

Presentation from the

# Workshop on Innovations for Scaling up to Citywide Sanitation

October 16-17, 2012, Ahmedabad

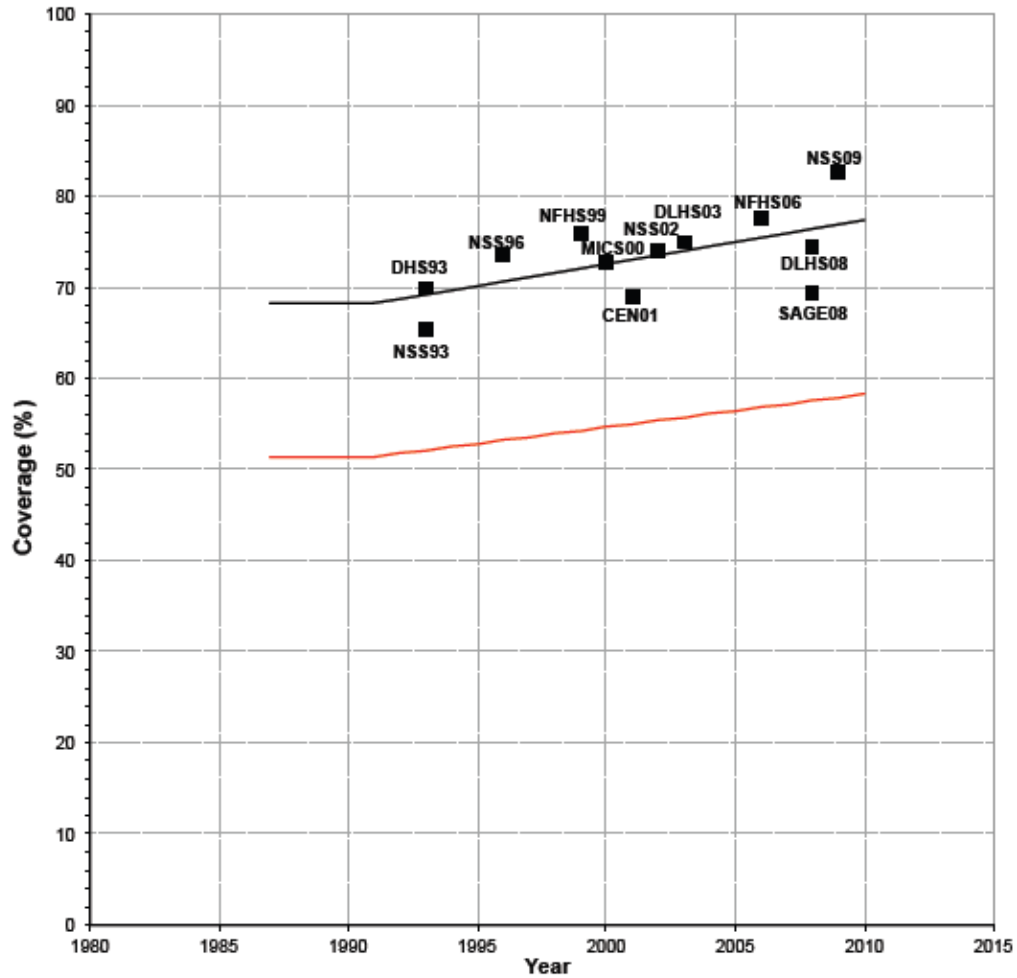


Organised by PAS Project, CEPT University

*Sanitation  
Situation in  
India :  
Need for  
innovative  
solution*



# India - urban - JMP - estimated proportion of the population using improved sanitation facilities



**Legend**

**JMP-estimated survey findings**  
 ■ Improved + shared

**JMP-estimated coverage**  
 — Improved + shared  
 — Improved

Estimated coverage 2012 update				
Year	Improved	Shared	Other unimproved	Open defecation
1990	51%	17%	4%	28%
1995	53%	17%	5%	25%
2000	55%	18%	5%	22%
2005	56%	19%	7%	18%
2010	58%	19%	9%	14%



# Key facts from CENSUS 2011

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**18.6%** URBAN HHs HAVE REPORTED **NO** TOILETS

**32.7%** OF URBAN HHs HAVE ACCESS TO **PIPED SEWER**  
SYSTEM

**38.2%** HHs HAVE **SEPTIC TANKS**

**6%** OF HHs DEPEND ON **PUBLIC TOILETS**

**12.6%** OF HHs RESORT TO **OD**

# PAS

Performance Assessment System

Annual Service delivery

profile for **419**

Cities in **2** States

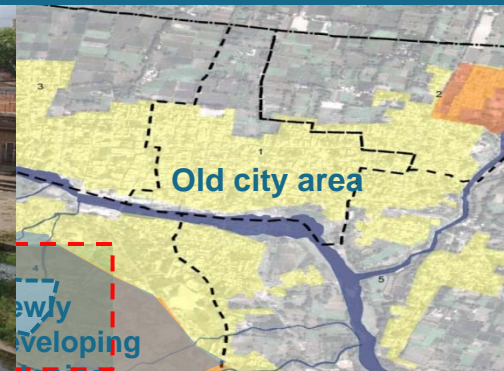
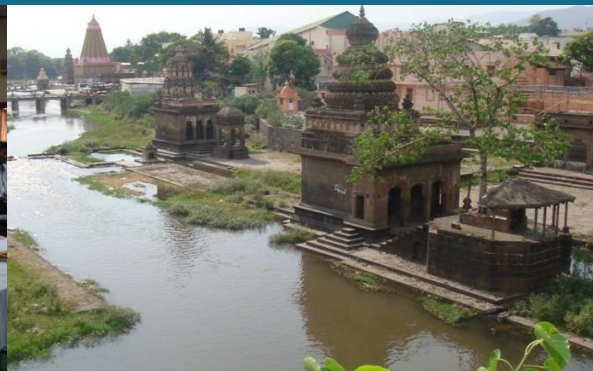
covering **32**

Key indicators and

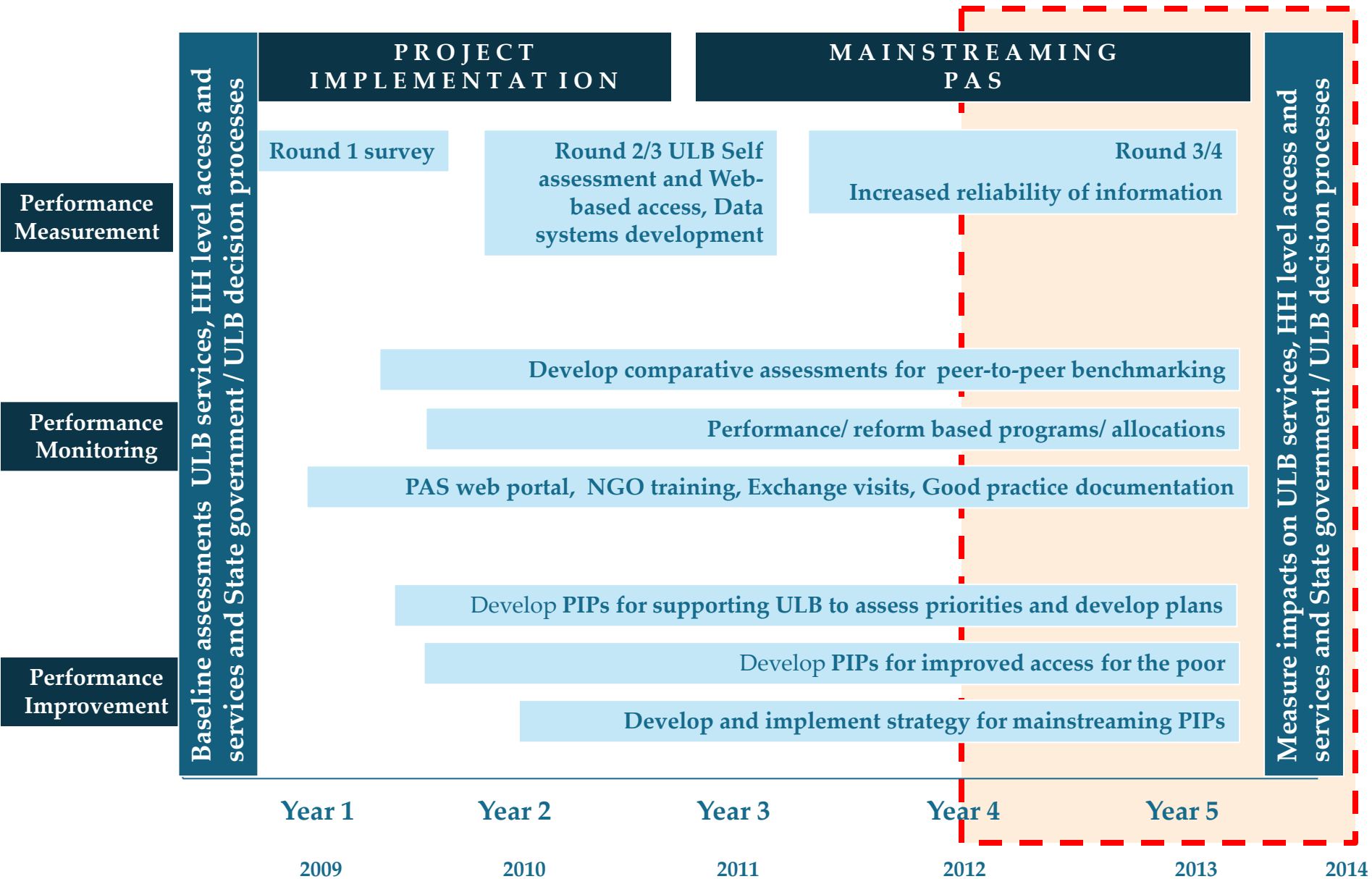
**88** local action indicators

Sectors : Water supply, Waste Water, Solid waste Management & Storm Water

Focus on **Measurement, Monitoring & Improvement**



# Five year Plan for PAS



# **32.7%** OF URBAN HHs HAVE ACCESS TO **PIPED SEWER** SYSTEM



**WHERE DO THESE PIPED SEWERS END?**

# SEPTIC TANKS are most common means of excreta disposal



Survey results confuse between septic tanks and soak pits

**Are Septic Tanks Built as per Codes / Specifications ?**

**How often are they cleaned ?**

**Where does the effluent flow ?**

**What happens to the SLUDGE?**



**12.6%** OF URBAN FAMILIES RESORT TO **OPEN  
DEFECATION**

**IS IT A BEHAVIORAL ISSUE?**

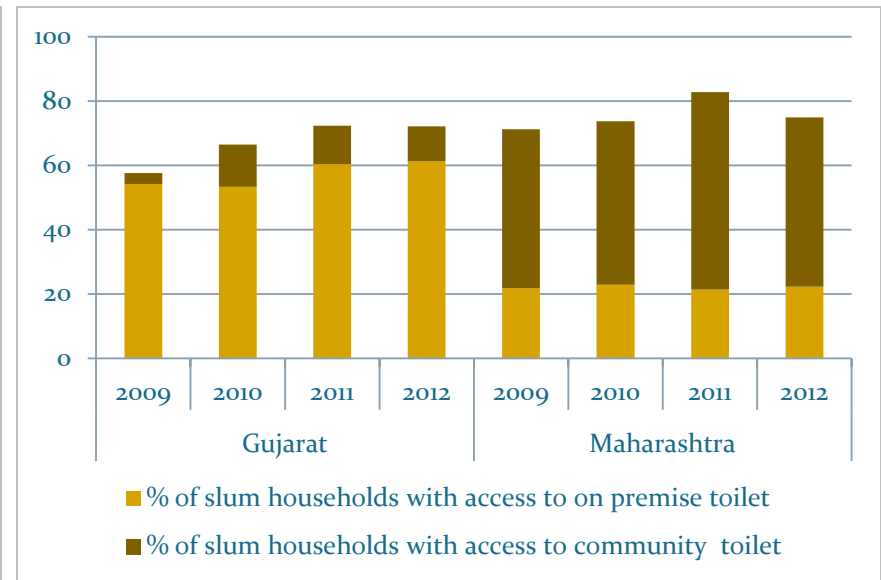
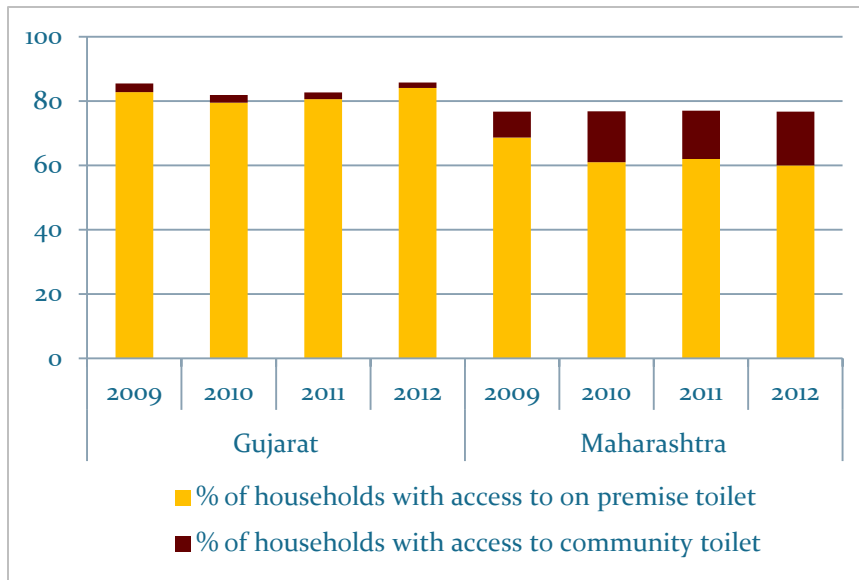
**IS TECHNOLOGY THE ANSWER?**

**LEADERSHIP ?**

**DOES COMMUNITY HAVE A ROLE ?**

**ARE THERE ENOUGH GOOD PRACTICES OF OD FREE CITIES IN  
INDIA ?**

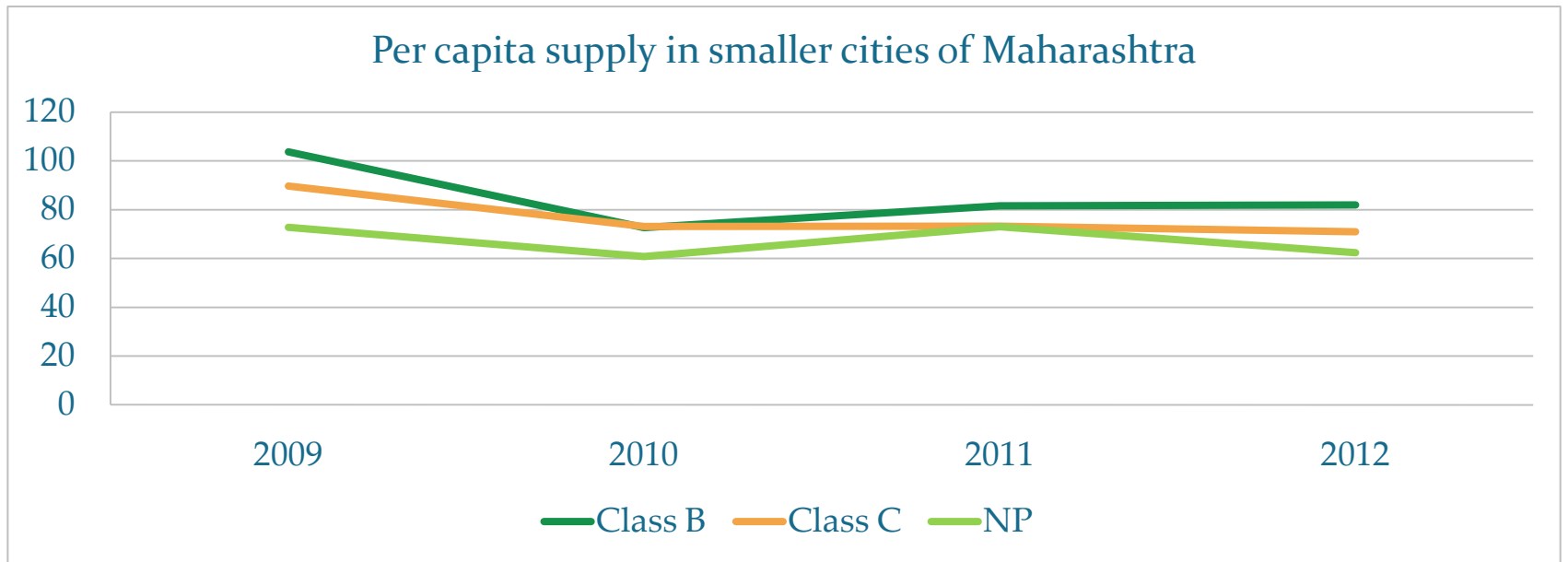
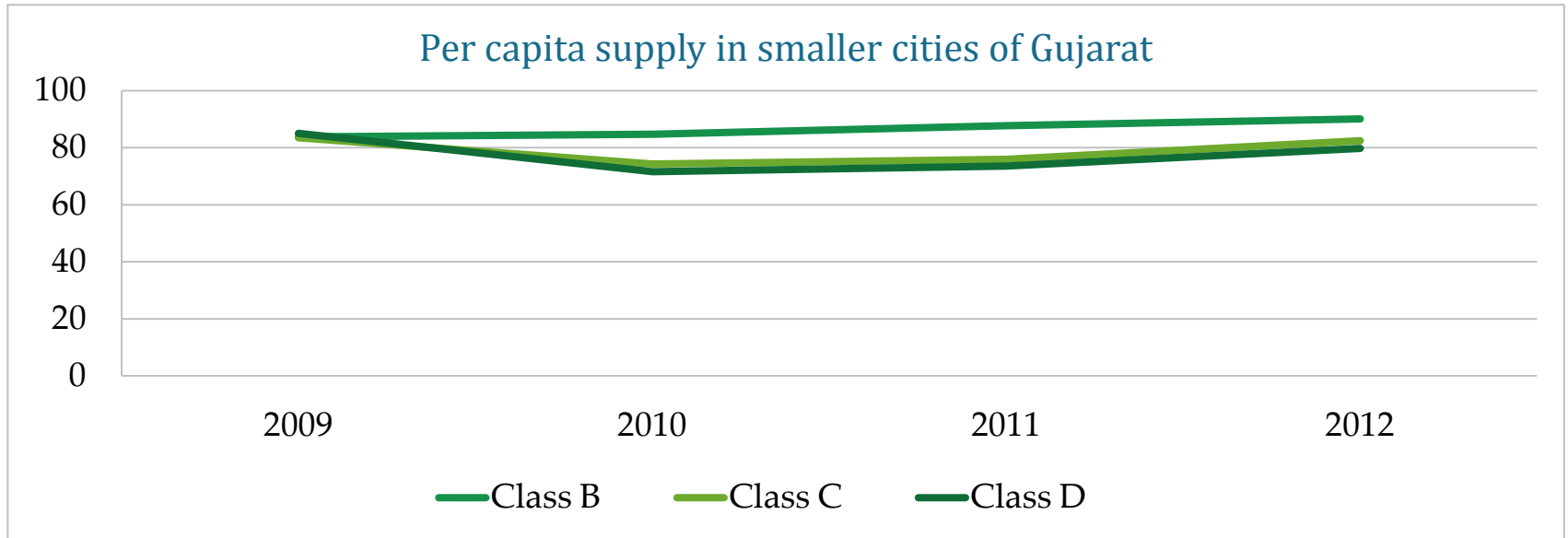
# Access to toilets in Gujarat and Maharashtra-PAS



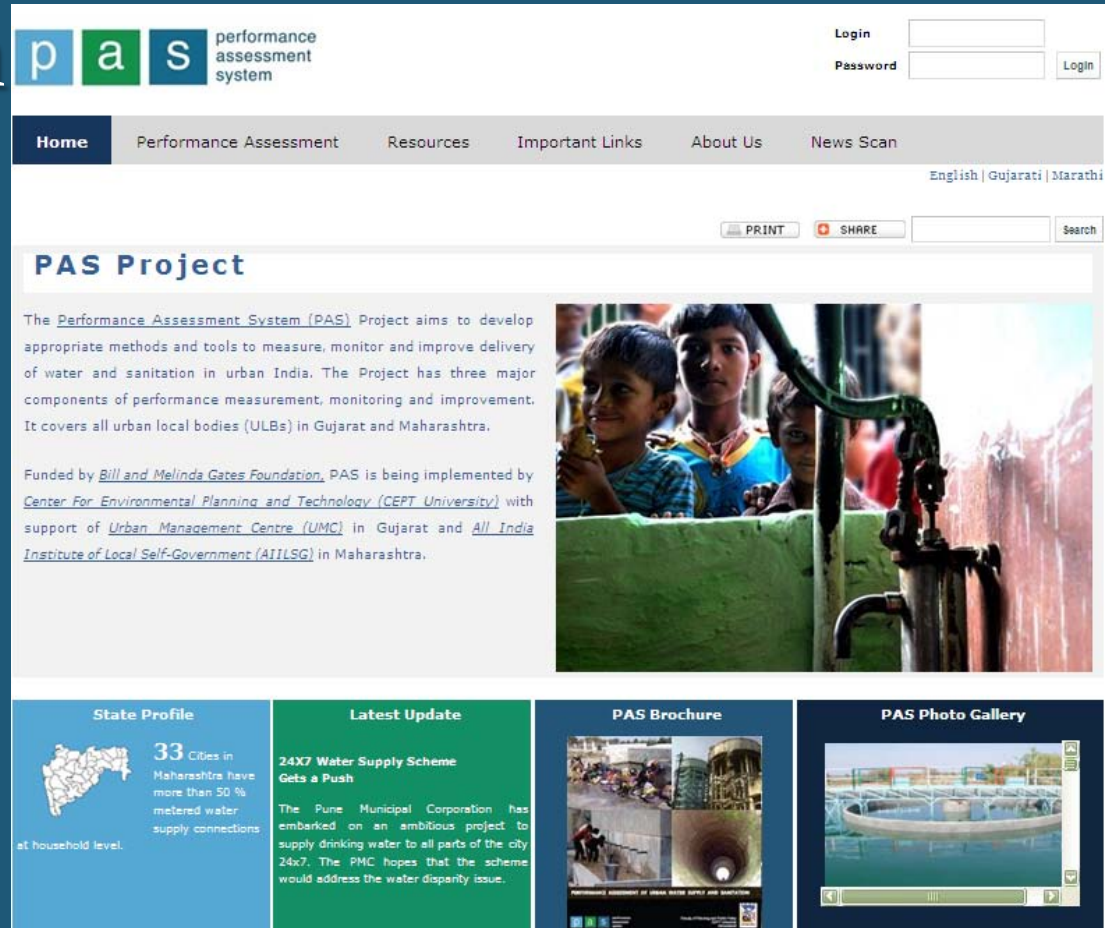
Source: PAS Database

- Concentrated efforts for provision of toilets
- Gradual increase in sanitation in slum settlements in both states
- However, increased dependency of community toilets in Maharashtra, especially in slum settlements

# Insufficient water supply for sewerage projects



# www.pas.org.in



The screenshot shows the homepage of the Performance Assessment System (PAS) website. At the top left is the PAS logo (p, a, s) and the text "performance assessment system". To the right are "Login" and "Password" fields with a "Login" button. Below this is a navigation menu with "Home", "Performance Assessment", "Resources", "Important Links", "About Us", and "News Scan". On the right side of the menu, there are links for "English | Gujarati | Marathi". Below the menu are "PRINT" and "SHARE" buttons, and a search bar. The main content area features a "PAS Project" section with a text description and a photo of children. Below this are four columns: "State Profile" (33 cities in Maharashtra), "Latest Update" (24x7 Water Supply Scheme), "PAS Brochure", and "PAS Photo Gallery".

performance assessment system

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## PAS Project

The Performance Assessment System (PAS) Project aims to develop appropriate methods and tools to measure, monitor and improve delivery of water and sanitation in urban India. The Project has three major components of performance measurement, monitoring and improvement. It covers all urban local bodies (ULBs) in Gujarat and Maharashtra.

Funded by Bill and Melinda Gates Foundation, PAS is being implemented by Center For Environmental Planning and Technology (CEPT University) with support of Urban Management Centre (UMC) in Gujarat and All India Institute of Local Self-Government (AIILSG) in Maharashtra.



State Profile


33 Cities in Maharashtra have more than 50 % metered water supply connections at household level.

Latest Update


24x7 Water Supply Scheme Gets a Push

The Pune Municipal Corporation has embarked on an ambitious project to supply drinking water to all parts of the city 24x7. The PMC hopes that the scheme would address the water disparity issue.

PAS Brochure



PAS Photo Gallery



# WEB BASED MEASUREMENT AND MONITORING



# PAS information

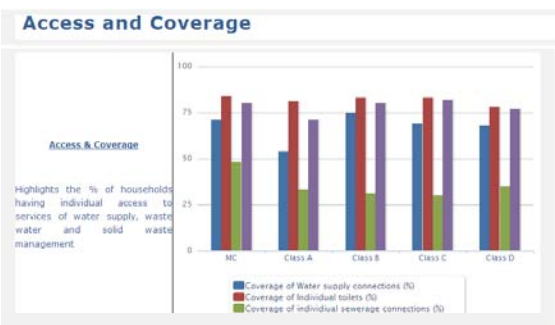
- One of the largest data base for urban water and sanitation – 419 cities, 4 years, over 100 indicators
- Web based measurement and monitoring through PAS portal, [www.pas.org.in](http://www.pas.org.in)
- One click access to WSS performance for all ULBs across Gujarat
- Data is captured online at source, i.e. at ULB level
- Graphical and tabular analysis at both state and local levels
- On hand information available through customized reports in Excel and PDF: informed decision making

# Online Monitoring



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 Password

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[Framework](#)   [Toolkit](#)   [State Profile](#)   [Know Your City](#)



### Background of Achalpur

Select State:  Select Year:  Select Indicator Group:  Submit

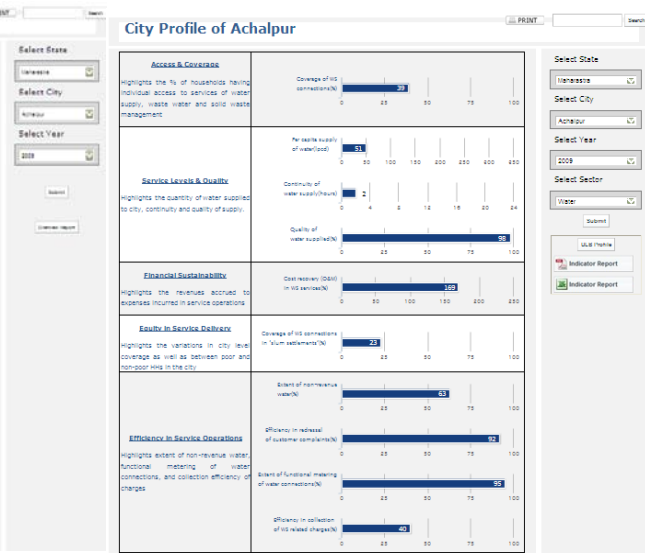
GENERAL INFORMATION			
Class	Class A	No. of sub-allocations	33
Block	24-730	Block population	36,333
Area (Sq. Km.)	14.3	Block households	11,837
Total population	127,514	Total annual city capital receipts	31,142,790
Total households	26,176	Total annual city capital expenditure	31,79,126
Density (persons per sq km)	7,449	Total annual city revenue receipts	22,74,342
Total municipal staff	108	Total annual city revenue expenditure	24,82,179

WATER SUPPLY	
Total water produced (MLD)	2.4
Water connections in place (No.)	1,168
Water connections in plans (No.)	1,711
Area covered by network (Sq km)	7.2
Area covered by network (No.)	203
Annual revenue receipts from water	1,82,179
Annual revenue expenditure on water	18,33,897
Annual capital expenditure on water	1,163,821

WASTE WATER	
Area covered by waste water network (Sq km)	0.0
Waste connections in place (No.)	0
Waste connections in plans (No.)	0
Total sewerage connections (No.)	0
Area covered by sewerage network (Sq km)	0.0
Annual revenue receipts from sewerage	0
Annual revenue expenditure on sewerage	0
Annual capital expenditure on sewerage	0



## State profile of all SLBs

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[Water](#)   [Sanitation & Waste Water Management](#)   [Solid Waste Management](#)   [Cross-Cutting Theme](#)

### Resources > Good Practices

The urban health 'Good Practices' related to the urban water and sanitation services. The good practices are categorized into four main areas namely: Water, Sanitation, Solid Waste Management and Cross-cutting Theme. Various 'Best-practice' urban officials actions, which help to improve performance factors under which creditable work is being done and captured as good practices in the urban water and sanitation sector.

Documentation of good practices plays a critical role in the FIS Project, especially for the Performance Improvement component. The good practices featured here are based on the attempts of various urban cities to improve services through appropriate systems. These would be helpful for other urban cities in developing their own Performance Improvement Plans (PIP), and in developing local actions.

Diverse aspects of good practices encompass improved coverage, efficiency and equity in service delivery, financial sustainability, representation of citizens and adoption of innovative approaches. The examples of good practices include the work developed under PAS Project by CSRI University and its partners along with numerous other good practices implemented by various urban organizations.

Themes for Good Practices for Performance Measurement

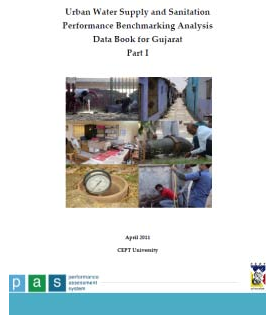
Sr.No.	Major Themes	Sub-Themes	Descriptions
1	Water	<ul style="list-style-type: none"> <li>Additional and improved connections for slum and non-slum households</li> <li>Regulating unauthorised connections (including fixed, freestanding, stolen etc)</li> <li>Energy Cost Reduction</li> <li>24*7 water supply, restoring regular flow and non-harmful water (leak) reduction</li> </ul>	<ul style="list-style-type: none"> <li>The regular ascension or provision of additional connections in class with a particular focus on slum households. It covers all level external infrastructure along with processes and policies for improved water services including additional connections and regulated processes for new connections.</li> <li>The diverse efforts towards detection and regularization of illegal connections to reduce non-revenue water. Assets attached are also covered.</li> <li>It has intention of cost reduction including energy audit, replacement/replacement of pumping machinery, usage of off peak hour, and using on-gravity based water feeding to treatment plants and reservoirs.</li> <li>This feature provision of 24*7 water supply through system enhancement, installing of bulk water production, distribution points and consumer connections and health based on contamination. Additionally, it covers establishment of ground monitoring system (GMS), efficient energy, in-house monitoring, water audit to enhance water balance and reduce WFL.</li> </ul>
2	Sanitation	Additional and improved toilets, waste water connections for slum and non-slum households, open defecation free (ODF) initiatives.	The segment has good practices for provision of toilets, especially in slum households including examples of community involvement and efforts towards open defecation free status. Other components covered are safe disposal practices, providing additional incentives/contract and acquiring cash grants to covered water, drain, provision and policies for improved sanitation services, and modified processes for new sewerage connections and toilets.

## Overview of all cities

## City profile of all SLBs

## Documentation of good practices

# Stages in Performance Measurement and Monitoring



Performance measurement reports



Online data entry

Indicator	Target	Actual
1.1 Coverage of water supply connections (%)	75	75
1.2 Coverage of individual toilets (%)	75	75
1.3 Coverage of individual sewerage connections (%)	75	75
1.4 Household level coverage of SAM services (%)	75	75
1.5 Coverage of water supply connections (%)	75	75
1.6 Coverage of individual toilets (%)	75	75
1.7 Coverage of individual sewerage connections (%)	75	75
1.8 Household level coverage of SAM services (%)	75	75
1.9 Coverage of water supply connections (%)	75	75
1.10 Coverage of individual toilets (%)	75	75
1.11 Coverage of individual sewerage connections (%)	75	75
1.12 Household level coverage of SAM services (%)	75	75
1.13 Coverage of water supply connections (%)	75	75
1.14 Coverage of individual toilets (%)	75	75
1.15 Coverage of individual sewerage connections (%)	75	75
1.16 Household level coverage of SAM services (%)	75	75
1.17 Coverage of water supply connections (%)	75	75
1.18 Coverage of individual toilets (%)	75	75
1.19 Coverage of individual sewerage connections (%)	75	75
1.20 Household level coverage of SAM services (%)	75	75

Access controlled (password for each user)

Validation based on comparative analysis



Updating data

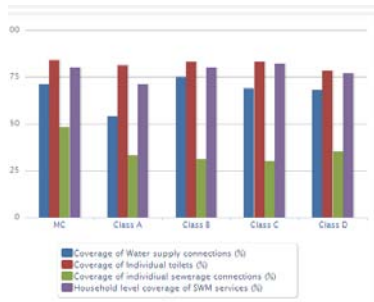
Ambernath: Compare your city



Final approval of data



Review by city and state



City and state profiles



# STATE Dashboard showing performance indicators of Sanitation in Gujarat

**Gujarat**

Class: MC

All

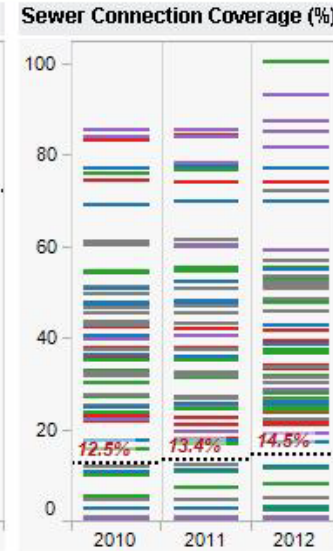
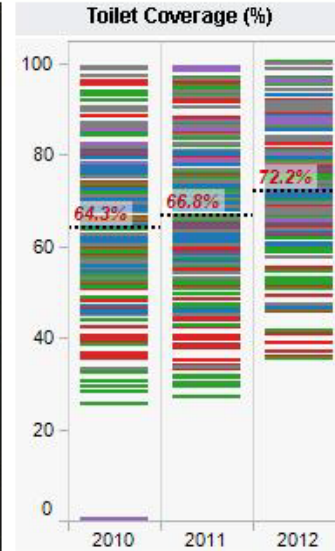
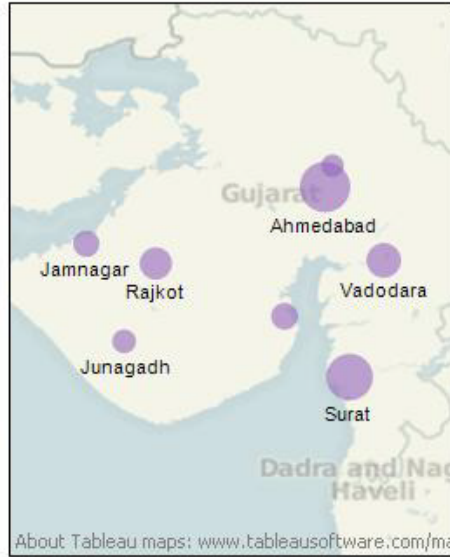
**Waste Water**

KPI: **Toilet Coverage**

The indicator captures the number of households with access to individual toilets. It is an important indicator that assesses the level of sanitation services in the city

KPI: **Sewer Coverage**

This indicator captures the extent of coverage in terms of individual sewerage connections for each household. This indicator is significant in estimating the level of sanitation services in the city.

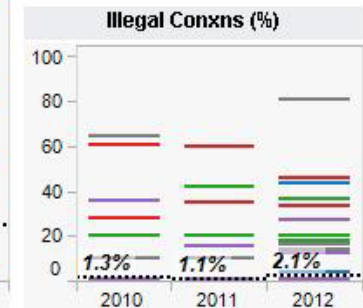
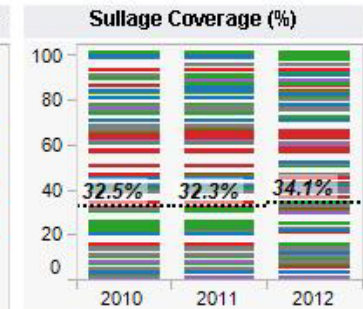
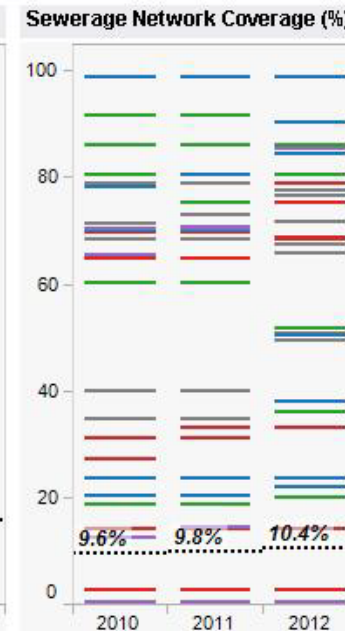
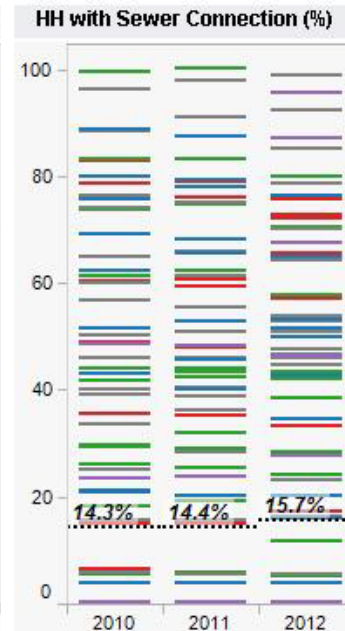
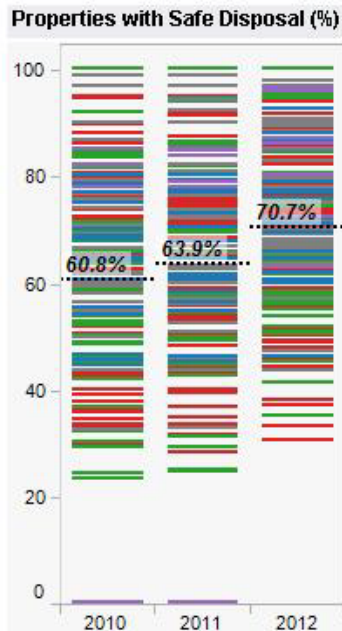
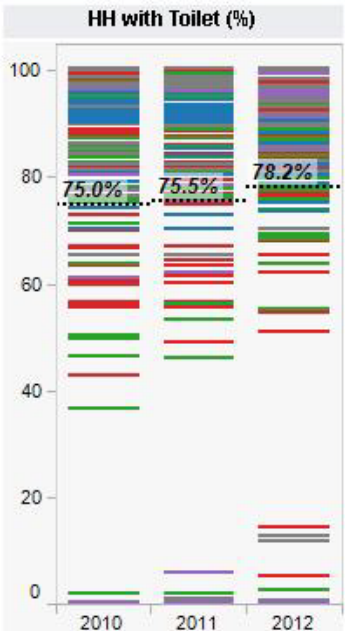


Select ULB

- Ahmedabad
- Bhavnagar
- Gandhinagar
- Jamnagar
- Junagadh
- Rajkot
- Surat
- Vadodara

## Local Action indicators (LAI)

Local Action Indicators described below give insights into the aspects impacting Coverage. Each circle/line represents the LAI values for the cities in the selected Class.



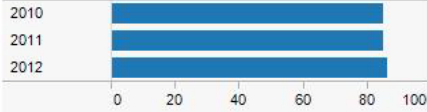


# CITY Dashboard showing performance indicators of Sanitation in Gujarat

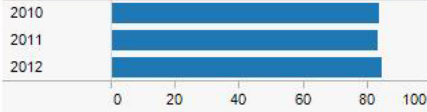
## Access & Coverage

Highlights the % of households having access to services of waste water (sanitation and sewerage)

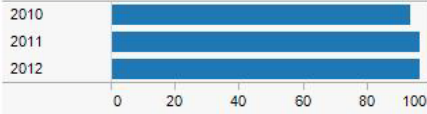
Toilet Coverage (%)



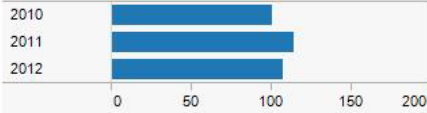
Sewer Coverage (%)



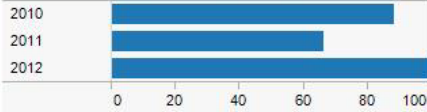
Sewage Collection Efficiency (%)



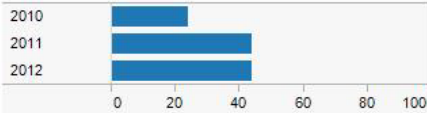
Treatment Capacity (%)



Cost Recovery in Sewage Management (%)



Toilet Coverage in Slums (%)



Sewer Coverage in Slums (%)



## Service Levels & Quality

Highlights the quantity of wastewater collected and treatment capacity of Sewage Treatment Plant

## Financial Sustainability

Highlights the revenues accrued to expenses incurred in service operations

## Equity in Service Delivery

Highlights the variations in city

## Vadodara

Class: MC

Key Performance Indicators for Waste Water Sector



Select ULB

- Ahmedabad
- Bhavnagar
- Gandhinagar
- Jamnagar
- Junagadh
- Rajkot
- Surat
- Vadodara**

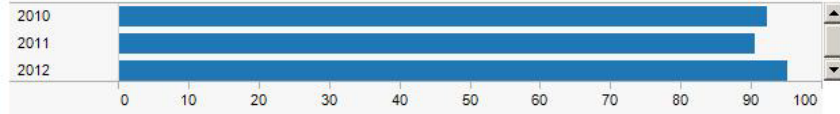
Class

- (All)
- MC
- A
- B
- C
- D
- NP

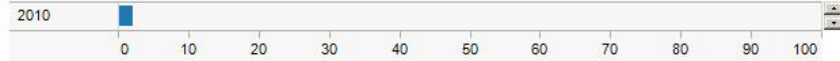
Class

- MC

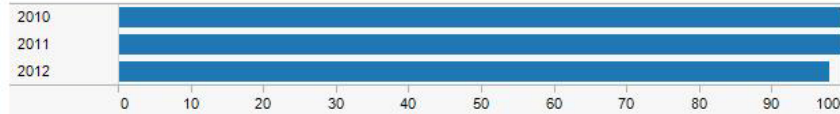
Quality of Treatment (%)



Sewage Reuse and Recycle (%)



Complaint Redressal (%)



Sewage Charges Collection Efficiency (%)



## Efficiency in Service Operations

Highlights extent of wastewater treatment before disposal, reuse/ recycling of wastewater, and collection of sewerage related charges

# Support for Improvement Planning



# Tools for Performance Improvement

## Approach to Performance Improvement Planning

MODULE I: PERFORMANCE ASSESSMENT			
Background studies and diagnosis to arrive at Sectoral information	Step 1	Performance Data	
Sector performance assessment through peer comparison and identifying several components across the value chain of WSS services	Step 2	Performance Assessment	
MODULE II: INTER SECTORAL PLANNING			
A comprehensive Action matrix is prepared to guide the user to select physical actions, policy and process actions	Step 3	Action Planning	
Action impact includes cost and benefit. For each activated action, project associated Capex & O&M are projected. Benefits are captured in improved Indicator values	Step 4	Impact of Actions	
MODULE III: FINANCIAL ASSESSMENT			
Municipal finances are assessed by projecting the finances based on Business as Usual scenario and projected impact due to PIP Actions Activations	Step 5	Municipal Finance	
The PIP Action Plan is critically evaluated with respect to availability of Municipal finances to arrive at feasible Implementation Plan that can be sustained by ULB in long term	Step 6	Financial Plan	

## ODF Model

**Goal:** The model will assist ULBs to determine toilet requirements and cost of making the city open defecation free. It is a simple tool for gauging resource requirements for City, class of cities or overall State level

INPUTS	<ul style="list-style-type: none"> <li>Demographic details: Population, HHs, HH size</li> <li>Infrastructure details: Presence or absence of sewer network, type of drains</li> <li>Sanitation details: HH using individual/shared/community toilet, HH and Population resorting to OD</li> </ul>	
POLICY ASSUMPTIONS	<ul style="list-style-type: none"> <li>Percentage coverage through individual toilets</li> <li>Persons per seat of community toilets</li> <li>Subsidy by the State government</li> </ul>	
COST ASSUMPTIONS	<ul style="list-style-type: none"> <li>Cost of construction of individual toilet</li> <li>Cost of construction per seat of community toilet</li> <li>Cost of surveys and creating awareness</li> </ul>	
OUTPUTS	<ul style="list-style-type: none"> <li>No of individual toilets to be constructed</li> <li>No of seats in community toilets to be constructed</li> <li>Cost of making the city OD Free</li> </ul>	

## Tariff Setting Model

**Goal:** This model is to assist ULBs to determine water tariff to recover 100% cost of operations and maintenance.

Based on guidelines issued by GoM via a GR dated 2<sup>nd</sup> August, 2012 for fixing charges of water supply & sewerage services.



### OTHER LOGIC TO BE PROVIDED

- Cross subsidization amongst user categories
- Life line supply if required
- Type of costs to be recovered (O&M or Capital)
- Increase in connections by expanding the network or adding more consumers to existing network

## Target Setting Model

**Goal:** To assist ULBs to set realistic targets for service levels to fulfil one of the conditions stipulated by the 13<sup>th</sup> Finance commission.

The model provides assessment of past trends of indicators and related context information, which gives a realistic direction for setting optimum targets for Improvements



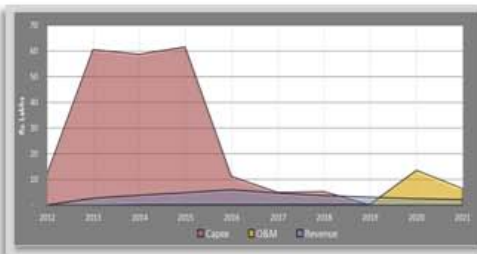
### MODEL LOGIC : Captures multiple dimensions of Target Setting



# CEPT-CRISIL PIP tool

Summary of Capital Expenditure											
Actions	Type	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Household Survey	Data system	1.1	1.1	1.1							12.4
Water Audit	Data system	1.1	1.1								1.2
Installation of Bulk Flow Meters	Data system	1.1	1.1								12.4
Process Improvements to operationalize periodic checking of water losses	Process/ Policy										0.0
Formulate policy to introduce consumer metering	Process/ Policy										0.0
UV Mapping of leakages at joints	Existing system	4.2	4.3	4.5	4.8						17.8
Replacement of service line connections	Existing system	17.1	46.1	42.1							120.4
Metering of consumer water supply connections	New infrastructure										0.0
Mapping of water and waste water network	Supplementary actions	1.1	1.1	1.1							1.1
Hydrological Modelling	Supplementary actions	1.1	1.1	1.1							1.1

WATER SUPPLY SERVICES											
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Coverage of individual water supply connections in city	%	85	85	85	85	85	85	85	85	85	85
Coverage of individual water supply connections in slums	%	85	85	85	85	85	85	85	85	85	85
Per Capita supply of water at consumer end	l/c/d	110	110	110	110	110	110	110	110	110	110
Continuity of water supply	hours	110	110	110	110	110	110	110	110	110	110
Extent of Non-revenue water	%	25	25	25	25	25	25	25	25	25	25
Extent of metering of water connections	%	25	25	25	25	25	25	25	25	25	25
Quality of water supplied	%	95	95	95	95	95	95	95	95	95	95
Efficiency in redressal of customer complaints	%	95	95	95	95	95	95	95	95	95	95
Efficiency in collection of MS charges	%	95	95	95	95	95	95	95	95	95	95
Cost recovery in MS services	%	95	95	95	95	95	95	95	95	95	95



For more information on PIP tool,  
Visit us at performance improvement  
section of PAS web portal  
[www.pas.org.in](http://www.pas.org.in)



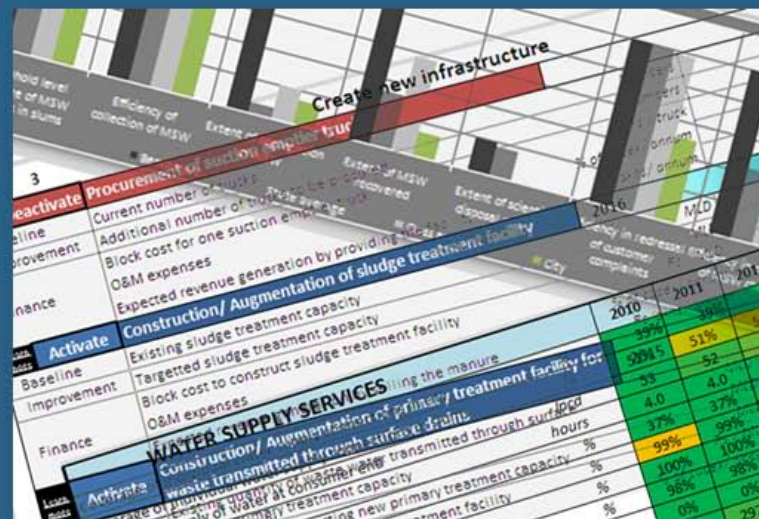
The Performance Assessment System (PAS) Project at CEPT University is a five-year Action Research Project. It supports development of appropriate tools and methods to measure, monitor and improve delivery of water and sanitation services in urban India. Funded by the Bill and Melinda Gates Foundation, the PAS Project covers all 400 plus urban local governments in the two Indian states of Gujarat and Maharashtra. CEPT is implementing the Project with Urban Management Centre (UMC) in Gujarat and All India Institute of Local Self-Government (AIILSG) in Maharashtra.



To know more about the PIP Tool, please  
write to [pas@cept.ac.in](mailto:pas@cept.ac.in)



## Performance Assessment System Project



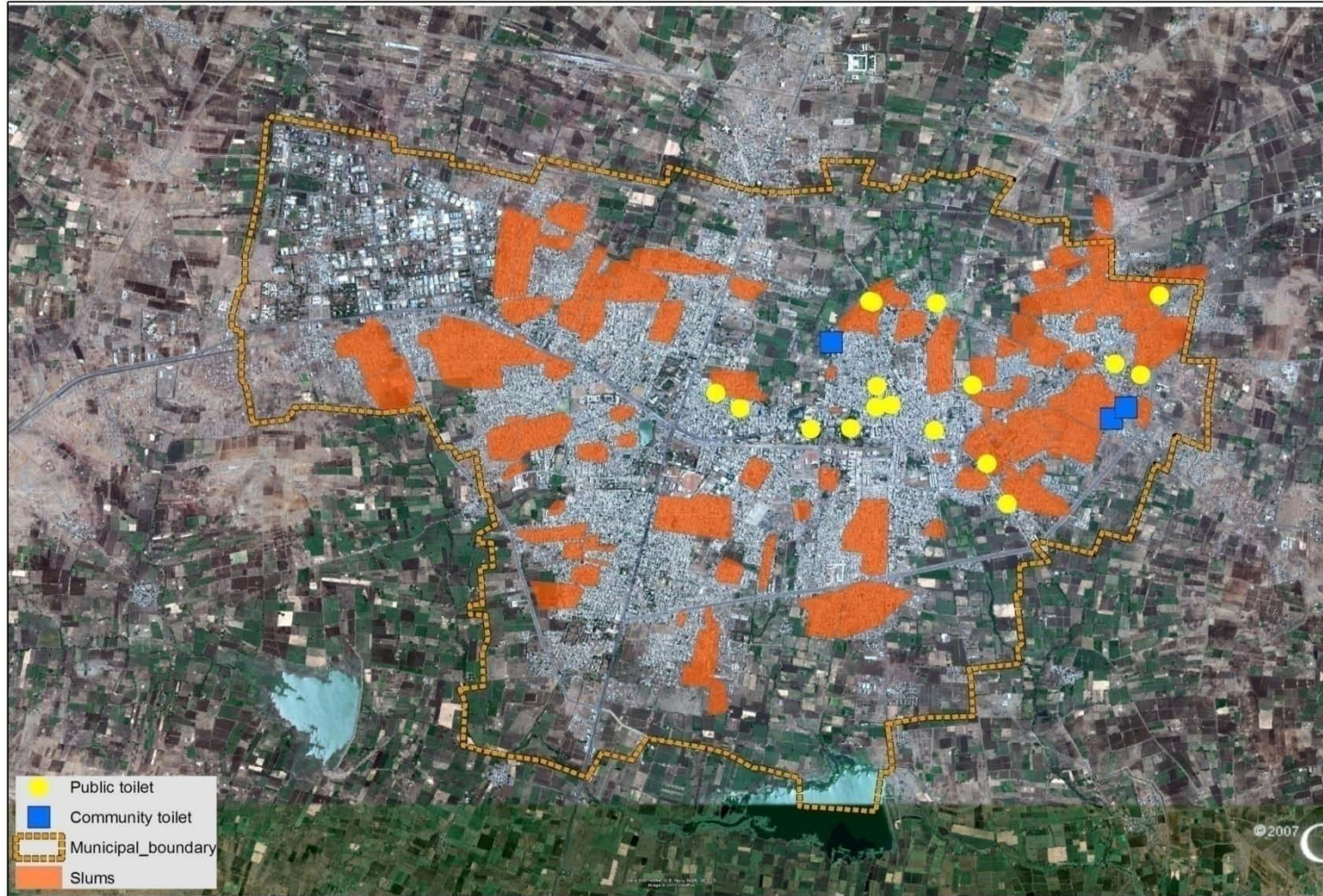
## A Tool to support development of UWSS PERFORMANCE IMPROVEMENT PLAN

CEPT University, Ahmedabad  
INDIA  
[www.cept.ac.in](http://www.cept.ac.in), [www.pas.org.in](http://www.pas.org.in)



# GIS for Planning: Slum mapping and analysis

Concentration of community toilet location in only one part of the city



# DEMO OF PAS PORTAL

# Workshop Structure

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- Appropriate framework for city wide sanitation assessment
- City Sanitation Plans – lessons on approach, methodology, and implementation experience
- Experiences from India and other countries on managing the sanitation challenge
- Appropriate solutions for small and medium towns
  - Discussion with city officials based on preliminary work done by CEPT/PAS team
  - Focus on technology, finance and governance aspects

# Thank You

