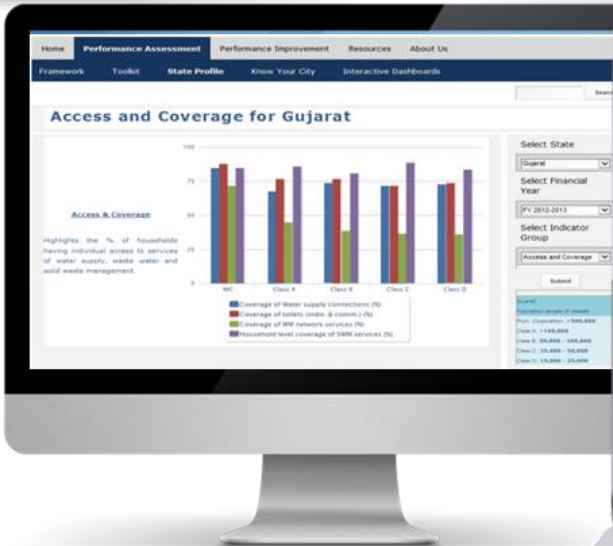
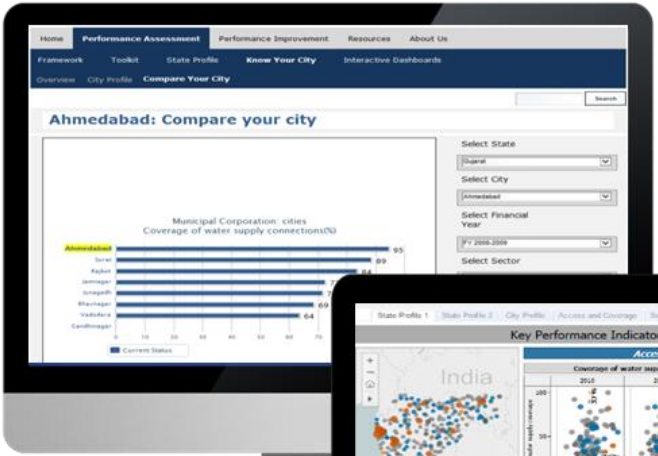
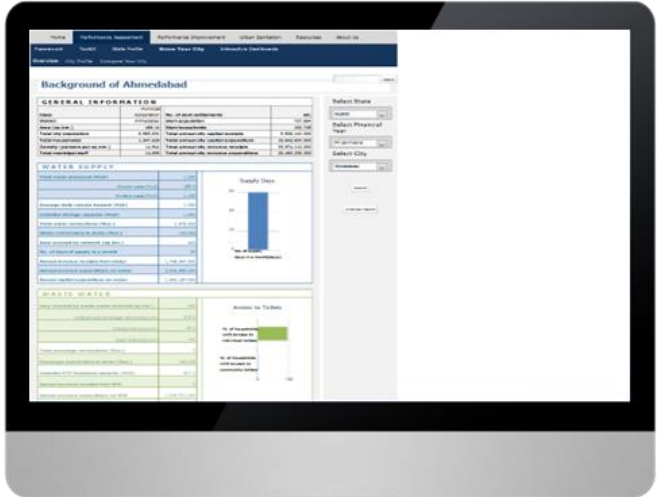
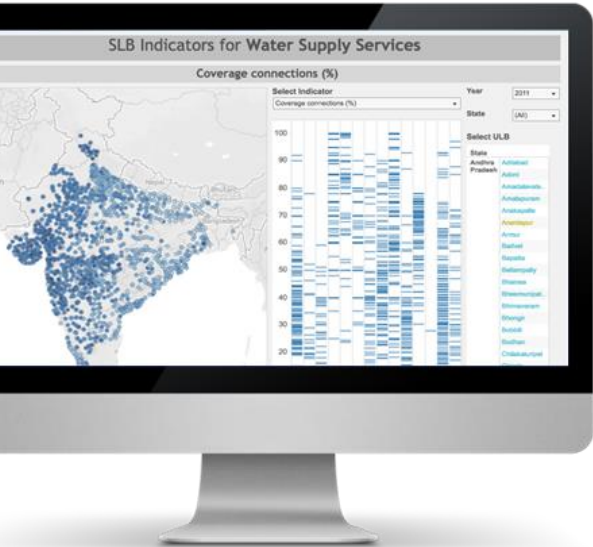
Cost recovery and collection efficiency play a crucial role in providing reliable and quality service delivery and performing sustained service operations. The overall revenue collection efficiency for water supply and sanitation (sewerage + onsite sanitation + SWM) services is only 50% in 2023, with marginal enhancement as compared to 47% of collection efficiency in 2009. It clearly indicates a delay in the revision of service charges/ base tax rates that led to poor cost recovery for water supply and sanitation services. Currently, the cost recovery for these services stands at 61% in 2023, based on demand from the tax and user charges for water, sanitation and SWM services. However, given that the collection efficiency

is only 50%, the real cost recovery has remained at just 30% for water, sanitation and SWM service delivery.

#### **Local action indicator (LAIs)**

The local action indicators of PAS have played a crucial role in identifying service gaps and guiding cities toward targeted interventions. For example, these indicators have helped identify energy consumption as the largest expenditure source for water and sanitation services. Municipal corporations in Gujarat spend 40-60% of their expenditure on fuel costs. Addressing this issue can improve service efficiency. Additionally, energy consumption is a major source of GHG emissions. If cities transition to renewable sources, such as installing solar panels at pumping stations and treatment plants, they can reduce electricity costs and become revenue surplus. This shift would also help lower GHG emissions and contribute to building climate-resilient cities.

Through its emphasis on performance assessment, policy advocacy, and capacity-building, PAS has demonstrated that systematic monitoring is key to sustainable improvements in urban water and sanitation services. Looking ahead, PAS will continue to support cities in their journey towards universal, equitable, and efficient water and sanitation provision



**PERFORMANCE ASSESSMENT SYSTEM (PAS) PROJECT Patdi**

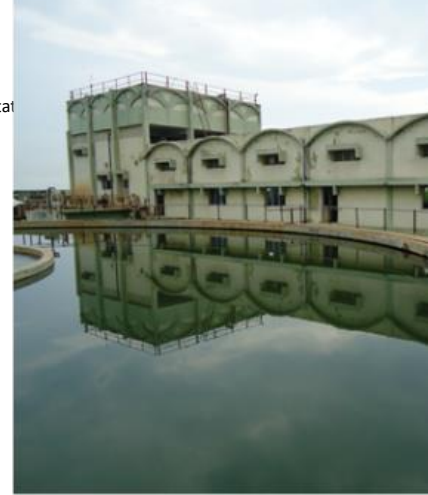
**GENERAL INFORMATION : FY 2011-2012**

Sl. No.	Indicator	Unit	2010-2011	2011-2012
1.1	Population (Census 2001/2011)	Persons	16808	16808
1.2	Decadal Growth Rate of the City	%	7.0	7.0
1.3	Population (Present Year)	Persons	19000	19000
1.4	Number of Households (Census 2001/2011)	Number	2995	2995
1.5	Number of Households (Present Year)	Number	5500	5500
1.6	Family Size (Census 2001/2011)	Persons	5.83	5.83
1.7	Family Size (Present Year)	Persons	3.27	3.27
1.8	Number of Skams (2001/2011)	Number	0	0
1.9	Number of Skams (Present Year)	Number	10	10





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## 2 Institutionalising PAS in government systems

The use of PAS received a boost with the Thirteenth Finance Commission's (FC) recommendation to use SLBs for a performance grant for financial years 2011-15. The performance grant (which is 20% of a block grant) was made available only if the state governments fulfilled a set of conditions, one of which was to assess and publish service levels and targets. To meet the requirements of the 13th FC performance grants, a formal process of setting up SLB cells was adopted in each of our states. This helped the state and ULBs to ensure annual action of data collection. Many other states also formed SLB cells. Government resolutions were issued by the respective state governments regarding the formation of SLB cells, with their terms of reference and responsibilities. The calendar of activities of the SLB Cell was defined, with timelines for activities like online data entry by ULBs, SLB data analysis and dissemination, capacity building, and support for city-level improvement plans.

In 2014, Ministry of Urban Development (MoUD) (now the Ministry of Housing and Urban Affairs (MoHUA)) of the Government of India appointed CEPT as the National Technical Support Partner for SLB. Based on the Gujarat and Maharashtra experience, the project influenced the MoUD to form SLB Cells at state level to operationalise the SLB framework in all India. The PAS online module was endorsed by the MoHUA for use by

states. As a national technical support partner, CWAS shared knowledge, tools and experiences with other states planning to initiate service-level benchmarking for water supply and sanitation services.

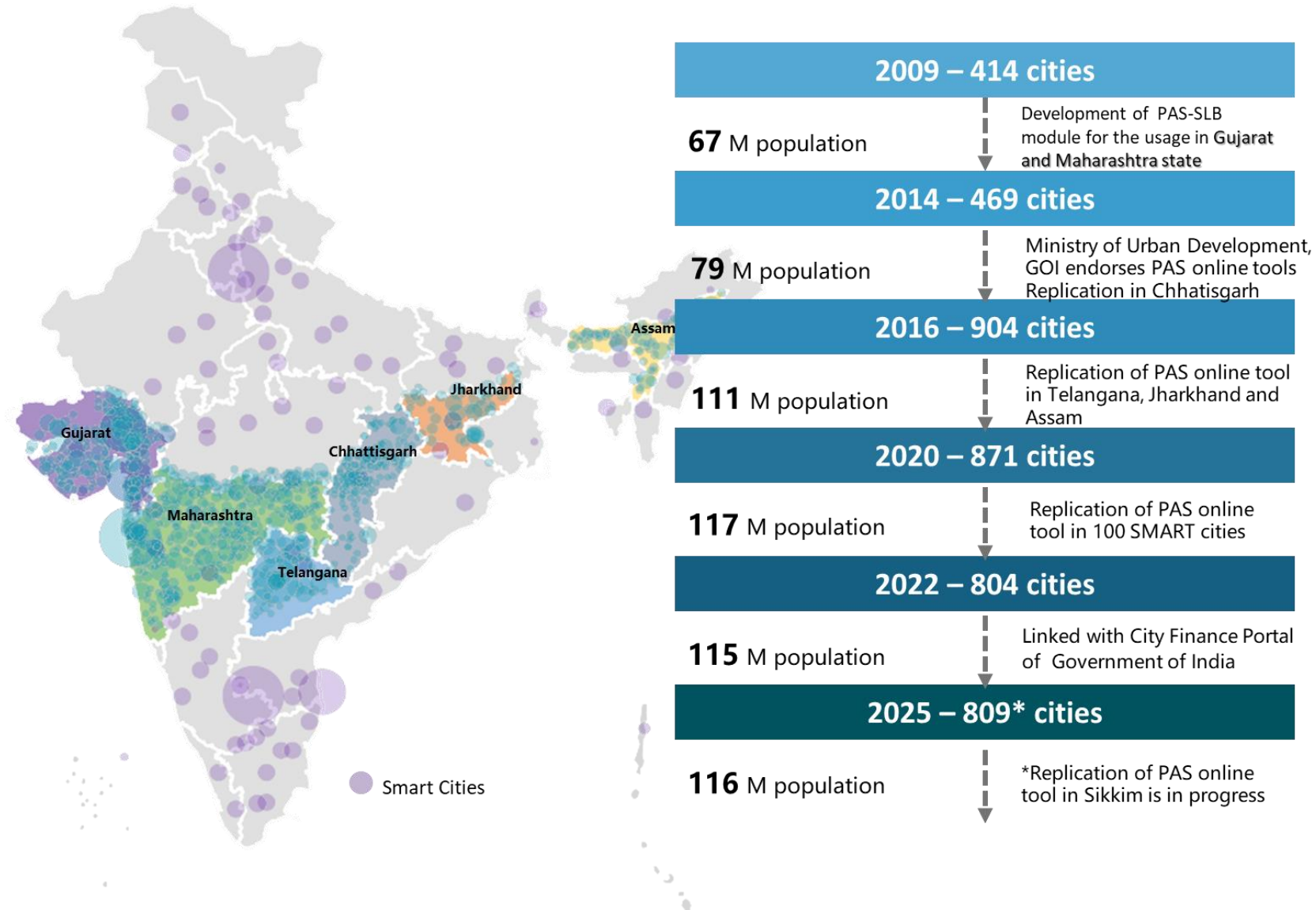
To qualify for the performance grants under the 13th and 14th Finance Commissions, cities were required to publish a gazette on Service Level Benchmarks (SLBs). This process was streamlined by integrating gazette publication into the PAS online portal, allowing cities to publish gazettes directly in the prescribed format. Additionally, the interactive dashboards and data book were developed and help support cities in their routine decision-making processes.

The Center for Water and Sanitation- CWAS<sup>2</sup> made presentations to the 14th and 15th *Finance Commissions* to continue performance-based grants linked to notification and improvement in water and sanitation service delivery. These were incorporated in recommendations of both the finance commissions. The 14th FC (2015-20) identified measurement and publication of service-level benchmarks as one the conditions to avail performance-based grants. This provided an opportunity to strengthen and scale up the online performance assessment (SLB-PAS) module developed under the PAS

<sup>2</sup> Center for Water and Sanitation- CWAS began its work in 2009 with PAS project with a focus on improving water and

sanitation services in India. The Center carries out various activities including action-research, advocacy and capacity building.

Figure 4 Coverage of PAS across India



## 2.1 Scaling up PAS to other states and cities of India

An enabling policy ecosystem of inclusion of SLBs as one of the criteria for ULBs to access performance-based grants from the 13<sup>th</sup> and 14<sup>th</sup> Finance Commissions served to promote the use and sustainability of the PAS in the two states while providing an opportunity to replicate the system in other states. More than 550 cities in Gujarat and Maharashtra have used this system continuously since 2009. In addition, four other states and the Smart Cities Mission of the Government of India have used the online system for performance assessment: Chhattisgarh in 2015, Jharkhand in 2016, and Assam and Telangana in 2016. Under the guidance of Smart City Mission, 100 cities used the online PAS module to assess water and sanitation services. In addition, the PAS website also hosts three years (2009-11) information on SLB indicators for over 1,800 cities covering 18 states.

Since 2017, the states of Chhattisgarh and Jharkhand have institutionalised the SLB-PAS module and used their funds to hire local consultants to support the use of the online SLB-PAS module by cities. This demonstrates ownership by these state governments for the use of the PAS-SLB portal for their performance monitoring activities.

To streamline adoption of PAS in the Smart Cities Mission, PAS was linked to MoHUA's Assessment and Monitoring Platform for Liveable, Inclusive and Future-ready India ([AMPLIFI](#)) portal, which serves as a repository of data derived from various assessment frameworks. A water and sanitation dashboard was prepared and uploaded on the AMPLIFI portal. CWAS has also explored PAS-SLB module's links with the [City Finance portal](#) created for 15th FC grant compliance. Based on experience with 1,000 cities, the online PAS-SLB module has been further simplified for use by all 4,000+ cities across India.

Capacity building of state and city officials is a vital activity for replication and sustenance. The CWAS team has conducted more than 100 capacity-building workshops and trained more than 3,000 government officials for the assessment and improvement of water and sanitation services. These workshops were conducted in partnership with the respective state government. In the initial years, trainings were conducted at the regional level in small batches to make sessions interactive. Later, trainings were organised for specific groups, such as newly formed cities. With COVID-19, learning and knowledge sharing have been transformed through online training. City officials also undergo a transformation driven by the need for

digital administration. Since 2020, CWAS has conducted more than 75 online trainings and meetings in various states and smart cities of India.

The 15th FC (2021-26) has continued linking performance grants with the publication and improvement of service-level benchmarks for all major cities of India. Progressive performance grant conditions linked with

financial incentives have encouraged cities to assess and improve the regular performance of water and sanitation service levels.

The portal is used year by all cities of Gujarat, Maharashtra, Jharkhand, and Chhattisgarh. From Northeast India, Sikkim has recently initiated the work with SLB-PAS. CWAS has initiated exploration of the possibility of using the PAS system and portal in other countries.

## 2.2 Streamlining PAS for Sustainable WASH Monitoring

The state governments now completely own the process of annual service monitoring. The state government sends letter to all cities in the state and conduct a PAS-SLB training workshops. Significant improvements is seen in the annual timeline of PAS information-gathering process. Cities now use the PAS portal more efficiently. To familiarize city and state officials with the online system and help them address any technical issues on their own, CWAS has also created [self-learning, easy-to-understand videos](#). This has been very helpful to cities using PAS portal.

These videos guide city officials through the entire process, from data entry to resolving errors and submitting indicators and targets for all indicators. It also helps them generate gazettes. With the help of these videos and

tutorial guidebooks, a state can complete the process in three months across all its cities.

City and state officials now proactively engage in completing the process within the stipulated timeline to access Finance Commission grants. The availability of video tutorials has further strengthened this transition, reducing reliance on external consultants. Regional and divisional commissioners now independently conduct PAS-SLB workshops with their team, with the CWAS team providing support as needed.

The approach has evolved, with workshops now being arranged as an initial step for all cities, significantly reducing the time required to complete the process. Furthermore, the focus of regional workshops has shifted from



merely assisting cities in data entry to strengthening data systems. The overall timeline for data collection and completion has also been streamlined due to rigorous follow-ups by state and regional/divisional commissioners through instant digital messaging platforms. Consequently,

the time required for SLB data collection has been reduced to one-third of what it was before 2022.









## 3 Use of PAS-SLB framework and monitoring tools

PAS Project is characterised by its conceptualisation at scale, philosophy of long-term sustainability, working at all tiers of government and an emphasis on implementation rather than only planning. It developed a framework suited to the local context, responded to changing policy contexts, fostered innovation and embraced change. PAS-SLB framework is a routine decision-making tool for cities. Information from the PAS has

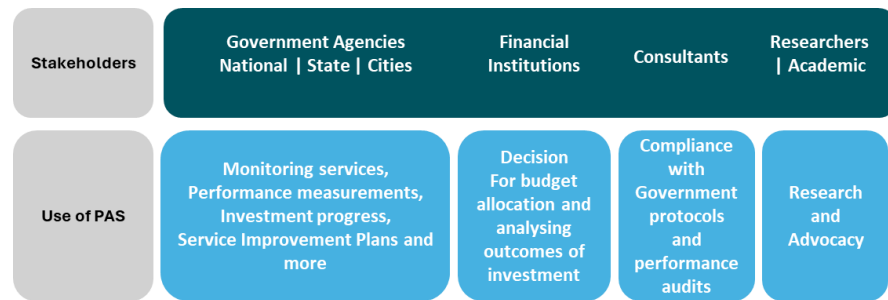
supported policies at national and state levels, and for the preparation of improvement plans at city level. The lack of water and sanitation services data at the city level was addressed by PAS information. This has helped a number of stakeholders to take decisions in regard to water and sanitation and for municipal strengthening.

### 3.1 Use of PAS by various stakeholders

A range of stakeholders have used the PAS portal for different purposes. These include government agencies at national, state and city levels, regulators, financing institutions, researchers and consultants. **Cities** have used the portal for performance measurement, reporting on performance indicators, performance improvement planning and investment decision-making. **Government agencies, at national, state** and local levels have used PAS data for policy developments, programme monitoring, impact assessment and service improvement actions. **Regulators** such as the Comptroller and Auditor General of India (CAG) have used PAS information to conduct performance audits for basic services for selected cities in Maharashtra and assess their regulatory compliance. **Multi-lateral**

**financing institutions** like the Asian Development Bank have used PAS data for project identification, selection, and formulation. **Researchers**, including academicians and students of planning and technology colleges, comprise the largest body of users. **Consulting firms** and individual consultants have also used PAS data to prepare assignments such as vision documents, city development plans and city sanitation plans. In 2022, MoHUA endorsed a study by Safe Water Network on the [\*Water Compendium: Making Cities Water Positive\*](#), which utilized PAS indicators to calculate a City Water Index.

**Figure 5 Use of PAS by a range of stakeholders**



**National and state governments use PAS information for policy, programme and compliance:**

SLB-PAS data has been used widely to formulate strategies to achieve universal coverage of water supply tap connections under the AMRUT 2.0 Program. Many state governments regularly submit PAS water and sanitation information to NITI Aayog to compute the annual water management index. Gujarat, Chhattisgarh and Jharkhand have used the SLB-PAS data to monitor the progress of water and sewerage projects in various cities, reporting the Water Index at NITI Aayog and to identify various measures to improve service delivery. The Comptroller and Auditor General (CAG) of Gujarat, Maharashtra, Chhattisgarh, and Jharkhand states have conducted an analysis of the SLB data and have alerted many cities regarding the non-achievement of SLB targets.

It is also important to recognise that PAS Project can link with National and State government missions. The rich time series information of WASH service delivery can enable governments to move towards data-driven governance in urban areas. The government of India’s various flagship programmes, such as SBM, AMRUT and Smart Cities, have used the PAS framework of SLBs. Information from the PAS database for cities in Maharashtra has helped in developing [City Sanitation Action Plans \(CSAPs\)](#) in 412 cities in Maharashtra under SBM 2.0, as well as for preparing City Water Balance Plans (CWBP) under AMRUT 2.0.

**Box 1: Maharashtra’s experience on ODF work instrumental for ODF and ODF+ framework at national level**

GoM initiated the journey of becoming ODF and Swachh (cleanliness) by launching the “Swachh Maharashtra Mission, Urban” (SMMU) on 15th May, 2015, under the aegis of the GoI’s Swachh Bharat Mission. GoM envisaged “ODF Communities” moving towards “ODF+ and ODF++ Communities” by addressing the entire service chain of sanitation rather than focusing only on the number of toilets constructed in the cities. A systematic approach was adopted by keeping the city in view as a unit, and encouraging city managers to move towards improved sanitation by prioritizing access and use of their own toilets and implementing plans for safe management of fecal waste. This experience of Maharashtra was instrumental in developing the ODF and ODF+ framework at the national level.

Urban Maharashtra was declared ODF in October 2017. Cities are now moving towards “ODF++” status by providing safe transportation and treatment of fecal sludge and

septage. PAS data related to the management of sewage and fecal sludge and septage were used to prepare strategies for safe transportation and treatment of sewage and fecal sludge. Based on PAS information, the Government of Maharashtra passed a resolution for co-treatment of fecal sludge and septage at nearby STPs or setting up an independent fecal sludge and septage treatment plant in their city based on a prototype design.

The 15th Finance Commission, in the tradition of its predecessors, the 13th and 14th Finance Commissions, has also focused on Service Level Benchmarks (SLBs). It has made improvements in SLBs as one of the mandatory conditions for availing grants. The information on MoHUA's City Finance Portal also enables linking WASH expenditure with service levels. The SLB performance from the PAS database is also shown on this portal for selected states.

#### **State Finance Commissions:**

The State Finance Commissions in most states lack access to information on their ULBs. Central Finance Commission reports typically lament the lack of information on municipal governments. PAS has been able to provide annual information required by the State Finance Commissions (SFC) for decision making. The SFC in Gujarat used PAS information in its discussions on devolution of funds to ULBs. In the memorandum to the 14<sup>th</sup> and 15<sup>th</sup> Finance Commission submitted by the Government of Maharashtra (GoM),

the support provided by PAS Project to the state on SLBs is recognised. The state governments propose continuation of PAS support for further reporting to our finance commission.

#### **Box-2: Support to Ministry of Housing and Urban Affairs (MoHUA) to develop advisory on Last Mile Connectivity for urban water supply:**

AMRUT 2.0 aims to provide universal coverage of water supply services across all the ULBs. With support from AMRUT 2.0 for water services in the city, it was essential to understand the progress and hindrances the ULBs are facing in providing universal coverage. CWAS, CEPT University undertook a study of [Last Mile Connectivity](#) for access to water supply services in slums in selected cities of Gujarat and Maharashtra at the behest of MoHUA.

The study leveraged PAS monitoring data on household water connections and network coverage, along with equity indicators, to evaluate disparities between slum and non-slum areas. The exercise identified challenges in obtaining an individual water connection and also identified good practices in water supply coverage and connections. Based on the findings and good practice cases, an Advisory on 'Last Mile Connectivity for Water Supply' was developed for MoHUA. This advisory is circulated to all the state governments under AMRUT programme.

#### **State guidelines and manuals:**

The information available under PAS for water and sanitation services, has supported the officials at the state level to make decisions on developing appropriate strategies for basic services in their cities. It enables a comprehensive analysis of challenges and improvements necessary in

urban water and sanitation system. With the insights from PAS information, various standard operating procedures (SoPs) and manuals for faecal sludge management (FSM), water quality surveillance, customer grievance redressal were developed. The [SOP for FSM](#) was included in a [Government Regulation issued by the Government of Gujarat \(GoG\)](#) for making cities open defecation free.

### City level Performance Improvement Plans:

PAS monitoring was utilized to create city-level improvement plans for water and sanitation services. These plans emphasized not only expanding infrastructure but also enhancing service management, operations, and maintenance, contributing to overall service improvement. In Maharashtra, the theme for Open Defecation Free (ODF) cities and 24x7 water supply was integrated in an improvement planning exercise for 15 cities. This has helped draw interest from state government and resulted in periodic review of improvement plans by state officials. **(See Box 3).**

#### Box 3: Evidence-Based Decision-Making in Sanitation: Maharashtra's ODF++ Journey

The CWAS team supported 15 Class A cities in Maharashtra (population 100,000–300,000) to prepare Performance Improvement Plans (PIPs) focusing on 24x7 water supply and achieving Open Defecation Free (ODF) status. These plans detailed funding

needs, institutional responsibilities, and community mobilization strategies, exploring options for individual and community toilets.

Before the Swachh Bharat Mission (SBM), PAS assisted cities like Wai and Sinnar in achieving universal toilet access and proper septage management. It also documented good practices from cities like Mahad and Satara. Insights informed Maharashtra's Swachh Maharashtra Mission Urban (SMMU), launched in 2015 to achieve ODF, ODF+, and ODF++ status. The approach prioritized access to toilets and safe faecal waste management.

Maharashtra achieved ODF status in October 2017, with cities progressing toward ODF++ through improved sewage and faecal sludge management. The key step of doing gap analysis was through use of additional information of PAS database on septage management, co-treatment at STPs, and building over 170 faecal sludge treatment plants during the COVID-19 pandemic. These efforts shaped national sanitation frameworks, demonstrating scalable success in urban sanitation.

#### Box 4: Reducing Non-Revenue Water in Rajkot: A Success Story

Rajkot Municipal Corporation (RMC) in Gujarat, faced severe water shortages, supplying water for only 20–30 minutes daily. One of the key indicators under PAS-SLB is Non-Revenue Water, which is recorded for all ULBs. Based on this regular monitoring, Rajkot City understood the areas that require service improvement measures. RMC approached CWAS team to conduct the Non-Revenue water study. The detailed water audit study by CWAS revealed high losses due to unmonitored water extraction, treatment, and distribution, along with illegal connections and pipeline leaks.

To address this, Rajkot Municipal Corporation (RMC) installed a real-time water loss monitoring system, including ultrasonic sensors and flow meters, at a cost of \$600,000. This system tracks water levels, detects leakages, and sends alerts, enabling swift action and helped in achieving the key results mentioned below:

- Reduced water losses
- Real-time monitoring and improved accountability
- Faster issue resolution through alarms and responsive zonal offices

The initiative showcases how action research and technology can transform urban water management. The case study of preliminary water audit in Rajkot successfully demonstrates the results of action, research and continuous engagement with cities, which distinguishes the PAS project's work.

**Reference:** [Reduction of Non-Revenue Water through Preliminary Water Audit for Indian cities](#)

### Monitoring and decision making:

As monitoring is a key aspect under PAS, various monitoring and decision-support tools have been developed to assist state and local governments in improving the effectiveness of service delivery. These tools include performance improvement tools such as Sani Plan, Target Setting Model, IFSM toolkit, private sector participation (PSP) tools and the Tariff Setting Model. Monitoring tools such as [SaniTab](#), [SaniPlan](#) and [SaniChatbot](#) are also developed. PAS information and tools have been extensively used by many stakeholders. Box 4 shows how these tools have facilitated the

preparation of improvement/investment plans at state and city levels. These have also been widely disseminated in several national and international workshops.

### Box 5: PAS monitoring tools and performance improvement plans

**SaniPlan** was developed to link performance improved options with financing options. It identifies water and sanitation improvement actions, simulates their impact on service levels, reviews financing options and assesses their impact on local finances. For example, many cities aspire for a sewerage system, but looking at the state of their municipal finances, they cannot afford regular operation and maintenance expenditures, even if they receive grants for capital expenditure. Hence, cities need to think of low-cost options, like faecal sludge and septage management (FSSM), that provide similar service-level outcomes. The SaniPlan tool (SaniPlan-FSM) is customised to prepare an integrated faecal sludge management plan (IFSM).

To demonstrate the use of performance indicators for improvement, PAS provided technical assistance to over 35 cities for improvement plans. Rather than infrastructure creation plans, the PAS plans focused on improvement of service levels in areas such as water-loss measurements and reduction, open defecation free cities, septage management, consumer grievance redressal, cost recovery and information system improvements. Plans provided both short-term (lowcost) and medium-term (capital-intensive) options. The plans were prepared on the basis of city-level assessment through analysis of PAS information and local consultations. The PAS project has been flexible and explored several themes for performance improvements that are linked to state government goals and targets.

## 3.2 New innovative frameworks using the PAS city information

In addition to supporting national, state, and city governments, CWAS has facilitated various uses of the PAS database. **Over the past five years, the database has enabled exploration of new and innovative research areas.** CWAS developed several frameworks to assess water, sanitation, and climatic conditions in cities.

PAS framework and online system marks an initial stride towards empowering cities through data. PAS Project has effectively harnessed the potential of this portal and data system for regular information collection and analysis. It has also supported the development of a number of frameworks and tools for data-driven governance and decision-making. By effectively leveraging the potential of the PAS framework and data, we have expanded the scope of city assessments in other vital areas such as:

- a) preparation of investment plans and projects under national programs such as SBM 2.0 and AMRUT,
- b) developing estimates of [SDG 6.2.1 on safely managed sanitation](#),
- c) assessing [City-wide Inclusive Sanitation \(CWIS\) performance across cities](#),
- d) assessing [municipal creditworthiness](#),
- e) assessing [Environmental, Social, and Governance \(ESG\)](#) performance of cities and
- f) assessing local governance for water and sanitation activities

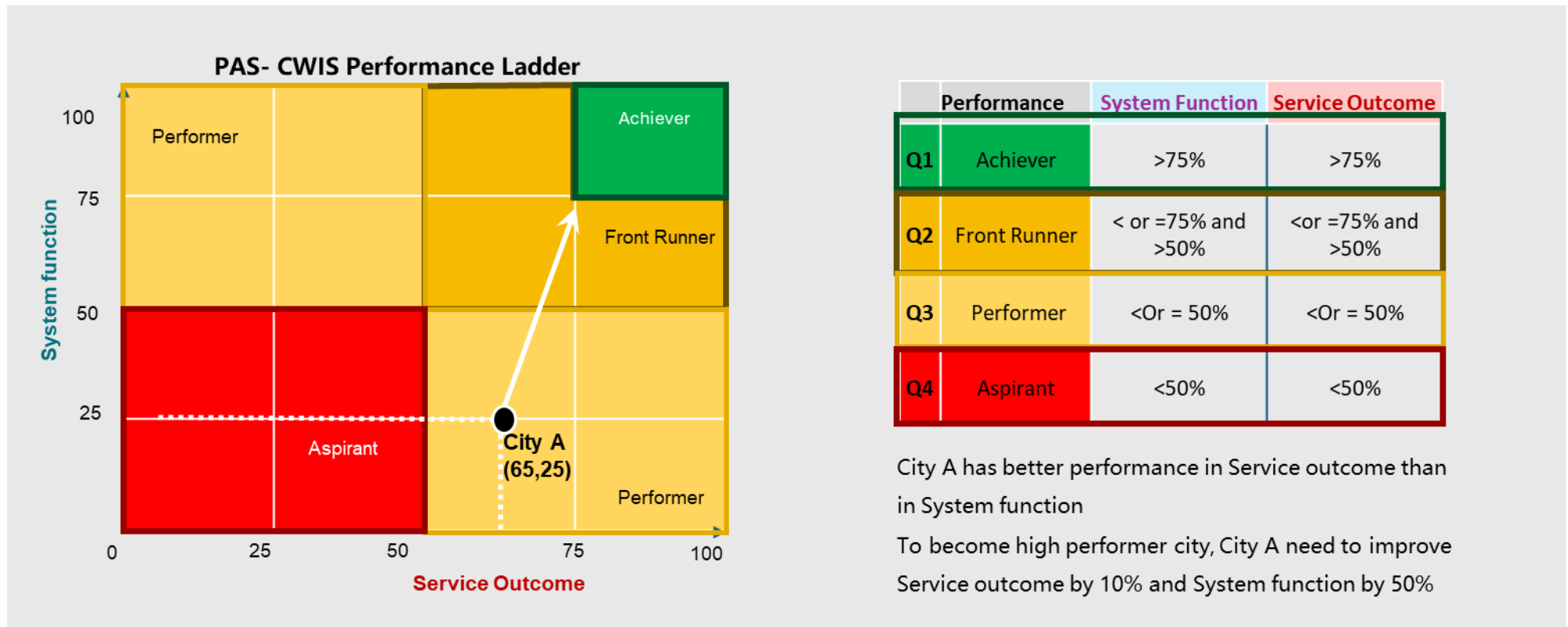
Environmental indicators in the ESG framework provide a good base on which to explore appropriate indicators for measuring city-level climate resilience. A roundtable meeting on ‘Creditworthiness Assessment – An Approach for Indian Cities’ was also held at MoHUA, under the chairpersonship of Additional Secretary, (MoHUA). The meeting discussed a [framework for creditworthiness assessment](#) using PAS information.



**PAS- CWIS (Citywide Inclusive Sanitation) framework:** CWIS has emerged as an approach to planning and implementing urban sanitation systems. Based on the convergence of PAS components with CWIS principles, the PAS CWIS framework was prepared to assess the PAS-CWIS index and [PAS-CWIS performance ladder](#). It can be used to assess system outcomes and

service functions identified in the CWIS framework. It was used to compute scores for more than 700 cities of Gujarat, Maharashtra, and Chhattisgarh. The idea of a CWIS ladder can help facilitate city governments and other stakeholders to take informed decisions for improving citywide inclusive and safe sanitation.

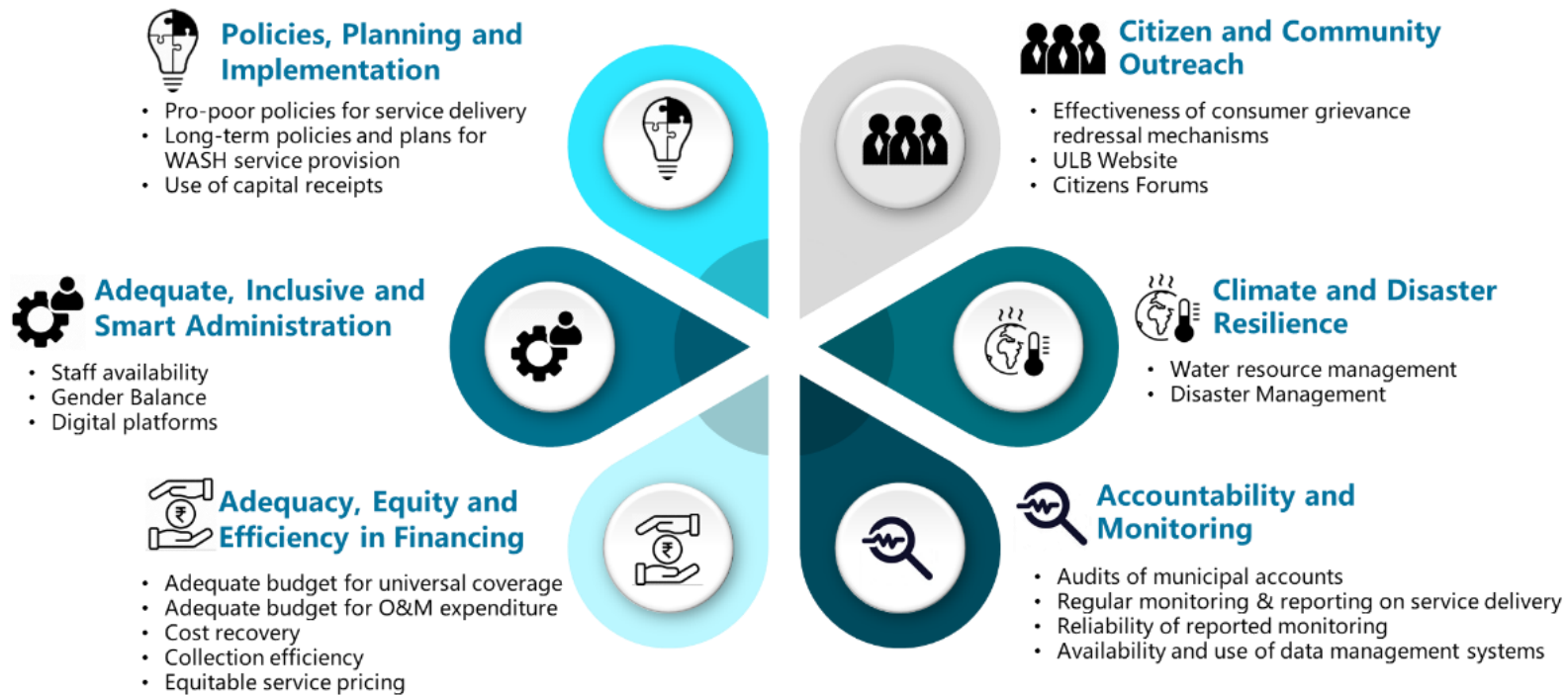
Figure 6 PAS-CWIS Framework



A **WASH governance framework** was developed as a part of the collaboration of CWAS with the Stockholm International Water Institute (SIWI) ([link1](#) | [link2](#)). The WASH Governance Framework covers six themes: i) policies and planning, ii) adequate, inclusive and smart administration, iii) adequacy, efficiency and equity in financing, iv) citizen and community outreach, v) climate and disaster resilience, and vi) accountability and

monitoring. It assesses city level performance on both governance and service outcomes. Its use will enable city governments to improve governance for both last mile connectivity especially for the most vulnerable groups, as well as improve efficiency and effectiveness of services. It will inform sector stakeholders to make better decisions, for contributing to SDG 6 of water and sanitation for all.

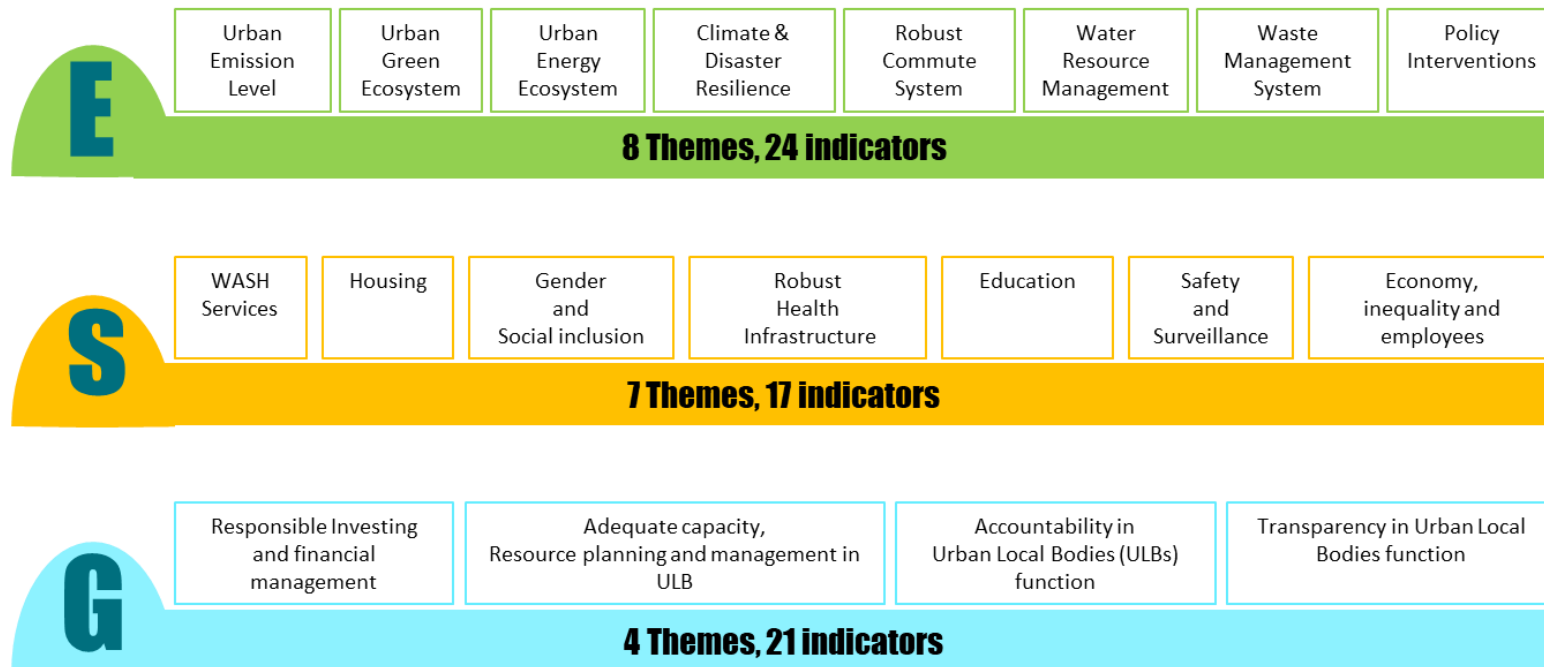
Figure 7 WASH Governance Framework



**Environment, Social and Governance (ESG) – Development and application of ESG Framework for cities:** The ESG assessment framework was specifically designed for Indian cities in partnership with the PwC India. Initial testing of the framework was done for 20 cities using PAS data as well as other publicly available datasets, showcasing its practical application and potential benefits. [“A roundtable meeting on “Making Cities ESG Ready”](#) was organized in New Delhi that enabled discussions

with key industry stakeholders under the chairpersonship of Additional Secretary (MoHUA), Government of India. A report on [“ESG assessments for cities in India”](#) was launched along with the [media outlets](#). Further work envisages supporting cities in becoming ESG-ready and attracting investments. CWAS is now exploring deep dive assessments for a selected city. Exploratory discussions were held with officials of Pimpri Chinchwad Municipal Corporation (PCMC) and their newly launched sustainability cell.

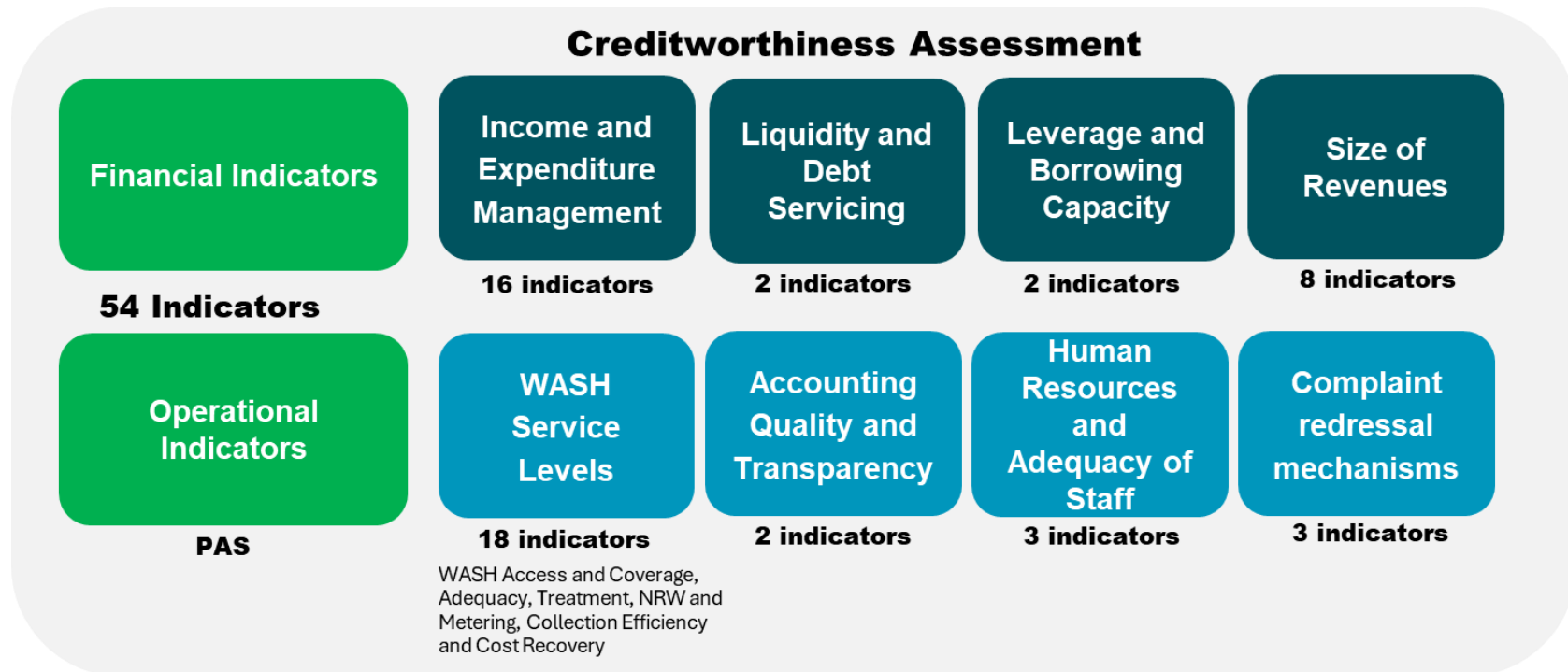
**Figure 8 ESG Framework for cities**



**Development and application of municipal credit worthiness assessment:** Urban infrastructure requires large capital investments. Assessing creditworthiness of a city is the first step towards accessing capital markets. In this context, “[A PAS creditworthiness assessment framework for Indian cities](#)” was developed. It provides an approach and methodology that can be used by cities in decision-making as a precursor to actual credit

rating and market borrowing. It also provides guidance to cities for measures needed to improve their creditworthiness for future borrowing. This framework was discussed in a meeting with the Additional Secretary (AMRUT), MoHUA, GoI for the potential application of the framework for Indian cities. For this, a roundtable meeting with relevant stakeholders like city officials, rating agencies, banks and investors was held.

Figure 9 Creditworthiness assessment framework



Further, the PAS project resulted in specialised learning and capacity building of several independent researchers and consultants who were associated with it. It has successfully nurtured a large number of young professionals and scholars, fostered successful industry-academic

partnerships, and built national, state and global networks of institutions working on similar issues. The project's learnings were disseminated to a large community of young planners and professionals and did not remain confined to academia

### 3.3 Data Systems Strengthening

Data system strengthening aims to enhance the reliability, consistency, and utility of data, ensuring better decision-making and service delivery outcomes. For cities building reliable and systematic data practices is a critical step toward improved service delivery. It reflects the capacity of a city government to handle data systematically and leverage it for informed decision-making and improved outcomes.

CWAS also emphasises strengthening data systems that mainly focus on two key pillars: **data recording ("capture")** and **data quality enhancement ("improve")**, which are crucial for sustainable improvements in service delivery. As part of these efforts, CWAS, CEPT University works to improve data reliability of the data under the data system strengthening initiative.

Over the years, various studies have been conducted and data system improvement plans have been demonstrated in pilot cities of Gujarat and

Maharashtra. CWAS has made efforts at data systems strengthening not just in relation to PAS-SLB but also to enhance overall municipal strengthening. Various efforts are taken for improving data recording process and enhancing data quality.

**Standardization of Supporting Documents:** The PAS portal, a comprehensive WASH data repository, includes 32 KPIs, 100 LAIs, and over 100 inbuilt checks for validation. Initially, CWAS manually collected supporting documents from cities to validate the submitted data. With a lack of training or awareness regarding documentation and record-keeping mechanisms, many cities struggled to provide adequate documentation, except for financial records like Demand Collection Balance (DCB) tables and budget documents.



As part of data system strengthening, cities have been trained to record data in standardized formats developed by CWAS based on earlier MoUD guidelines. In addition, to enable the cities to submit the supporting documents, CWAS developed a new portal in 2023 that allows ULBs to upload supporting documents directly, ensuring ease in validation of the data submitted to the PAS portal. State officials, particularly in Gujarat and Maharashtra, have mandated cities to use the portal for document uploads, fostering greater accountability among ULBs.

**Linkages of PAS with government data portal:** CWAS has also explored links between the PAS portal KPIs with government portals that record similar information on WASH, such as the City Finance Portal, AMRUT 2.0, Nagarotthan portal in Maharashtra and e-Nagar portal in Gujarat. This effort aims to establish reliable and credible information for broader user adoption.

**Sector consultation workshops with the state government on data system strengthening:** Discussions with the Directorate of Municipal Administration (DMA)-Maharashtra have encouraged the state to prioritize data reliability. A supporting document upload tab has been introduced with their requirement, which will aid in verifying the data submitted by the city officials.

Further, from the status of the water and sanitation service deliveries, CWAS is discussing with the state governments of Gujarat and Maharashtra to conduct capacity building workshops on sectors or areas that need improvement, such as a workshop to measure and reduce NRW. For municipal strengthening, CWAS is strengthening the past efforts on Information Systems Improvement where formats were developed for streamlining regular information collection in cities. One of the exercises under this is the digitisation of property tax reassessment surveys which is being piloted in Gujarat.

**Exploring a Citizen Feedback System on service level:** CWAS initiated a pilot program introducing Interactive Voice Response (IVR) services to ascertain the services received by citizens. It was done for selected urban poor communities in two cities -Satara and Sinnar in Maharashtra. Residents of slums were reached through IVR to enable them to report on municipal service delivery related to water and waste management. The response received through this process is viewed by municipal officers through a dashboard. This helped to enhance service delivery in these areas. Further work is planned to explore its use in other areas, and on an ongoing basis.

**Data system strengthening efforts for Global South:** Efforts have also been made to support data systems strengthening in the Global South. CWAS in partnership with IWA convened a session on “[Data Systems Strengthening for Inclusive Sanitation Services](#)” at the IWA Development Congress 2023

and plans to convene many such webinars/workshops globally. These integrated approaches are expected to enhance data reliability and improve the accuracy of SLB reporting.







**p a s** performance assessment system



## 4 Way Forward

The key distinguishing features of the PAS Project can be summed up as: its conceptualisation at scale; philosophy of long-term involvement; emphasis on implementation rather than only planning; ability to adapt to changing policy contexts and the varying needs of different levels of government, enabling it to stay relevant; ability to plough back its field research findings into the design of meaningful and implementable policy rooted to context; and ability to foster innovation and embrace continuous change.

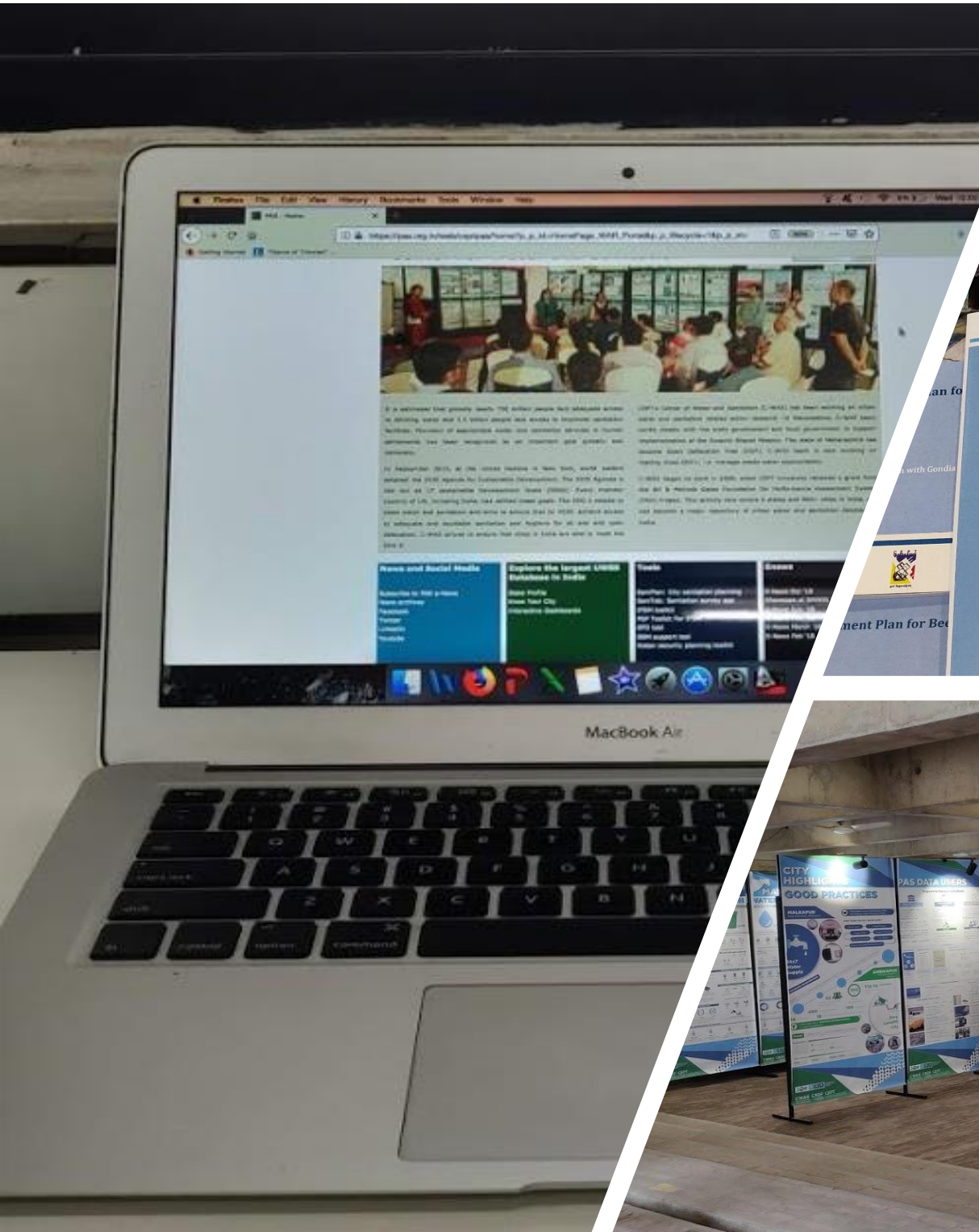
The project's continuous evolution, its exploration and questioning of prevailing methodologies and paradigms in UWSS, and benchmarking in particular, and its rootedness/relevance to the context have enabled it to find solutions and have lasting, transformational impact at the state level and influence policy at national and state levels.

A key lesson learnt from this project is that scale is very important to demonstrate the importance of performance assessment systems and their impact. The PAS Project operated at the state level and covered all the cities in the state. Working with all levels of government (national, state and local), ownership and regular reviews are essential to influence policies and implementation. Patience and adequate time (five to seven

years) are required to mainstream government systems. Government ownership and regular reviews are essential for successful implementation. Linking performance measurement to service improvement is necessary to sustain the interest of local governments. The benchmarking exercise needs to be linked to performance-based funding. Potential hurdles due to changes in governments and transfer of officials can be avoided or overcome by ensuring that robust systems and processes are in place, and objectives and methodologies are internalised by users.

The PAS Project has built a comprehensive system for assessing and improving water and sanitation services, focusing on practical, scalable solutions. Its tools and frameworks are designed for developing countries and address issues of equity and on-site sanitation beyond the usual water benchmarking efforts. It has been implemented across nearly 1,000 Indian cities. The idea of SLB-PAS has become national – Gujarat and Maharashtra, and more recently, Chhattisgarh, Telangana and Jharkhand are the states that have consistently reported on SLBs and Assam. Recently Sikkim have initiated the process by adopting SLB-PAS. The successful roll-out of SLB-PAS to states other than Gujarat and Maharashtra stands testimony to its replicability. Further efforts are required to spread







information on the uses and benefits of the PAS to state and local governments in India to institutionalise the PAS at each level of government. Its relevance to other national governments of Low and Middle-Income Countries needs to be explored and supported. The project aims to move ahead in three key areas:

- a) **Outreach and scale:** CWAS will expand its PAS model to other Indian states as well as other countries in South Asia, Southeast Asia, and Sub-Saharan Africa. This will be done by adapting to local needs. Mainstreaming PAS into Urban Local Bodies (ULBs) through e-governance and progressive benchmarks will enable phased improvements, particularly for smaller cities. Efforts to increase PAS visibility also include redesigning its website, publishing an annual journal, and showcasing success stories. This aims to position CWAS as a leader in urban water and sanitation.
- b) **Linking with stakeholders:** CWAS foresees continuing its support to all levels of government with continued efforts focusing on promoting data-driven decision-making and fostering a culture of continuous

performance improvement at all levels. Academic courses and training programs will be expanded to partner institutions and online platforms, ensuring widespread knowledge sharing. With a citizen-centric approach, PAS also aims to include citizen feedback to better understand intra-city variations and improve service delivery for disadvantaged areas.

- c) **Use of new technologies:** PAS will explore emerging technologies, including Artificial Intelligence (AI), to enhance data utilization and decision-making processes. These technologies offer significant potential in areas such as trend analysis, identifying service gaps, and more. By leveraging AI-driven insights, PAS may strengthen its analytical capabilities and support decision-making processes.

By addressing these priorities, PAS aims to strengthen and ensure its legacy while adapting to evolving urban water and sanitation challenges and priorities.

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## **CENTER FOR WATER AND SANITATION**

The Center for Water and Sanitation (CWAS) is a part of CEPT Research and Development Foundation (CRDF) at the CEPT University in Ahmedabad, India. CWAS undertakes action-research, implementation support, capacity building and advocacy in the field of urban water and sanitation. Acting as a thought catalyst and facilitator, CWAS works closely with all levels of governments - national, state and local to support them for delivery of water and sanitation services in an efficient, effective and equitable manner.

## **PAS PROJECT**

The Performance Assessment System is a programme initiated by the CEPT University, Ahmedabad, with funding from the Gates Foundation. Since 2009, PAS has supported development of tools, methods and processes for performance assessment and improvement in delivery of urban water and sanitation services. The PAS online performance assessment system has been implemented in multiple states of India, covering more than 800 cities.

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AND SANITATION

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