

SUMMARY OF PIP ACTION PLAN

Print

Key Performance Indicators

Financial Summary

Action Plan Summary

Summary details

CAPEX

O&M

PHASING ONLY

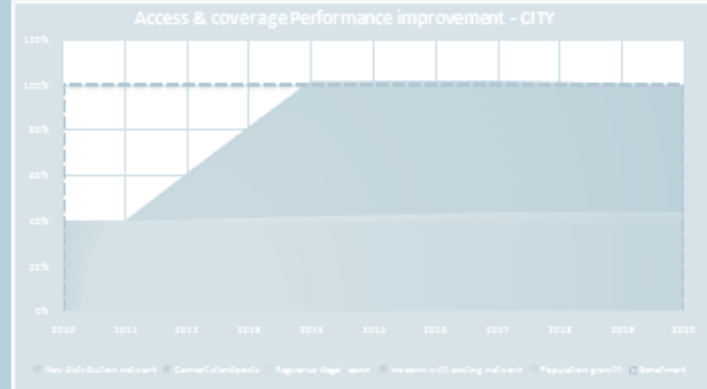
Water supply actions

Waste water actions

Solid waste actions

Summary of O&M expenditure

Actions	Type	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Regularizing unauthorized connections	Existing system											0.0
Laying new distribution network lines	New infrastructure											823.1
Laying internal infrastructure lines in slum settlements	New infrastructure											0.0
Reduction of losses in Trunk main transmission	Existing system											0.0
Reduction of losses in Treated water transmission	Existing system											0.0
ij) Improvement in distribution network	Existing system											0.0
Reduction in free connections	Existing system											0.0
Increasing continuity of water supply services	Existing system											0.0
l) Water augmentation - Dwn surface water	New infrastructure											16.2
Augmentation of water	New infrastructure											0.0
Augmentation of water	New infrastructure											0.0
Improvement in local efficiency of water supply collection & taxes	Existing system											0.0
Other measures to optimise power & energy expenses	Existing system											0.0

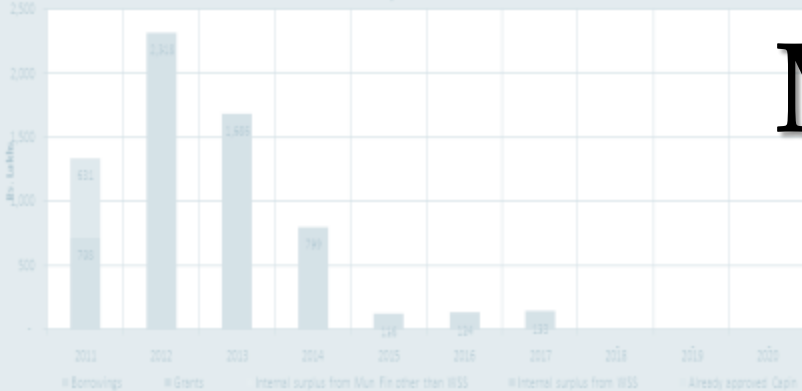


# PERFORMANCE

# IMPROVEMENT PLANNING

# MODEL

Summary of Financial Plan



WATER SUPPLY SERVICES

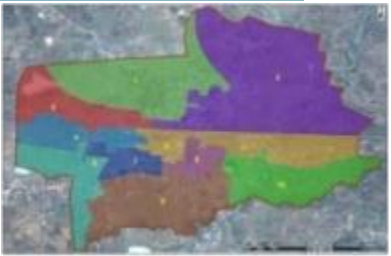
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Coverage of individual water supply connections in the city	%	38%	38%	60%	80%	100%	100%	100%	100%	99%	99%
Coverage of individual water supply connections in slums	%	51%	51%	68%	86%	100%	100%	100%	100%	100%	100%
Per capita supply of water to customer	lpcd	53	54	57	60	64	67	67	67	66	65
Continuity of water supply	hours	4.00	4.00	10.67	17.33	24.00	24.00	24.00	24.00	24.00	24.00
Extent of Non revenue water	%	37%	35%	30%	26%	20%	16%	15%	14%	14%	14%
Extent of metering of water connections	%	98%	98%	98%	98%	100%	100%	100%	100%	100%	100%
Quality of water supplied	%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Efficiency in redressal of customer complaints	%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%
Efficiency in collection of W/S charges	%	85%	85%	88%	90%	93%	95%	98%	100%	100%	100%
Cost recovery in W/S services	%	90%	88%	90%	90%	82%	82%	78%	83%	84%	78%

# Contents

- 1. Approach to Performance improvement planning model**
- 2. Data Entry and Forecasts**
- 3. Module I: Performance Assessment**
- 4. Module II: Action Planning**
- 5. Module III: Financing Plan**
- 6. Comparison of PIP plan options**

# Approach to Performance Improvement planning model

# Performance Improvement



**Performance Improvement** component of the PAS Project focuses on development of financially feasible approaches to improve delivery of city-level services for water supply, wastewater and solid waste management.

**PIP Model** has been developed as a multi-year plan with a focus on improving service performance across themes of access, equity, service levels and quality, efficiency and financial sustainability.

To measure service performance **Service Level Benchmarking** indicators of the Government of India with additions for equity and on-site sanitation have been adopted in the PIP Model.

# Approach to Performance Improvement Planning

## Conventional Approach



**'PROJECT'**  
*based approach*

Oriented towards achieving **OUTPUTS**

Starting point is an assessment of funding resources available – **SUPPLY DRIVEN**

Focus on developing **INDIVIDUAL PROJECTS** of various sectors

## PAS Approach



**'SERVICE'**  
*based approach*

Oriented towards achieving **OUTCOMES**

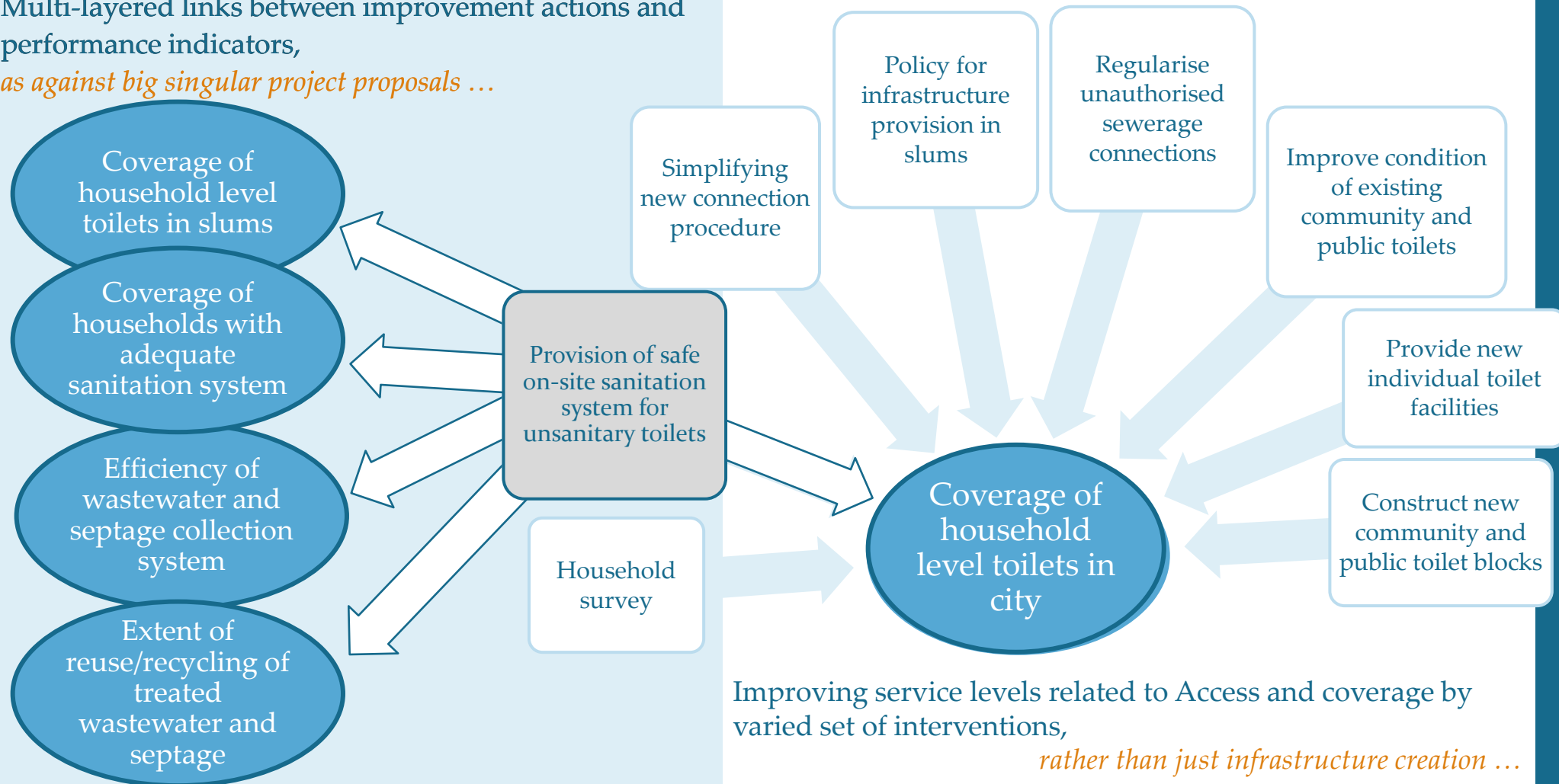
Starting point is measurement of current performance and local priorities – **NEED DRIVEN**

Focus on developing integrated **SECTORAL SOLUTIONS**

# Approach to Action planning for service improvement

Focus on moving away from 'infrastructure investment plans' to evolving 'service improvement plans' which include wide set of actions for improving service delivery.

Multi-layered links between improvement actions and performance indicators,  
*as against big singular project proposals ...*



Improving service levels related to Access and coverage by varied set of interventions,  
*rather than just infrastructure creation ...*

Inter-sectoral linkages are also captured in PIP model ... *Impact of water augmentation on Per capita supply but also on wastewater generation, treatment capacity required, impact on finances*

# Integrated approach for FINANCIAL PLANNING

Assess aggregate funding demand from all improvement actions

## Financial implications of each Improvement action

Capital expenditure

Revenue generation

Operating and maintenance expenditure

Effect of inflation based on phasing

Aligning both these financial streams to evolve sustainable 'Financing Plan'

## External sources of funds

Exploring funding pattern possible for each improvement action

## Internal sources of funds

Exploring options to increase revenue from own income sources

Assess financial health and extent of revenue surplus available

## Municipal finances of urban local bodies

Past trends of municipal finances

Forecasting for finances for Business as Usual scenario

# Performance Improvement Planning model

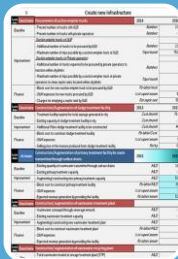
IMPROVEMENT PLAN OPTIONS



## I. PERFORMANCE PRIORITIES

Sector Performance indicators used as the basis for assessing service performance

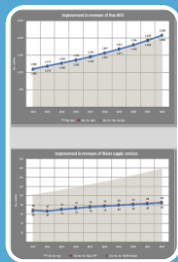
Actions (investments, policies, process changes) identified to achieve sector service objectives



## II. ACTION PLANNING

Improvement Plan developed by designing actions for costs, phasing & revenue impact

Review Improvement Plan for impact on service performance



## III. FINANCIAL PLANNING

Key financial decisions related to sources funds, tariffs and transfer of surplus to WSS

Review feasibility of Financing Plan for capital and operating expenditure

PIP Model starts with measurement of current performance levels. This is followed by identification and design of a set of actions to improve performance. Phasing and financial implications of these actions are assessed and a financing plan is developed. The Model enables comparison of various options in terms of their impacts on service levels and on ULB's financial capacity to operate and maintain new infrastructure.

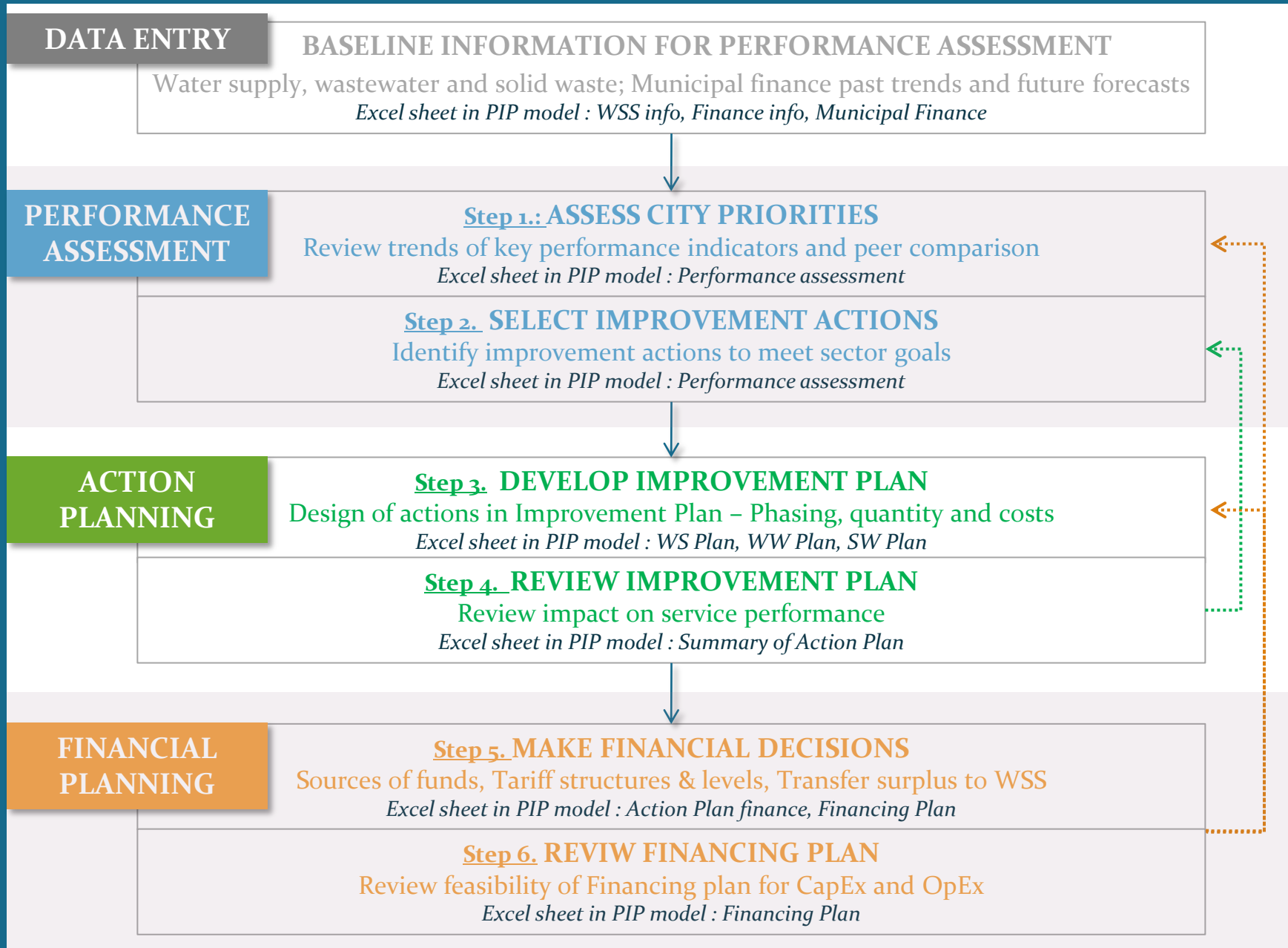


# Steps in Performance Improvement Planning model

PIP Model is developed as an excel based spreadsheet to facilitate interactive usage.

The structure of the Model has been aligned with PIP planning process. It has three distinct modules, each for a stage of PIP planning process.

The chart alongside denotes each sheet of excel workbook and its flow of sequence.

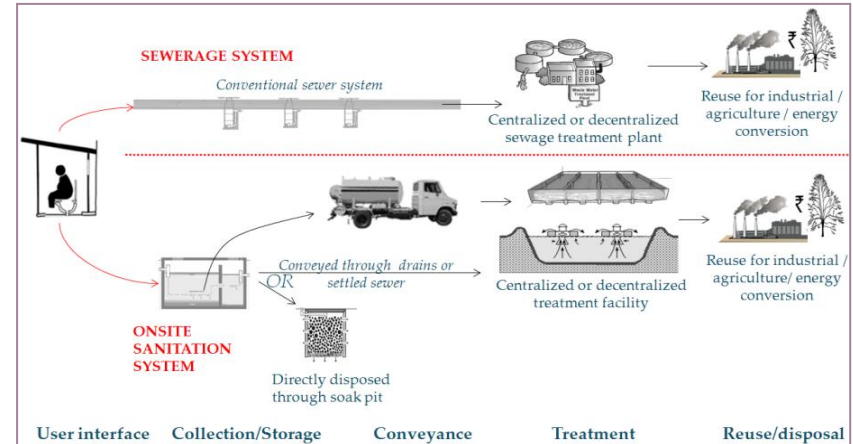
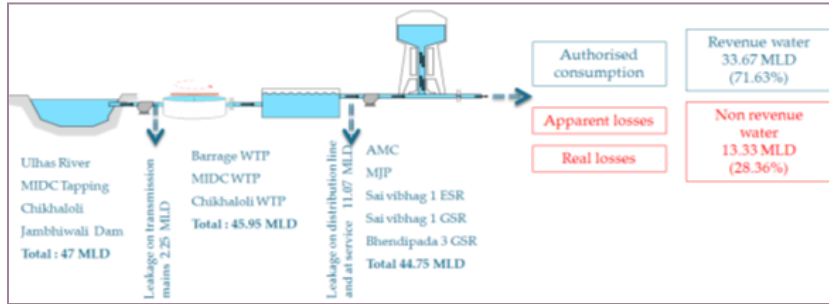


# Data Entry and Forecasts for Performance assessment

# Situational assessment of sector across 'value chain'

Performance assessment is envisaged as a sector-wide approach, assessing entire value chain rather than focusing it as separate compartments.

## Value chain of Water supply and wastewater services



Current performance levels of water and sanitation services are assessed and quantified in terms of Key performance indicators. To arrive at these results, comprehensive compilation of baseline information is required. Each sector is captured through various data sets across their respective value chain.

DEMOGRAPHY	WATER SUPPLY	WASTEWATER	SOLID WASTE
Demography	Water production	Wastewater conveyance	Solid waste generation
	Water treatment	Toilet facilities	Collection & transportation
	Water supply distribution	Treatment and disposal	Processing & treatment
	Taxes and charges	Taxes and charges	Taxes and charges



# Snapshot of sector input sheet in PIP model



I Demography information				
<b>A Population details</b>				
Sr. No.	Particulars	Census 2001	Census 2011	
1	Total population	31,630	65,251	
2	Slum population	6,846	14,123	
3	Total number of households	6,117	13,112	
4	Total number of slum households	1,324	2,838	
<b>B Population growth rate assumptions</b>				
Sr. No.	Particulars	Unit	Value	
1	Decadal population growth rate : 2001 - 2011	Based on actual growth rate for 2001 and 2011	106.3%	
2	Decadal population growth rate : 2011 - 2021	Estimated growth rate	25.0%	
<b>C Number of properties</b>				
Sr. No.	Particulars	Residential properties	Non-residential properties	
1	Total number of properties in city presently <i>NOTE: Count all the properties irrespective of whether they are assessed for property tax or not</i>	12,000	2,000	
2	Annual growth rate for increase in properties	2%	3%	
3	Total number of properties assessed for taxation <i>NOTE: Count only those properties that are assessed in present year</i>	11,000	1,000	
<b>D City Area and wards</b>				
Sr. No.	Particulars	Unit	Value	
1	Jurisdictional area of city	Square kms	51.4	
2	Inhabitated area of city	Square kms	2.8	
3	Number of municipal wards	Numbers	6	
II Water supply sector information				
<b>A Water production</b>				
i) Source of water				
Sr. No.	Particulars	Allocation in MLD	Actual Drawl in MLD	
1	Surface water - Own Source			
2	Bulk buy of raw water		5.63	
3	Bulk buy of treated water		1.60	
4	Ground water source(s)			
	<b>Total</b>		7.23	
5	Water from non-ULB sources			
ii) Raw water transmission				
Sr. No.	Particulars	Unit	Value	
1	Length of transmission network	Kms	18.00	
2	Estimated raw water transmission losses	%	3.00%	
<b>B Water treatment</b>				
i) Water treatment plant (WTP)				
Sr. No.	Particulars	Unit	Value	
1	Total installed capacity of all WTPs	MLD	6.15	
2	Estimated losses at WTPs	%	2.00%	

# Situational assessment of municipal finance

**Functional classification of municipal budget :**  
(a) Revenue account, (b) Capital account, (c) Extraordinary account

## Budget recasting

Municipal budgets are generally not aligned with proper accounting structure as per National municipal accounting manual (NMAM). It is imperative to first re-classify all budget item heads properly as per their functions for any analysis.

## Budget past trends

Municipal finance information related to overall municipal account and separately for water supply, wastewater and solid waste services are to be filled here. To arrive at best trend estimates for municipal finance projections, past five years' budget figures are compiled for reference.

## Budget forecasting

Municipal finances are forecasted to assess financial strength of ULB for sustaining present services. They are projected for Business as Usual scenario for plan period of 10 years based on past trends. For revenue account, the budget estimates should relate to operating and maintaining of present services. Similarly, capital account should relate to ongoing or approved project for ULB.

BASELINE  
INFORMATION

ASSESS CITY  
PRIORITIES

SELECT  
IMPROVEMENT  
ACTIONS

DEVELOP  
IMPROVEMENT  
PLAN

REVIEW  
IMPROVEMENT  
PLAN

MAKE  
FINANCIAL  
DECISIONS

REVIEW  
FINANCING  
PLAN

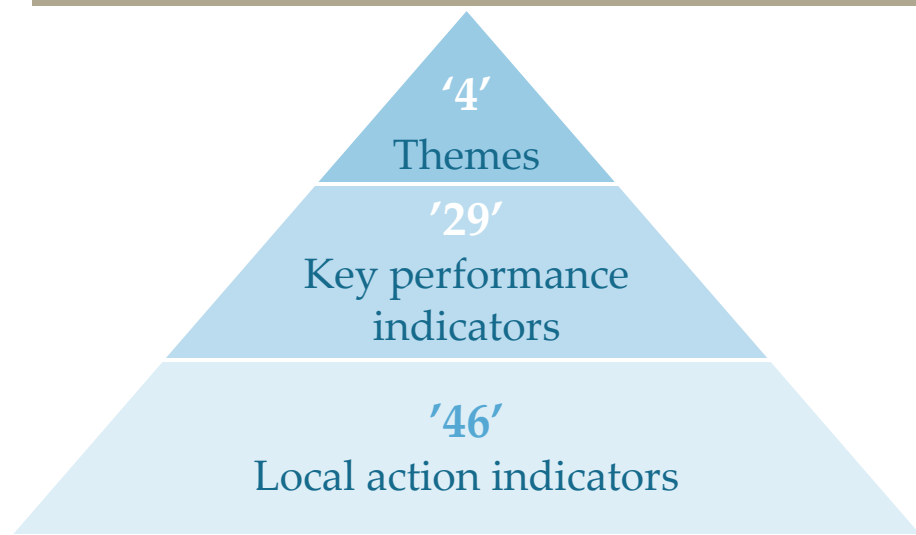


# Module I: Performance Assessment

# Approach to Performance Assessment

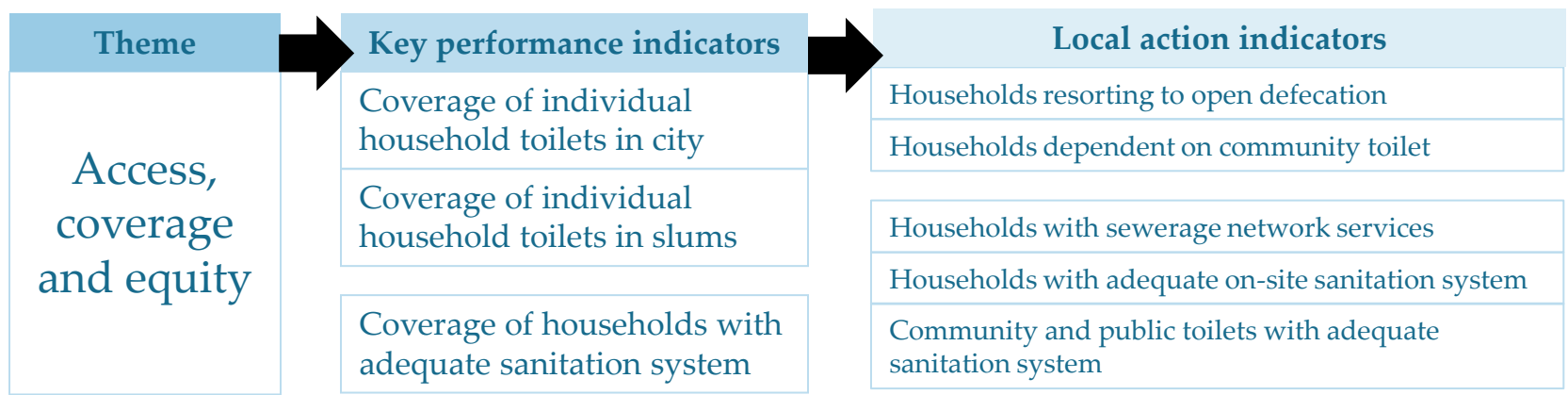


## Components of Performance assessment framework



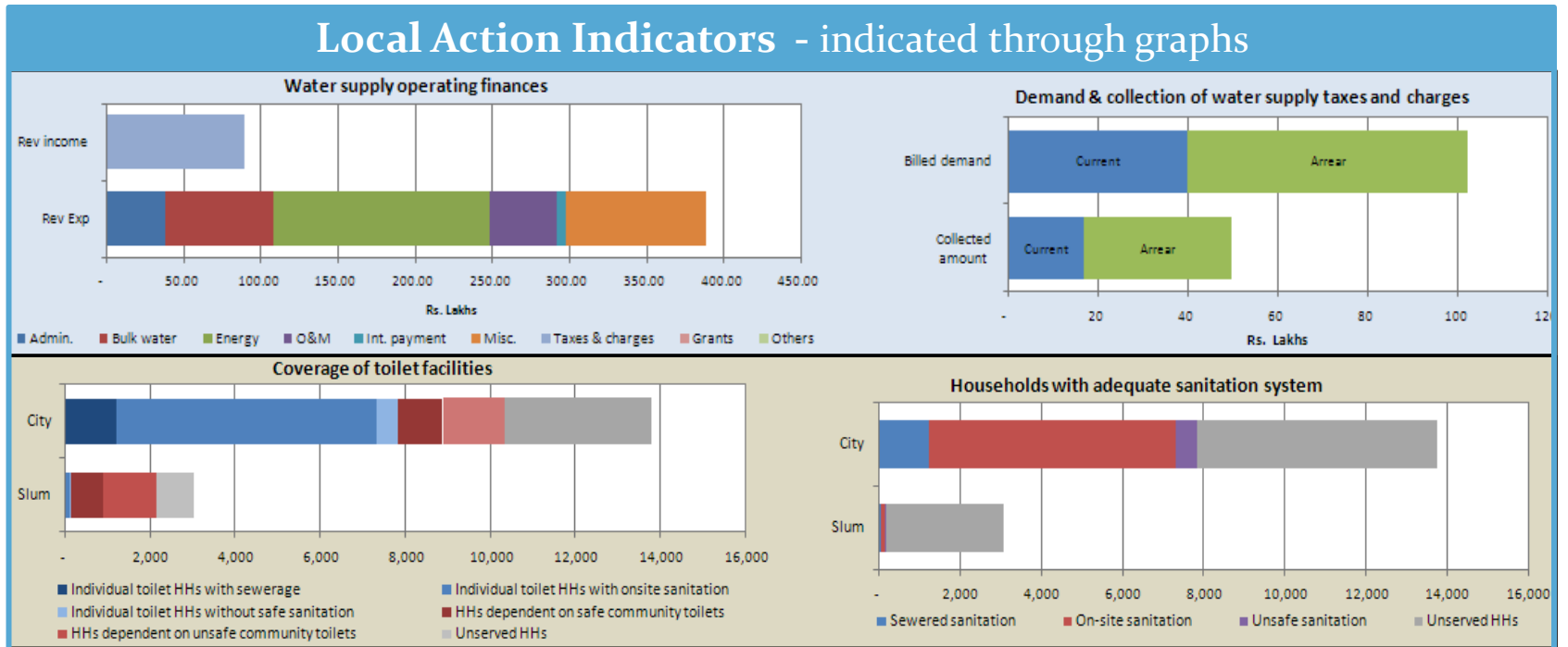
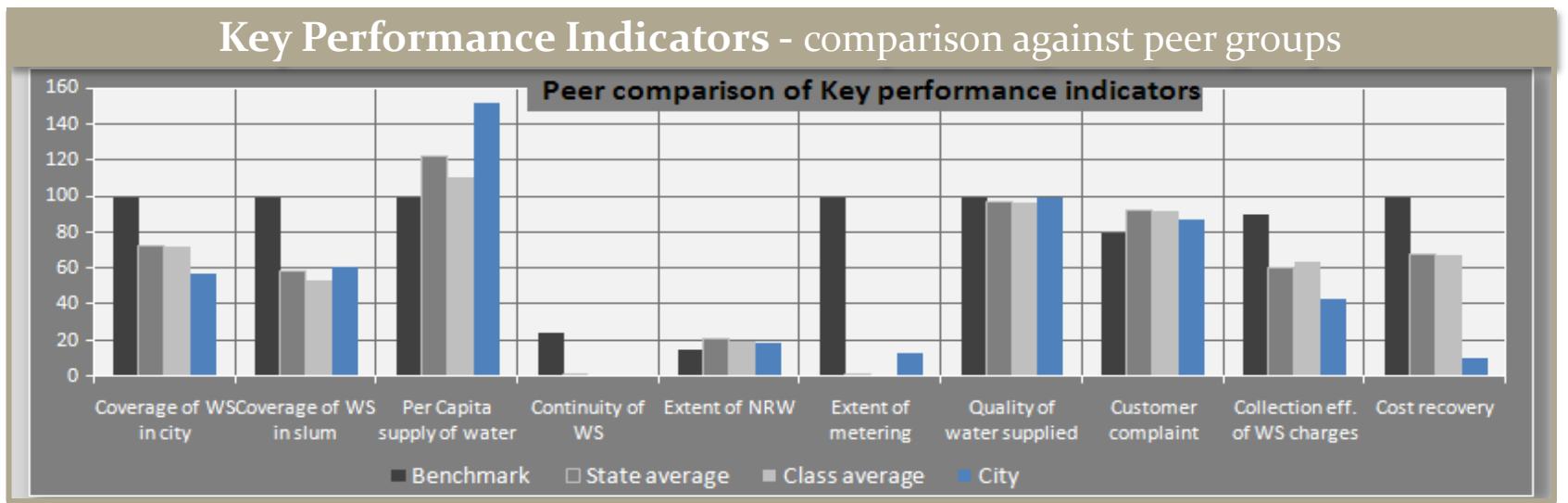
Both states of Gujarat and Maharashtra have in their many development programs identified 'Goals' and 'Reforms' that need to be achieved for the water supply and sanitation sectors. The framework has adapted to these needs, and identified a set of Key Performance Indicators for Goals and Reforms, as well as Local Action Indicators that need to be achieved for city specific improvement.

**Four themes :** (a) Access, coverage & equity; (b) Service levels and quality; (c) Efficiency in service operations; (d) Financial sustainability



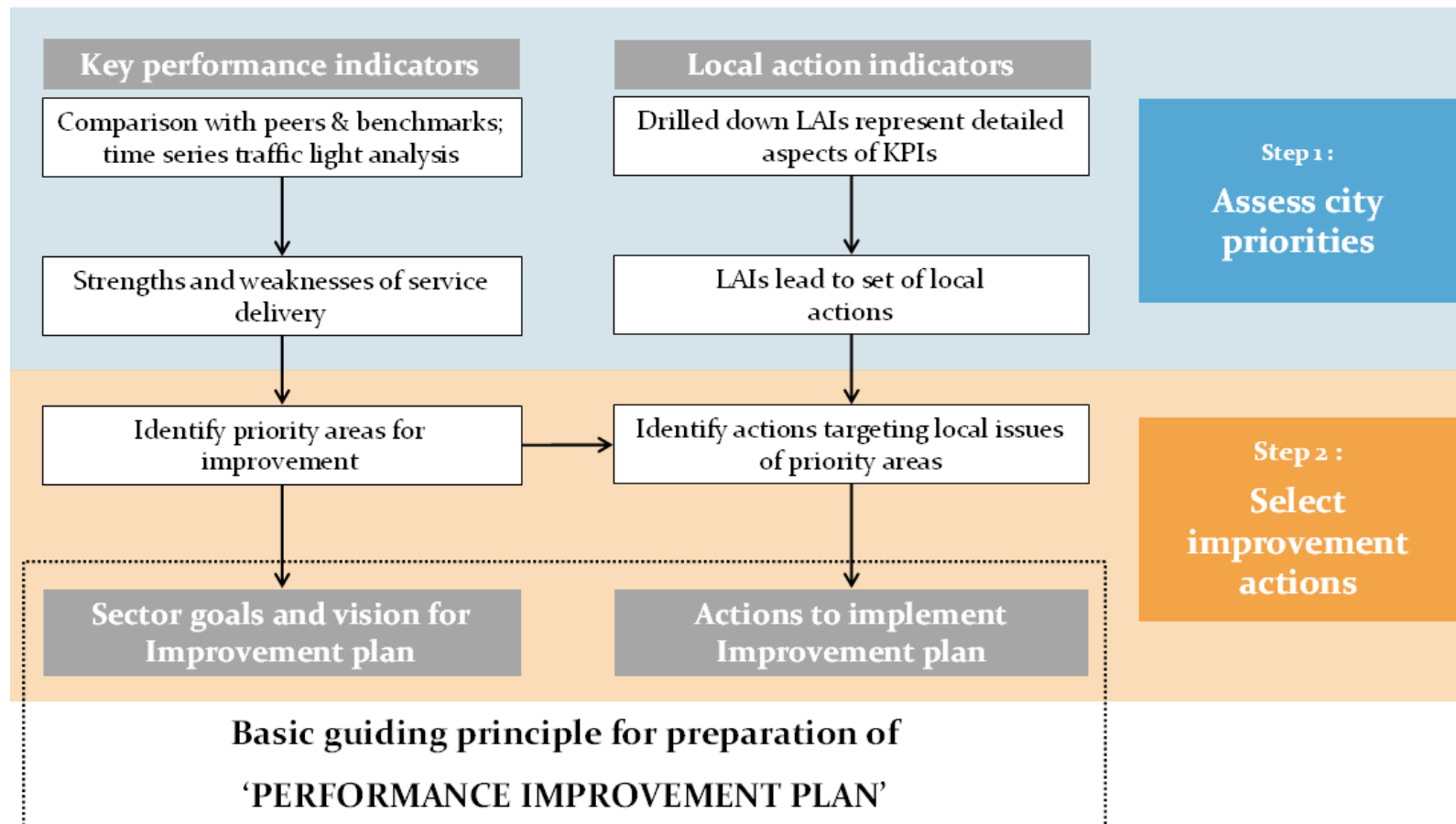


# Snapshot of performance assessment in PIP model - Identify city priorities



# Approach to selection of improvement actions

Analysis of performance results aims at identifying strengths and weaknesses of service delivery. The low performing KPIs are core problematic areas of service delivery that needs to be targeted in improvement plan. These problematic areas are elaborated with corresponding LAIs to assess the actual reasons for low performance. Thus LAIs lead to set of localized actions that influence relevant contextual issue rather than promote only new infrastructure creation for city level plans. Identification of all such core problem areas and their corresponding local actions form the basis of Improvement Plan.



# Actions for Performance Improvement

Sector wide approach of PIP is supported by wide range of improvement actions that are categorized under four types of intervention areas. These range from no cost to low-cost solutions like process and policy interventions and rehabilitation of existing infrastructure rather than concentrating only on creation of new assets.

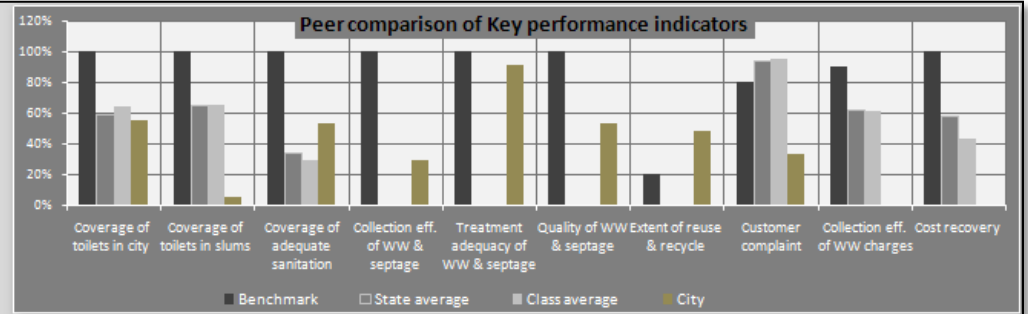


Type of interventions	Description
<b>1. Data improvement actions</b>	For most of the ULBs, quality of data is very poor. These actions shall help improve it but will not directly impact the KPI values.
<b>2. Process/policy improvement actions</b>	This category highlights the understated process or policy areas that may have been primary hurdle in reform implementation.
<b>3. Existing system improvement actions</b>	This category highlights the scope for improving existing infrastructure to achieve desired results at low-cost by providing a range of options.
<b>4. New infrastructure creation</b>	This category complies a list of all the new infrastructure projects that can be undertaken.

# Snapshot of performance assessment in PIP model – Select improvement actions



Key Performance Indicator	Value
<input type="checkbox"/> Coverage of individual household toilets in city	55%
<input checked="" type="checkbox"/> Coverage of individual household toilets in slums	5%
<input checked="" type="checkbox"/> Coverage of households with adequate sanitation	53%
<input checked="" type="checkbox"/> Efficiency of wastewater and septage collection	29%
<input type="checkbox"/> Adequacy of wastewater and septage treatment capacity	91%
<input type="checkbox"/> Quality of wastewater and septage treatment	53%
<input type="checkbox"/> Extent of reuse/recycling of treated wastewater and septage	48%
<input checked="" type="checkbox"/> Efficiency in redressal of customer complaints	33%
<input checked="" type="checkbox"/> Efficiency in collection of wastewater charges and taxes	0%
<input checked="" type="checkbox"/> Extent of cost recovery in wastewater services	0%



## ACCESS AND COVERAGE [Click here](#) Simulate Performance Improvement Plan



Actions for performance improvement	Impact of actions on KPIs									
	Coverage of HHs with individual toilets in city	Coverage of HHs with individual toilets in slums	HH coverage with adequate sanitation system	Collection efficiency of WW & septage disposal	Adequacy of treatment for WW & septage	Quality of treatment for WW & septage	Extent of reuse/recycle of treated WW & septage	Efficiency in redressal of complaints	Efficiency in collection of WW charges	Extent of WW cost recovery
<b>A) Data improvement measures</b>										
<input type="checkbox"/> Household survey to assess wastewater services										
<input checked="" type="checkbox"/> Surveys and monitoring of open defecation sites										
<input type="checkbox"/> Computerisation of wastewater records										
<b>B) Process/ Policy improvement measures – No cost</b>										
<input type="checkbox"/> Process improvement for new sewerage connection										
<input checked="" type="checkbox"/> Policy for providing sanitation services in slums										
<b>C) Existing system improvement measures – Low cost</b>										
<input type="checkbox"/> Increasing connections using existing sewerage network										
<input type="checkbox"/> Regularising unauthorised sewerage connections										
<input checked="" type="checkbox"/> Provision of safe on-site sanitation system for individual toilets										
<input checked="" type="checkbox"/> Provision of safe sanitation for community/public toilets										
<input type="checkbox"/> Improve condition of existing community and public toilet blocks										
<input type="checkbox"/> Information, education and communication (IEC) campaigns for sanitation awareness										
<b>D) Create new infrastructure – High cost</b>										
<input type="checkbox"/> Provide sewerage sanitation system in city										
<input type="checkbox"/> Provide sewerage sanitation system in slums										
<input checked="" type="checkbox"/> Provide on-site sanitation system in city and slums										
<input checked="" type="checkbox"/> Construction of new community/public toilet blocks										

# Snapshot of Sector goals and vision summary in PIP model

All the KPI priority areas and corresponding improvement actions identified in performance assessment analysis are compiled here as summary of Sector goals and vision for Improvement Plan of ULB

SECTORAL VISION AND PRIORITIES FOR IMPROVEMENT		
WATER SUPPLY	WASTE WATER	SOLID WASTE
<b>SECTOR GOALS</b>		
Coverage of individual water supply connections in city	Coverage of individual household toilets in city	Key Performance Indicators
Continuity of water supplied (hours/ day)	Coverage of households with adequate sanitation system	Coverage of household level solid waste services in city
Extent of metering of water supply connections	Quality of wastewater and septage treatment	Coverage of household level solid waste services in slums
Quality of water supplied	Efficiency in collection of wastewater charges and taxes	Extent of segregation of solid waste
Cost recovery in water supply services		
<b>PLANNING OBJECTIVES</b>		
Computerisation of water supply records	Household survey to assess wastewater services	Procure additional equipments for street sweeping and drain cleaning
Process improvement for new water supply connection applications	Computerisation of wastewater records	Information, education and communication (IEC) campaign for awareness of solid waste management compliance with MSW rules 2000
Regularising unauthorised water supply connections	Increasing connections using existing sewerage network	Tracking solid waste transport vehicle movement for increasing operational efficiency
Laying new water supply distribution network	Provision of safe sanitation for community/ public toilets	Process for allotment of government land for processing/ disposal
Laying internal water supply lines in slums	Provide sewered sanitation system in city	Process to obtain authorisation from concerned authorities and furnish annual report of compliance
Installation of bulk flow meters	Improving wastewater and septage quality surveillance	Review of operating practices at scientific landfill sites to ensure compliance with MSW rules 2000
Mapping of water and wastewater network		
Conduct Utilities survey (asset mapping)		



# **Module II: Action Planning**

# Approach to Action Planning

Action Planning is a process that aims to consolidate various dimensions of problem solving into output based tangible Action Plan.



All improvement actions of Theme – 1

Improvement action -1

Improvement action -2

Improvement action -3

Improvement action -4

Improvement action -5

Improvement actions are chosen based on city priorities

Actions proposed in Action Plan

+ Improvement action -1

✓ Improvement action -2

✓ Improvement action -3

+ Improvement action -4

✓ Improvement action -5

Actions are calibrated with specifics of phasing, improvement and costing

Impact of each action is individually assessed on overall service levels

Interactive pictorial graphs display impact on performance and finance

Informed decision making process for arriving at Sectoral Plan

# Planning of improvement actions

Individual actions are calibrated as output based tangible targets. A set of these calibrated actions will form an implementation plan for ULB across ten years of plan period. Hence, this Action Plan must evolve through an iterative process of identifying appropriate actions, phasing and financing pattern.

To facilitate action planning, all the actions are compiled in an easy to use tabular structure along with pictorial graphs to show its impact in terms of performance improvement and financial requirement.

Component	Description	Components of action calibration box
Activate/Deactivate action	To include or exclude a particular action in proposed PIP Action plan.	
Phasing of actions	Implementation period of activated action.	
Baseline information	Baseline information about action to facilitate decision-making.	
Improvement information	Improvement in performance envisaged by implementing the action.	
Costs and finance information	Financial details to implement the Action like basic block cost estimates, O&M expenses and revenue generation.	
Description of Action	This is provided in an annex with guidelines on explanation of action, assumption for calibrating it and finance block costs.	

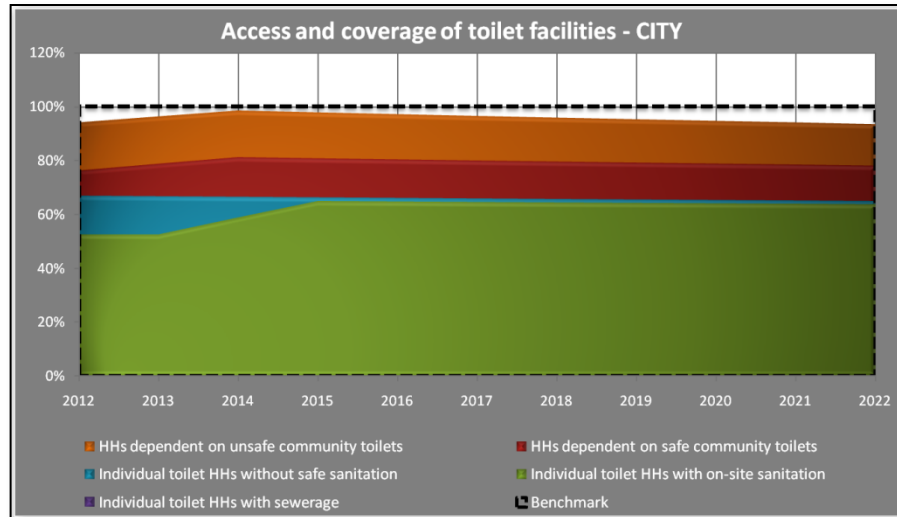
Snapshot of Action calibration box	Learn more	Activate	Lay new water supply distribution network	2015	2018
	Baseline			- Inhabited area not served by distribution network - Existing length of distribution network - Existing percentage of households served with piped water supply	Sq. km Km %
Improvement			- Increase in length of new distribution network - Additional area to be covered with new distribution network - New connections that can be given by laying distribution network	Km Sq. km Number	10 1.00 1,500
Finance			- Block cost to lay distribution network - O&M expenses to maintain new distribution network	Rs lakhs/ km % of CapEx/ annum	20 5%





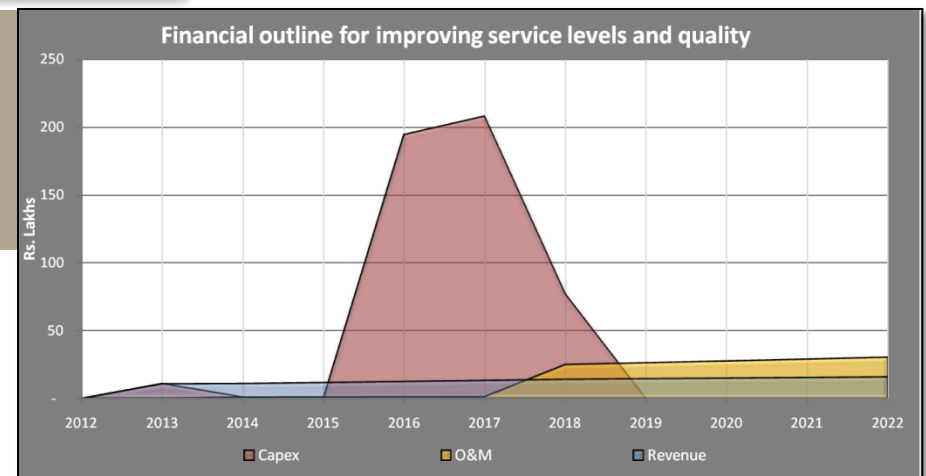
# Planning of improvement actions

Actions that are calibrated has cumulative impact on performance levels of a particular KPI. To represent this visually for easy interpretation, area graphs are prepared for each KPI/ theme. Impact of each action is represented through separate colours in each graph. Another set of graphs are prepared for each theme showing financial implications of calibrating all the actions under that theme.



Snapshot of graph showing impact of each activated action

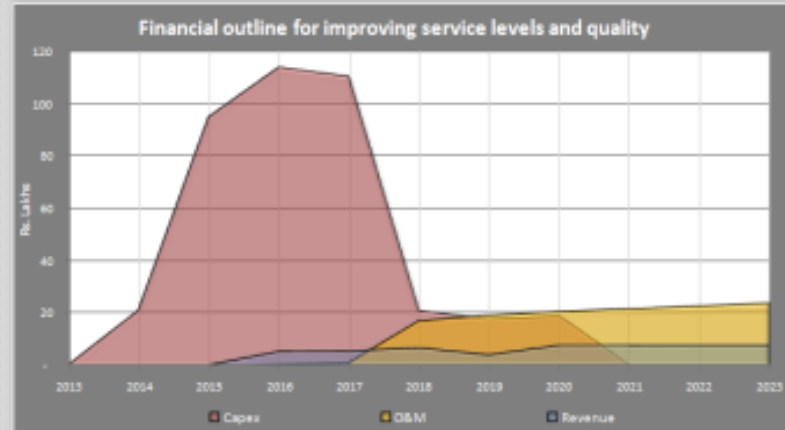
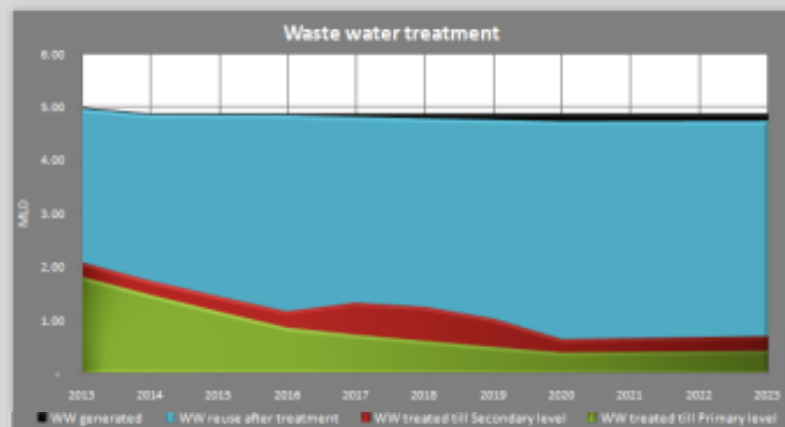
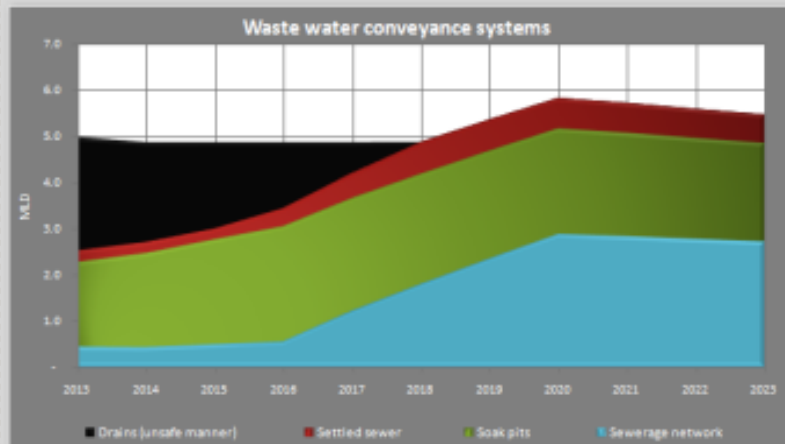
Snapshot of graph showing financial implication of activated actions



## ii Service levels and quality

1		Process/ Policy improvement measures	
Learn more	Deactivate	Improving processes for regular cleaning of drains and sewers	
2		Existing system improvement measures	
Learn more	Deactivate	Improving efficiency of septage collection systems	2015
Baseline		- Average number of trips made with a suction emptier truck of ULB	Trips/month
		- Average number of trips made with a suction emptier truck of private operators	Trips/month
Improvement		- Number of ULB owned suction emptier trucks that need repair & maintenance	Members
		- Additional number of trips to be made with a suction emptier truck of ULB	Trips/month
Finance		- Additional number of trips to be made with a suction emptier truck of private operators	Trips/month
		- Total cost of repairing suction trucks owned by ULB (Lump sum)	Ric. lakhs
		- Additional O&M expenses for increase in one trip for ULB	Ric./trip
Learn more	Deactivate	Plugging leakages in wastewater network	2017
Baseline		- Existing wastewater transmission losses	%
		- Targeted level of losses in wastewater transmission	%
Improvement		- Total cost of carrying out of this activity (lump sum)	Ric. lakhs
Finance			1.00
Learn more	Deactivate	Improving existing sewerage network	
Baseline		- Existing length of the sewerage network	Km
		- Length of existing sewerage network to be replaced	Km
Improvement		- Total cost of carrying out of this activity (lump sum)	Ric. lakhs
Finance			
Learn more	Deactivate	Upgradation of open surface drains to closed drains for storm water	2013
Baseline		- Total length of open surface drains	Km
		- Total area covered by open surface drains	Sq. Area
Improvement		- Total length of closed surface drains	Km
		- Total area covered by closed surface drains	Sq. Area
Finance		- Length of open drains to be upgraded to closed drains	Km
		- Incremental area to be upgraded to closed drains	Sq. Area
		- Block cost to cover open drains	Ric. lakhs/Km
Learn more	Deactivate	Reduce water logging/ flooding in city	
Baseline		- Prevent number of flood prone points in the city	Members
		- Average frequency of flooding at these points	Per year
Improvement		- Reduce flood prone points in city with suitable interventions	Members
		- Reduce average frequency of flooding	Per year
Finance		- Lump sum CapEx to undertake suitable interventions to reduce flooding	Ric. lakhs
		- O&M expenses, if any	Ric. annum

3		Create new infrastructure	
Learn more	Activate	Procure new suction emptier trucks	2013
Baseline		- Present number of trucks with ULB	Members
		- Present number of trucks with private operators	Members
Improvement		- Additional number of trucks to be procured by ULB	Members
		- Maximum number of trips possible by a suction emptier truck of Suction emptier trucks of ULB	Trips/month
Finance		- Block cost for one suction emptier truck to be procured by ULB	Ric. lakhs/truck
		- O&M expenses for new trucks procured by ULB	% of Capital annum
		- Charges for emptying a septic tank by ULB	Ric./septic tank
Learn more	Activate	Provide soak pits for wastewater disposal in non-sewered areas	2014
Baseline		- Non slum households connected to soak pits as compared to total Non slum households	Soak pit HHs/ Non slum HHs
		- Slum households connected to soak pits as compared to total Slum households	Soak pit HHs/ Slum HHs
Improvement		- Number of additional Non slum households to be provided with soak pits	Members
		- Number of additional Slum households to be provided with soak pits	Members



Visual display of impact of activated actions on performance

Snapshot of entire structure for Action Planning in PIP model

Tabular boxes for calibration of improvement actions

# Snapshot of guidelines for improvement actions in PIP model



WATER SUPPLY					
Sr. no.	Type of action	Action	Guidelines for activation	Guidelines for block cost estimate	Link
<b>ACCESS AND COVERAGE</b>					
1	Data improvement measures	Household survey to assess water supply services	Household survey will improve data reliability of indicator values and also help in identifying activities to improve indicators. Survey will also include wastewater and solid waste management along with water supply system.	Rs 35 to 50 per property	<a href="#">Back to Action</a>
2	Data improvement measures	Computerise water supply records	Computerisation of all records related to water supply, this needs hardware and software for water supply consumers. Household survey will help in updation of consumer record.	Cost of software and hardware procurement is around Rs 5 - 10 lakh	<a href="#">Back to Action</a>
3	Process/ Policy improvement measures	Process improvement for new water supply connection applications	Ease of connection procedure by reducing the documents required and introduce single window system. Also ease of connection procedure for slum household. To implement this activity, general body will passed order for revised procedure of water supply connection.	No cost	<a href="#">Back to Action</a>
4	Process/ Policy improvement measures	Policy for providing individual water connections in slums	General body needs to introduce policy to delink tenure from service provision in slums.	No cost	<a href="#">Back to Action</a>
5	Existing system improvement measures	Regularise unauthorized water supply connections	Household survey will identify the illegal connection, after that ULB should regularise the illegal connection. Regularisation process should be carried out within define time period and required dedicated team and quick process. This action will also involve process	Low cost; this activity will increase water supply revenue	<a href="#">Back to Action</a>
6	Existing system improvement measures	Increase connections using existing water supply distribution network	Household survey will help in identifying no of house without water connection in network area. Simplifying connection procedure and introduction of low connection fee scheme will bring more consumers for water supply.	No cost; this activity will increase water supply revenue	<a href="#">Back to Action</a>
7	Existing system improvement measures	Convert stand posts/public taps into group connections	First step is listed down free water connection and then identify the number of connections which can be converted into group connections and also remove unused water connection.	No cost; this activity will increase water supply revenue	<a href="#">Back to Action</a>
8	Create new infrastructure	Lay new water supply distribution network	All habited area should have water distribution network. Laid down the distribution network in unserved area. Minimum 2 to 5 years for proposal and detailed project report (DPR) preparation, approval and project implementation.	Rs 20 lakh to 40 lakh per km distribution network lay down	<a href="#">Back to Action</a>
9	Create new infrastructure	Lay internal infrastructure of water supply lines in slums	Laying internal infrastructure in slum area, so that connection can be easily given to the slum house.	Rs 20 lakh to 40 lakh per km distribution network lay down	<a href="#">Back to Action</a>
<b>SERVICE LEVELS AND QUALITY</b>					
1	Process/ Policy improvement measures	Improve water supply quality surveillance	Water quality should be properly monitored. At presently, there is no practice of regular monitoring of water quality. This is a process change action which suggest to regular monitoring of water quality as a routine work.	Rs 20,000 to 30,000 per protable water quality testing kit	<a href="#">Back to Action</a>
3	Existing system improvement measures	Increase continuity of water supply services	Water quantity should be sufficient to increase continuity of water supply services. Increase in continuity of water supply service will includes construction of mass balance reservoir, replacement or rehabilitation of pipelines, installing SCADA system at various reservoirs,		<a href="#">Back to Action</a>
4	Existing system improvement measures	Improve quality of water supplied	Based on raw water quality results, improve water treatment process like change in chlorination dose or retention time in		<a href="#">Back to Action</a>
5	Existing system improvement measures	Treatment of untreated supply ground water	Usually chlorination is required for ground water but if ground water contains floride then special treatment should be given to reduce floride.		<a href="#">Back to Action</a>
7	Create new infrastructure	Augment water supply - Own surface water	If existing source of water supply is not adequate to meet with demand then source needs to be augmented. New source of water should be reliable and sustainable.		<a href="#">Back to Action</a>
8	Create new infrastructure	Augment water supply - Ground water	If ground water quality is good as per IS 10500 and should not included in dark zone for ground water extraction then only city should augment ground water		<a href="#">Back to Action</a>
9	Create new infrastructure	Augment water supply - Buy additional treated bulk water	If city has allocation of bulk treated water from irrigation department or any water supplying agency at state level then city can augment water source by purchasing treated		<a href="#">Back to Action</a>
10	Create new infrastructure	Augment water supply - Buy additional raw bulk water	If city has allocation of bulk raw water from irrigation department or any water supplying agency at state level then city can augment water source by purchasing raw water		<a href="#">Back to Action</a>
11	Create new infrastructure	Augment/replace water supply transmission network	If transmission network carried water beyond its capacity then new network needs to be laid down.		<a href="#">Back to Action</a>
12	Create new infrastructure	Construct/augment water treatment plant	If water treatment plant treats water beyond its capacity then new WTP needs to be laid down.		<a href="#">Back to Action</a>
13	Create new infrastructure	Construct/augment water storage capacity	Water storage capacity should be 2/3 of water supplied. If there is less storage capacity then construct new storage tanks.		<a href="#">Back to Action</a>

# Assessing impact of Action Plan on performance

Improvement actions activated for each sector will have combined effect on performance of all three sectors – Water Supply, Wastewater and Solid Waste Management. The impact of Action Plan on service levels is assessed through a range of Performance Indicators. KPIs are reported along with its corresponding LAIs for all four themes. Traffic light analysis is done across time series with respect to benchmark values of KPIs.

Assess impact on performance



PIP performance indicators	Service level benchmarks (GoI)
Performance assessment framework indicators (adopted from SLB) with additional indicators for equity and non-sewerage indicators	Service Level Benchmarking indicators of the Government of India by Ministry of Urban development



Performance indicators computed across plan period of ten years



Assessment of performance against benchmark values through traffic light analysis



# Snapshot of time series analysis of performance in PIP model



Analysis of WSS performance with PIP Action Plan											
Performance of Water supply services											
Performance levels	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
<b>Access and coverage</b>											
Coverage of individual water supply connections in city	57%	69%	76%	83%	84%	85%	84%	84%	83%	83%	83%
Coverage of individual water supply connections in slum	61%	93%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Population with access to improved water services	59%	47%	31%	39%	41%	42%	43%	43%	44%	44%	45%
Spatial coverage of distribution network	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Unauthorised water supply connections	5%	5%	4%	3%	1%	0%	0%	0%	0%	0%	0%
<b>Service levels and quality</b>											
Per Capita supply of water at consumer end (lpcd)	152	182	269	206	194	183	177	171	166	160	155
Continuity of water supply (hours/ day)	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38
Quality of water supplied	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
Adequacy of treatment capacity	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Adequacy of storage capacity	244%	249%	249%	249%	249%	249%	249%	249%	249%	249%	249%
Per capita water supplied in ULB	180	221	327	250	235	222	215	208	202	195	188
Days of supply in a month	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
<b>Efficiency in service operations</b>											
Extent of Non-revenue water	19%	17%	14%	14%	13%	12%	12%	12%	12%	12%	12%
Extent of metering of water supply connections	13%	14%	20%	27%	32%	36%	36%	36%	36%	36%	36%
Efficiency in redressal of customer complaints	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%
% Losses from source to water treatment plant (WTP)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
% Losses from WTP to water distribution station (WDS)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
% Losses from WDS to final consumption	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
% of water supply connections that have meters	19%	17%	22%	27%	32%	37%	37%	37%	37%	37%	37%
<b>Financial sustainability</b>											
Efficiency in collection of water supply charges and taxes	43%	58%	74%	74%	74%	74%	74%	74%	74%	74%	74%
Cost recovery in water supply services	10%	61%	66%	105%	101%	97%	93%	116%	112%	108%	105%
Unit production cost of water supply (Rs/ kl)	5373	2885	3052	3218	3378	3545	3722	3906	4101	4304	4518
Per capita revenue expenditure	567	297	307	317	325	334	344	353	363	372	381
Per capita revenue income	131	268	292	360	336	336	327	406	418	422	418
Billed arrears to total billed demand	36%	42%	37%	19%	24%	24%	25%	20%	24%	24%	25%
Collection efficiency of arrear demand	52%	65%	77%	77%	77%	77%	77%	77%	77%	77%	77%

# **Module III: Financing Plan**

# Financial implications of Action Plan

The financial implications of each activated action is reported in terms of capital expenditure required to implement the action, its operational and maintenance costs and additional revenue to be generated. Financial summary of all the activated actions together is evaluated year-on-year basis to assess funding requirement across plan period.

Phasing of improvement actions

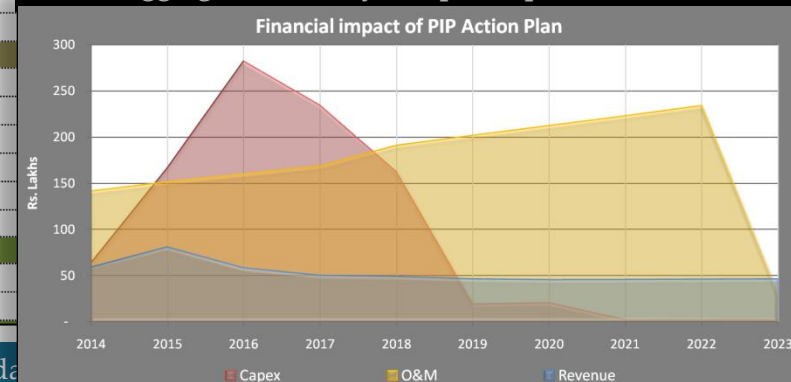
Capital expenditure requirement

Operating requirement

IMPROVEMENT ACTIONS		SUMMARY OF CAPITAL EXPENDITURE										
Sector colour code		Click here to view <b>Summary of</b>										
		<input type="radio"/> PHASING <input checked="" type="radio"/> CAPEX PLAN <input type="radio"/> O&M PLAN										
Water supply	Waste water	Solid waste	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
			40	43	46							
			1									
			1	1	1							
				3	3							
			3	20	22							
			3	0								
				11	11	12	13					
				71								
			5									
				1								
			1									
			9	10								

Click to view Phasing, CapEx or OpEx

Aggregate summary – CapEx, OpEx, Revenue



# External sources for financing improvement actions

To prepare feasible Financing Plan, various external sources of funds are explored to fund improvement actions. These are evaluated separately for each activated action.

Grant – in – aids

External debts

Private participation (PPP)

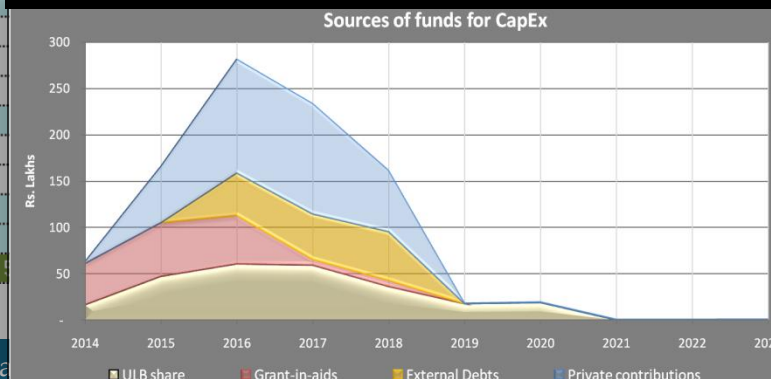
Beneficiary contribution



IMPROVEMENT ACTIONS				SOURCES OF FUNDS FOR CAPITAL EXPENDITURE				
Sector colour code: <span style="border: 1px dashed black; padding: 2px;">Water supply</span> <span style="border: 1px dashed black; padding: 2px;">Waste water</span> <span style="border: 1px dashed black; padding: 2px;">Solid waste</span>				Against each action, mention percentage share of funding possible from various funding sources (%)				
				NOTE : RE-ENTER INPUTS IN THIS TABLE EACH TIME AN ACTION IS ACTIVATED OR DEACTIVATED				
Actions	Type	Total CapEx	Central Grants	State Grants	Debt	Private/ ppp	Beneficiary	ULB share (% and Rs. lakhs)
Regularise unauthorised water supply connections	Existing system	0						
Convert stand posts/public taps into group connections	Existing system	0						
Lay internal infrastructure of water supply lines in slums	New infrastructure	129	50%	40%				10% 13
Conduct energy audit	Data system	1						100% 1
Repair non-functional metered water supply connections	Existing system	2					50%	50% 1
Improve collection efficiency of water supply charges and taxes	Existing system	0						
Computerise wastewater records	Data system	6						100% 6
Process improvement for new sewerage connection applications	Process/ Policy	0						
Regularise unauthorised sewerage connections	Existing system	0						
Increase connections using existing sewerage network	Existing system	0						
Provision of safe on-site sanitation system for individual toilets in non-	Existing system	45					50%	50% 23
Improve condition of existing community and public toilets	Existing system	4						100% 4
Information, education and communication (IEC) campaigns for	Existing system	48		50%				50% 24
Provide on-site sanitation system in city and slums	New infrastructure	368			40%		50%	10% 37
Procure new suction emptier trucks	New infrastructure	0						
Construct closed surface drains for storm water drainage	New infrastructure	68						
Construct/augment faecal sludge treatment plant	New infrastructure	229						
Improve wastewater and septage quality surveillance	Process/ Policy	0						
Improve consumer grievance redressal system	Existing system	0						
Prepare management plan to efficiently deploy manpower and	Process/ Policy	0						
Procure equipments for door to door solid waste collection (collection	Existing system	5						
Engage with private service providers to provide solid waste services	New infrastructure	0						
Improve processes for maintaining daily logs of solid waste across SWM	Process/ Policy	0						
Segregation of collection and transportation of solid waste	Existing system	2						
Improve collection efficiency of solid waste with existing vehicles	Existing system	1						
Procure new vehicles for solid waste collection and transportation	New infrastructure	19						

Input to determine sources of funds for improvement actions

Summary of External funding sources



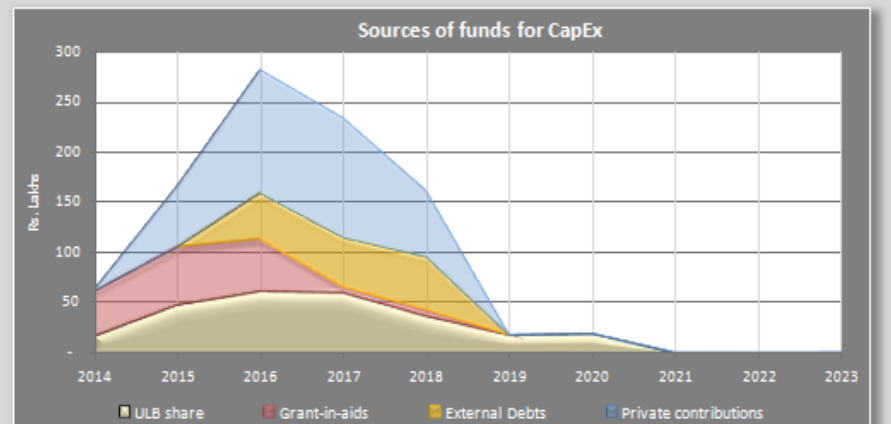
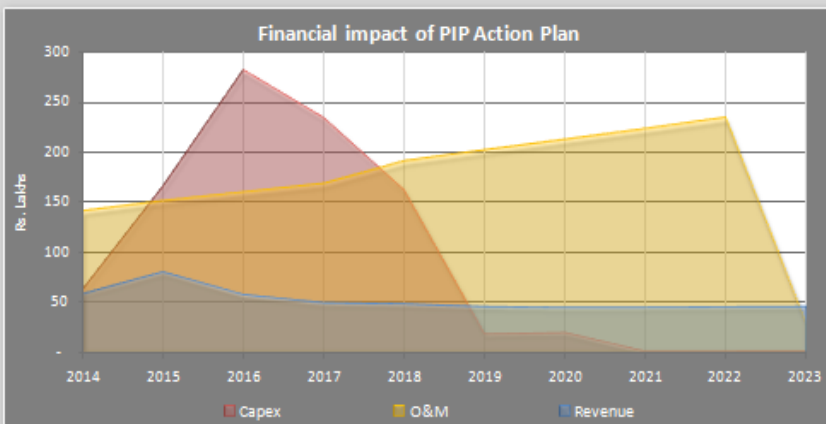


## Financial summary

Select SECTOR TOTAL WSS

Financial Summary	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Total
Capital expenditure	63	166	282	234	162	19	20	2	2	2	952
Additional O&M expense	141	151	153	168	190	201	212	222	233	30	1888
Additional revenue	53	80	58	50	43	46	45	45	46	46	523

Sources of funds	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Total
Central Grants	25	23	26	-	-	-	-	-	-	-	79
State Grants	20	23	26	6	7	-	-	-	-	-	87
External Debts	-	-	46	43	52	-	-	-	-	-	147
Private/PPP	-	50	53	57	-	-	-	-	-	-	161
Beneficiary share	2	11	63	62	66	1	1	1	1	1	215
ULB share	16	47	60	53	36	18	13	-	-	-	255



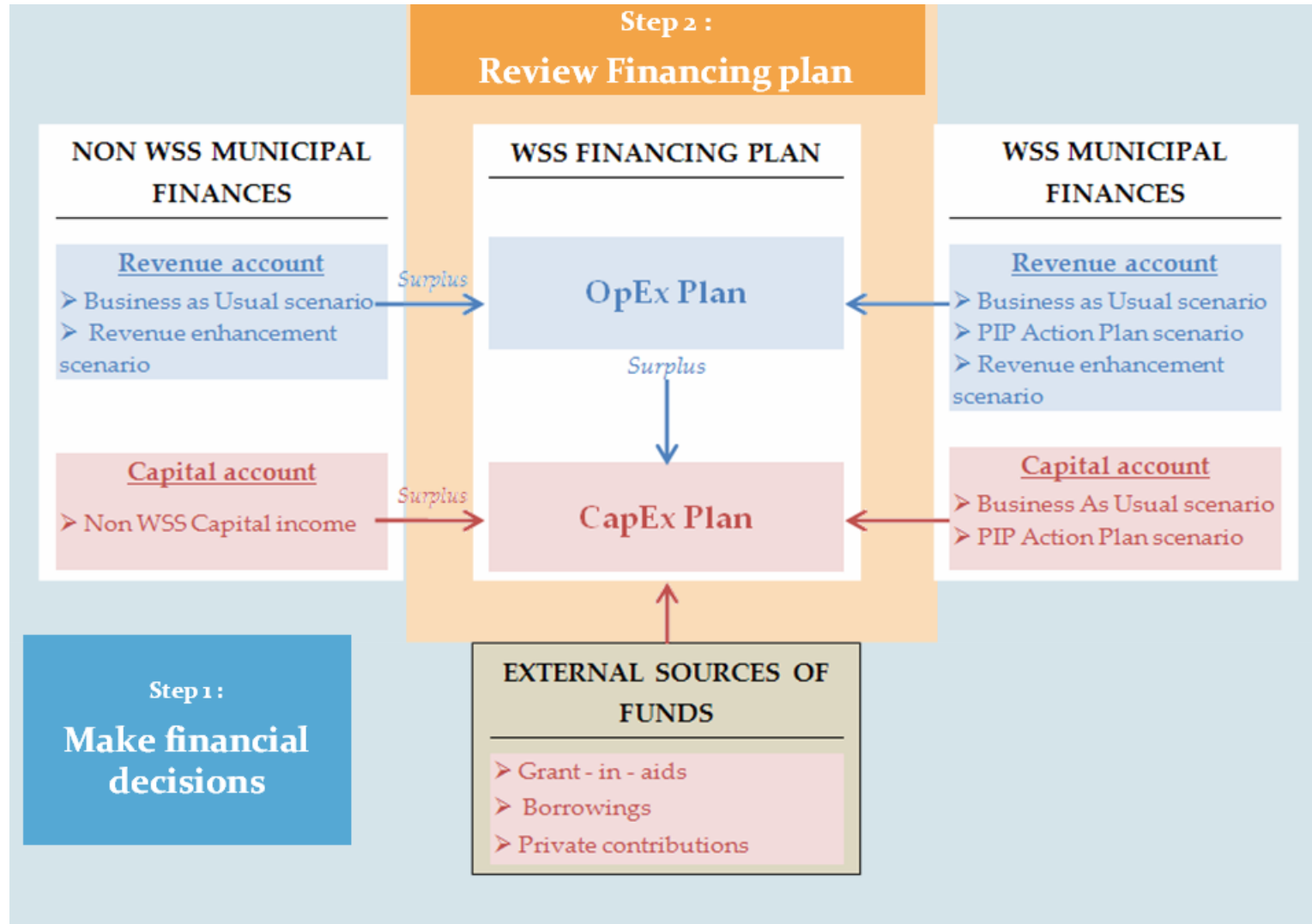
## Action Plan summary

IMPROVEMENT ACTIONS		PHASING OF PIP ACTIONS											SOURCES OF FUNDS FOR CAPITAL EXPENDITURE							
Sector colour	Water supply	Waste water	Solid waste	Click here to view: Summary of PHASING CAPEX PLAN O&M PLAN											Against each action, mention percentage share of funding possible through either of these funding sources (%)					
Actions	Type	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Total CapEx	Central	State Grants	Debt	Private	Beneficiary	ULB share (% and Rs. lakhs)		
Regularize unauthorised water supply connections	Existing system											0								
Convert stand posts/public taps into group connections	Existing system											0								
Lay internal infrastructure of water supply lines in slums	New infrastructure											123	50%	40%				10%	13	
Conduct energy audit	Data system											1						100%	1	
Repair non-functional metered water supply connections	Existing system											2					50%	50%	1	
Improve collection efficiency of water supply charges and taxes	Existing system											0								
Computerise wastewater records	Data system											6						100%	6	
Process improvement for new sewerage connection applications	Process/ Policy											0								
Regularize unauthorised sewerage connections	Existing system											0								
Increase connections using existing sewerage network	Existing system											0								
Provision of safe on-site sanitation system for individual toilets in non-slums	Existing system											45					50%	50%	23	
Improve condition of existing community and public toilets	Existing system											4								
Information, education and communication (IEC) campaigns for	Existing system											48		50%				50%	24	
Provide on-site sanitation system in city and slums	New infrastructure											368			40%		50%	10%	37	
Procure new suction emptier trucks	New infrastructure											0								
Construct closed surface drains for storm water drainage	New infrastructure											68						100%	68	
Construct/upgrade faecal sludge treatment plant	New infrastructure											229				70%		30%	63	
Improve wastewater and septage quality surveillance	Process/ Policy											0								
Improve consumer grievance redressal system	Existing system											0								

Snapshot of entire structure for Action Plan Finances in PIP model

# Approach to Financial Planning

Financial planning essentially involves a balancing act between meeting funding requirement from external and internal ULB sources of funds. It also assesses sustainability of these sources in long run.



# Preparation of Operating Plan

Financing Plan for water supply and sanitation is linked to overall municipal finance as most ULBs do not have a separate account. It results in transfer of revenue surplus from other sectors (Non-WSS) to WSS for revenue and capital expenditure as required. The investment requirement from PIP Action Plan is linked to funding sources calibrated in Action Plan finances.



Sources of revenue to meet operating expenditure

1. Additional income generated by improvement actions
2. Revise tariff structure
3. Non-WSS revenue surplus transfer to WSS

Snapshot of financial decisions to meet operating expenditure

KEY FINANCING DECISIONS										
Financing Plan	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
<b>WSS OPERATING AND MAINTENANCE PLAN</b>										
<b>1. Income generated from PIP actions</b>										
Income generated	108	160	162	148	174	190	214	216	218	219
<b>2. Revise WSS charges and tariffs</b> <span style="float: right;"><i>Link to</i> <a href="#">Revise WSS tariffs</a></span>										
Additional income generated	-	-	70	86	93	95	183	201	245	256
<b>3. Revise own municipal sources of funds</b> <span style="float: right;"><i>Link to</i> <a href="#">Revise own tax sources</a></span>										
Additional income generated	49	57	80	84	156	183	191	196	425	466
<b>4. Transfer Non WSS revenue surplus for WSS services</b> <span style="float: right;"><i>Link to</i> <a href="#">Review past trends</a></span>										
Non WSS revenue surplus	392	506	584	640	761	854	927	995	1,293	1,451
Propose transfer of surplus for WSS services	314	405	467	512	609	683	742	796	1,034	1,161
	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
<b>Operating ratio *</b>	<b>0.9</b>	<b>0.7</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.5</b>	<b>0.7</b>	<b>0.6</b>	<b>0.4</b>

# Snapshot of setting tariff structures in PIP model

Revision in tariffs for revenue enhancement to meet funding requirement of capital expenditure, operating expenditure & debt servicing.



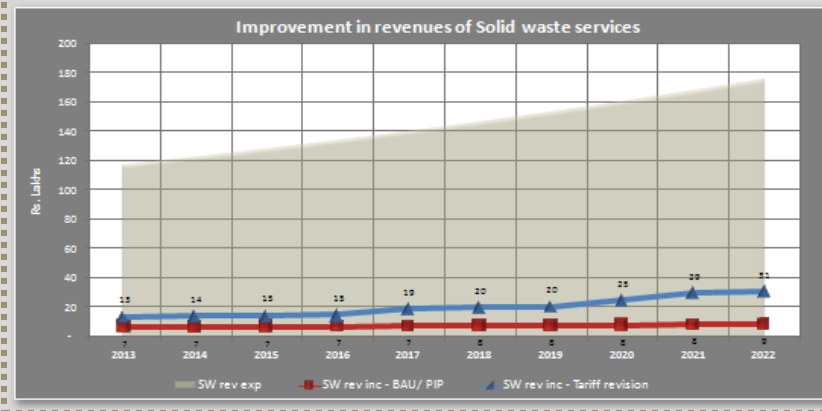
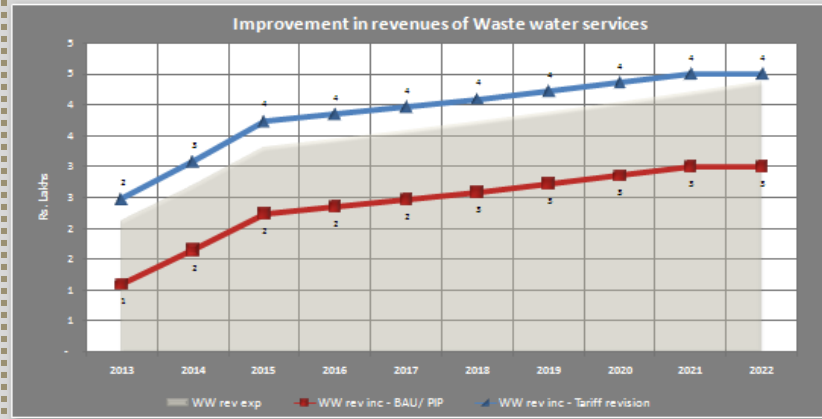
## Tabular boxes for setting of tariffs sector-wise

TARIFFS FOR WASTE WATER SERVICES												
<b>1. New connection charges for sewerage connection</b>												
Does the city have sewerage network?			NO			Connection charge			0			
If there is any proposal for laying new sewerage network, then charges for new connections are?			NO			3,000			100.0%			
% age increment in connection charge			2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
% age increment in subsidy in connection charges for poor											20%	
<b>2. Sanitation charges based on flat rate</b>												
Are sanitation charges based on flat rate levied in city presently?			NO			Mode of charging			Flat rate/ unit			
If No, and if planned to levy then start it from which year?			Year			Number of properties			0			
% age increment in flat rate based user charges			2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
<b>3. Property tax linked wastewater tax</b>												
Is property tax linked Ww tax levied in city presently?			NO			% of general property tax			0.0%			
If No, and if planned to levy then start it from which year?			Year			2013			2.00%			
% age increment in Wwaste water tax as percentage of			2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
<b>4. Sewerage benefit tax</b>												
Is sewerage benefit tax levied in city presently?			NO			Ref connection/annum			0			
If No, and if planned to levy then start it from which year?			Year									
% age increment in Sewerage benefit tax			2013	2014	2015	2016	2017	2018	2019	2020	2021	2022

TARIFFS FOR SOLID WASTE MANAGEMENT SERVICES												
<b>1. Solid waste charges based on flat rate</b>												
Is SW user charges levied in city presently?			Yes			Mode of charging			Flat rate/ annum			
If No and if planned to levy, then mention year to start it?			Year			Number of HHs & estab.			40			
% age increment in Flat rate based user charges			2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
			200%			100%			100%	100%		
<b>2. Property tax linked Solid waste tax</b>												
Is property tax linked SW charges levied in city presently?			No			% of general property tax			0.00%			
If No, and if planned to levy then start it from which year?			Year									
% age increment in Solid waste tax as percentage of			2013	2014	2015	2016	2017	2018	2019	2020	2021	2022

## Visual display of impact on revenues



# Preparation of Capital Plan

Sources of revenue to meet capital expenditure

1. Review of funds determined in 'Action plan finances' – Grants, debt, private players, beneficiary contributions
2. Determine transfer of revenue surplus from WSS revenue account
3. Determine transfer of CapIn surplus from Non-WSS capital account
4. Determine additional debt requirement and terms & condition of debts

BASELINE INFORMATION

ASSESS CITY PRIORITIES

SELECT IMPROVEMENT ACTIONS

DEVELOP IMPROVEMENT PLAN

REVIEW IMPROVEMENT PLAN

MAKE FINANCIAL DECISIONS

REVIEW FINANCING PLAN

Snapshot of financial decisions to meet capital expenditure

## WSS CAPITAL EXPENDITURE PLAN

### 1. WSS own fund sources and external funds for PIP

Already approved WSS CapIn	17	17	18	19	20	21	22	23	24	26
Grant-in-aid from Central & State government	20	25	26	4	2	2	2	-	-	-
Public contribution through PPP & Beneficiaries	29	39	99	461	491	453	485	0	0	0

### 2. Allocate WSS revenue surplus for capital funding

WSS revenue surplus	70	202	342	405	486	566	731	594	746	1,444
Dedicate funds for CapEx funding	35	101	171	203	243	283	365	297	58	0%
	50%	50%	50%	50%	50%	50%	50%	50%	8%	0%

NOTE: Aggregation of funds dedicated for debt servicing and CapEx should not exceed WSS revenue surplus amount.

### 3. Transfer Non WSS CapIn for WSS projects

Non WSS CapIn surplus	11	37	79	139	217	315	434	575	741	933
Propose transfer of surplus for WSS CapEx (% transfer)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

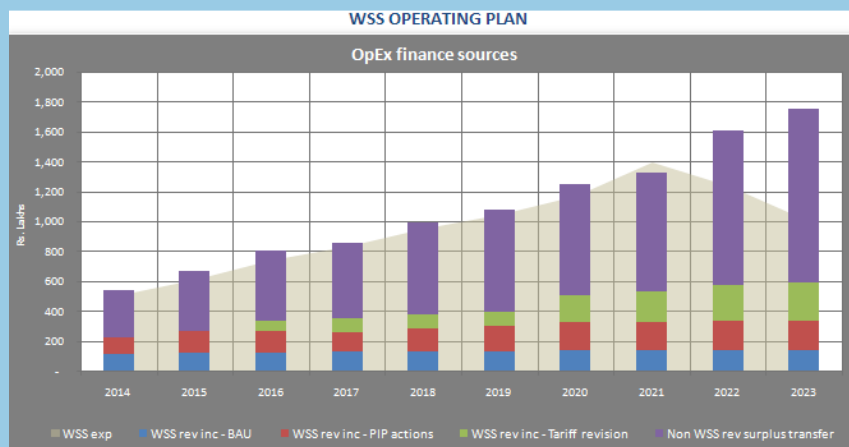
Link to [Review past trends](#)

### 4. External borrowings

Debt for funding PIP projects	-	5	6	20	21	16	17	-	-	-
Additional debt required	175	259	201	276	109	131	140	187		
Terms of conditions	Rate of interest (%)						10%			
	Moratorium period (No. of years)						1			
	Period of Borrowing (No. of years)						15			
Debt servicing requirement	-	18	54	90	129	155	172	189	209	211

Debt service coverage ratio*	NA	12.22	7.33	5.50	4.77	4.65	5.25	4.14	4.57	7.84
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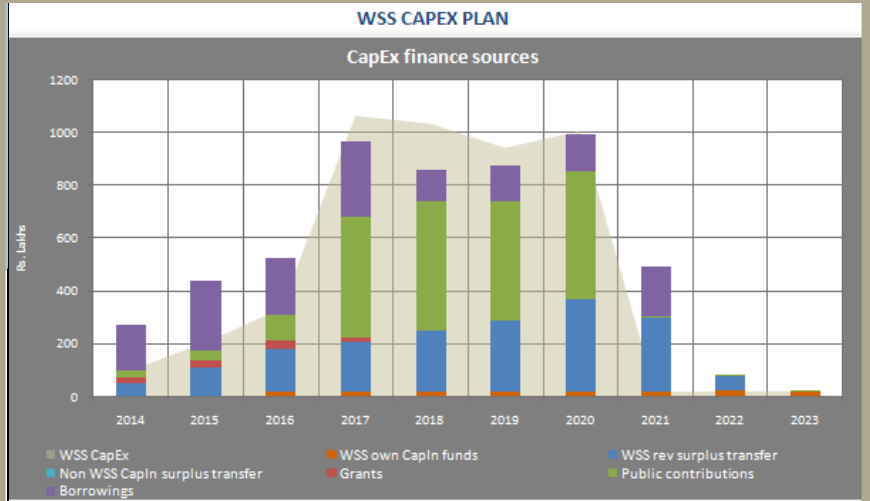
# Snapshot of CapEx and OpEx plan summary in PIP model



Snapshot of Operating plan summary and tariff structures

### TAXES AND CHARGES REVIEW

Average demand/ household/ annum	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Property tax demand	694	1041	1041	1041	1041	1561	1561	1561	1561	3123	3123
Water supply demand	960	960	960	1920	1920	1920	2680	2680	2680	2680	2680
Waste water demand	35	52	52	104	104	156	187	187	187	375	375
Solid waste demand	40	40	40	153	153	189	189	394	394	628	628
<b>Total demand/ HH/ annum</b>	<b>1729</b>	<b>2093</b>	<b>2093</b>	<b>3218</b>	<b>3218</b>	<b>3827</b>	<b>3827</b>	<b>5023</b>	<b>5023</b>	<b>7006</b>	<b>7006</b>
Annual increment	-	21%	0%	54%	0%	19%	0%	31%	0%	39%	0%
Operating ratio feasible:-	-	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes



Snapshot of Capital plan summary and external sources of funds

### EXTERNAL FUNDING REVIEW

Sources of funds for CapEx	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Already approved CapIn	17	17	18	19	20	21	22	23	24	26
Grant-in-aids	20	24	34	11	0	0	0	0	0	0
Public contributions	29	39	99	461	491	453	485	0	0	0
Internal funds transfer	35	96	163	193	231	270	350	282	58	0
Borrowings	175	265	212	286	120	131	140	187	0	0
Debt servicing requirement	0	18	56	90	129	154	163	182	202	204
DCFR feasible:-	-	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

IMPACT OF FINANCING PLAN ON MUNICIPAL FINANCES

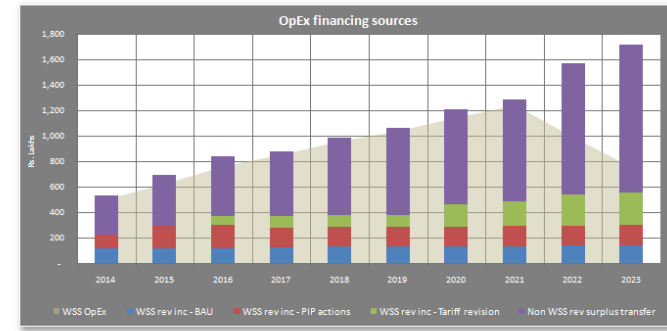
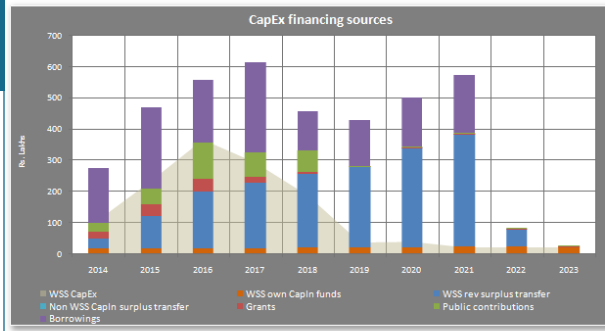
Budget heads	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
<b>REVENUE ACCOUNT</b>										
<b>Water supply and sanitation services (WSS)</b>										
Starting balance	-	35	101	171	202	243	283	366	297	688
Revenue receipts	537	681	817	872	1,004	1,099	1,272	1,348	1,635	1,777
Revenue expenditure	502	615	747	841	963	1,059	1,189	1,417	1,244	1,021
<b>WSS Revenue account status</b>	<b>35</b>	<b>101</b>	<b>171</b>	<b>202</b>	<b>243</b>	<b>283</b>	<b>366</b>	<b>297</b>	<b>688</b>	<b>1,444</b>
<b>Services other than water supply and sanitation (Non WSS)</b>										
Starting balance	1	78	101	117	128	152	171	185	199	259
Revenue receipts	883	943	1,022	1,087	1,223	1,320	1,402	1,487	1,802	1,934
Revenue expenditure	806	920	1,006	1,076	1,199	1,301	1,388	1,473	1,742	1,903
<b>Non WSS Revenue account status</b>	<b>78</b>	<b>101</b>	<b>117</b>	<b>128</b>	<b>152</b>	<b>171</b>	<b>185</b>	<b>199</b>	<b>259</b>	<b>290</b>
<b>CAPITAL ACCOUNT</b>										
<b>Water supply and sanitation services (WSS)</b>										
Starting balance	-	178	421	612	533	387	353	379	869	933
Capital receipts	276	446	521	982	886	906	1,031	507	82	26
Capital expenditure	98	203	330	1,061	1,032	940	1,005	17	18	19
<b>WSS Capital account status</b>	<b>178</b>	<b>421</b>	<b>612</b>	<b>533</b>	<b>387</b>	<b>353</b>	<b>379</b>	<b>869</b>	<b>933</b>	<b>940</b>
<b>Services other than water supply and sanitation (Non WSS)</b>										
Starting balance	-	11	37	79	139	217	315	434	576	742
Capital receipts	500	525	551	579	608	638	670	704	739	776
Capital expenditure	489	499	509	519	530	540	551	562	573	585
<b>Non WSS Capital account status</b>	<b>11</b>	<b>37</b>	<b>79</b>	<b>139</b>	<b>217</b>	<b>315</b>	<b>434</b>	<b>576</b>	<b>742</b>	<b>933</b>
<b>EXTRAORDINARY ACCOUNT</b>										
Starting balance	-	38	78	120	165	211	260	311	365	422
Receipts	135	142	149	157	164	173	181	190	200	210
Expenditure	97	102	107	112	118	124	130	136	143	150
<b>Extraordinary account status</b>	<b>38</b>	<b>78</b>	<b>120</b>	<b>165</b>	<b>211</b>	<b>260</b>	<b>311</b>	<b>365</b>	<b>422</b>	<b>482</b>
<b>OVERALL MUNICIPAL FINANCE</b>										
Total receipts	2,332	3,077	3,798	4,776	5,052	5,346	5,938	5,911	6,764	7,767
Total expenditure	1,992	2,339	2,699	3,609	3,842	3,964	4,263	3,605	3,720	3,678
<b>Closing balance*</b>	<b>340</b>	<b>738</b>	<b>1,099</b>	<b>1,167</b>	<b>1,210</b>	<b>1,382</b>	<b>1,675</b>	<b>2,306</b>	<b>3,044</b>	<b>4,089</b>

# Snapshot of Municipal finance summary in PIP model

Closing balance of WSS & overall municipal account shows surplus - Feasible financing plan



# Snapshot of entire structure of Financing plan in PIP model



Sources of funds	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Already approved CapEx	17	17	18	19	20	21	22	23	24	26
Grant-in-aids	20	37	43	21	8	2	2	0	0	0
Public contributions	30	51	115	77	69	1	1	1	1	1
Internal fund transfers	33	106	182	209	236	259	319	364	58	0
Borrowings	177	259	201	230	124	147	157	187	0	0
Debt servicing requirement	0	18	54	89	127	152	168	186	206	208
DSCR feasible	-	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Average tax demand (per household per annum)	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Property tax demand	694	1041	1041	1041	1041	1561	1561	1561	1561	3123	3123
Water supply demand	960	960	960	1320	1320	1320	1320	2880	2880	2880	2880
Wastewater demand	35	52	52	104	104	156	156	187	187	375	375
Solid waste demand	40	40	40	153	153	189	189	334	334	628	628
Total demand/household/annum	1729	2093	2093	3218	3218	3827	3827	5023	5023	7006	7006
Annual increment	-	21%	0%	54%	0%	19%	0%	31%	0%	35%	0%
Operating ratio feasible	-	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

## Water supply and sanitation Financing Plan

Financing Plan	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
<b>KEY FINANCING DECISIONS</b>										
<b>WATER SUPPLY AND SANITATION OPERATING PLAN</b>										
<b>1. Income generated from PIP actions</b>										
Additional income generated	106	174	183	155	160	153	155	157	159	
<b>2. Revise WSS charges and tariffs</b>										
Additional income generated	-	-	70	85	91	93	179	196	242	252
<b>3. Revise own income sources like Property tax</b>										
Additional income generated	43	57	80	84	156	183	191	196	425	466
<b>4. Allocate Non-WSS revenue surplus for WSS services</b>										
Non-WSS revenue surplus	392	506	584	640	761	854	927	995	1,293	1,451
Propose allocation of surplus for WSS OpEx	314	405	467	512	609	683	742	796	1,034	1,161
Operating ratio	0.9	0.7	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.3
<b>WATER SUPPLY AND SANITATION CAPITAL PLAN</b>										
<b>1. External sources of funds</b>										
Already approved WSS CapEx	17	17	18	19	20	21	22	23	24	26
Grants from Central & State government	20	37	43	21	8	2	2	0	0	0
Public contribution through PPP and Beneficiaries	30	51	115	77	69	1	1	1	1	1
<b>2. Allocate WSS revenue surplus for capital funding</b>										
WSS revenue surplus	66	212	364	417	473	517	639	727	1,004	1,906
Propose allocation of surplus for WSS CapEx	33	106	182	209	236	259	319	364	58	0%
Operating ratio	50%	50%	50%	50%	50%	50%	50%	50%	6%	0%
<b>3. Allocate Non-WSS CapEx for WSS capital funding</b>										
Non-WSS CapEx surplus	11	37	79	139	217	315	434	575	741	933
Propose allocation of surplus for WSS CapEx	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
<b>4. External borrowings</b>										
Debt from Action Plan finance	2	0	-	14	15	16	17	-	-	-
Additional debt required	175	253	201	276	109	131	140	187		
Terms of conditions	Rate of interest (%)		10%		Moratorium period (Number of years)		1		Period of Borrowing (Number of years)	
Debt servicing requirement	-	18	54	89	127	152	168	186	206	208
Debt service coverage ratio	NA	12.78	7.74	5.69	4.72	4.40	4.80	4.91	5.87	10.16

## IMPACT OF FINANCING PLAN ON MUNICIPAL FINANCES

Budget heads	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
<b>REVENUE ACCOUNT</b>										
<b>Water supply and sanitation services (WSS)</b>										
Opening balance	-	33	106	182	208	237	258	320	363	946
Revenue receipts	534	694	837	877	987	1,058	1,206	1,282	1,570	1,711
Revenue expenditure	501	621	761	851	958	1,037	1,144	1,239	987	751
WSS Revenue account status	33	106	182	208	237	258	320	363	946	1,906
<b>Services other than water supply and sanitation (Non-WSS)</b>										
Opening balance	1	78	101	117	128	152	171	185	199	259
Revenue receipts	883	943	1,022	1,087	1,223	1,320	1,402	1,487	1,802	1,934
Revenue expenditure	806	920	1,006	1,076	1,199	1,301	1,388	1,473	1,742	1,903
Non-WSS Revenue account status	78	101	117	128	152	171	185	199	259	290
<b>CAPITAL ACCOUNT</b>										
<b>Water supply and sanitation services (WSS)</b>										
Opening balance	-	170	408	599	922	1,192	1,586	2,050	2,606	2,670
Capital receipts	277	470	558	616	457	429	501	575	83	27
Capital expenditure	107	232	367	233	187	35	37	19	19	20
WSS Capital account status	170	408	599	922	1,192	1,586	2,050	2,606	2,670	2,677
<b>Services other than water supply and sanitation (Non-WSS)</b>										
Opening balance	-	11	37	79	139	217	315	434	576	742
Capital receipts	500	525	551	579	608	638	670	704	739	776
Capital expenditure	489	499	509	519	530	540	551	562	573	585
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<b>EXTRAORDINARY ACCOUNT</b>										
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Receipts	135	142	143	157	164	173	181	190	200	210
Expenditure	97	102	107	112	118	124	130	136	143	150
Extraordinary account status	38	78	120	165	211	260	311	365	422	482
<b>OVERALL MUNICIPAL FINANCE</b>										
Total receipts	2,330	3,104	3,847	4,413	5,001	5,627	6,550	7,538	8,503	9,637
Total expenditure	2,000	2,374	2,750	2,851	2,992	3,037	3,250	3,429	3,464	3,409
Closing balance	330	730	1,097	1,562	2,009	2,590	3,300	4,109	5,039	6,288

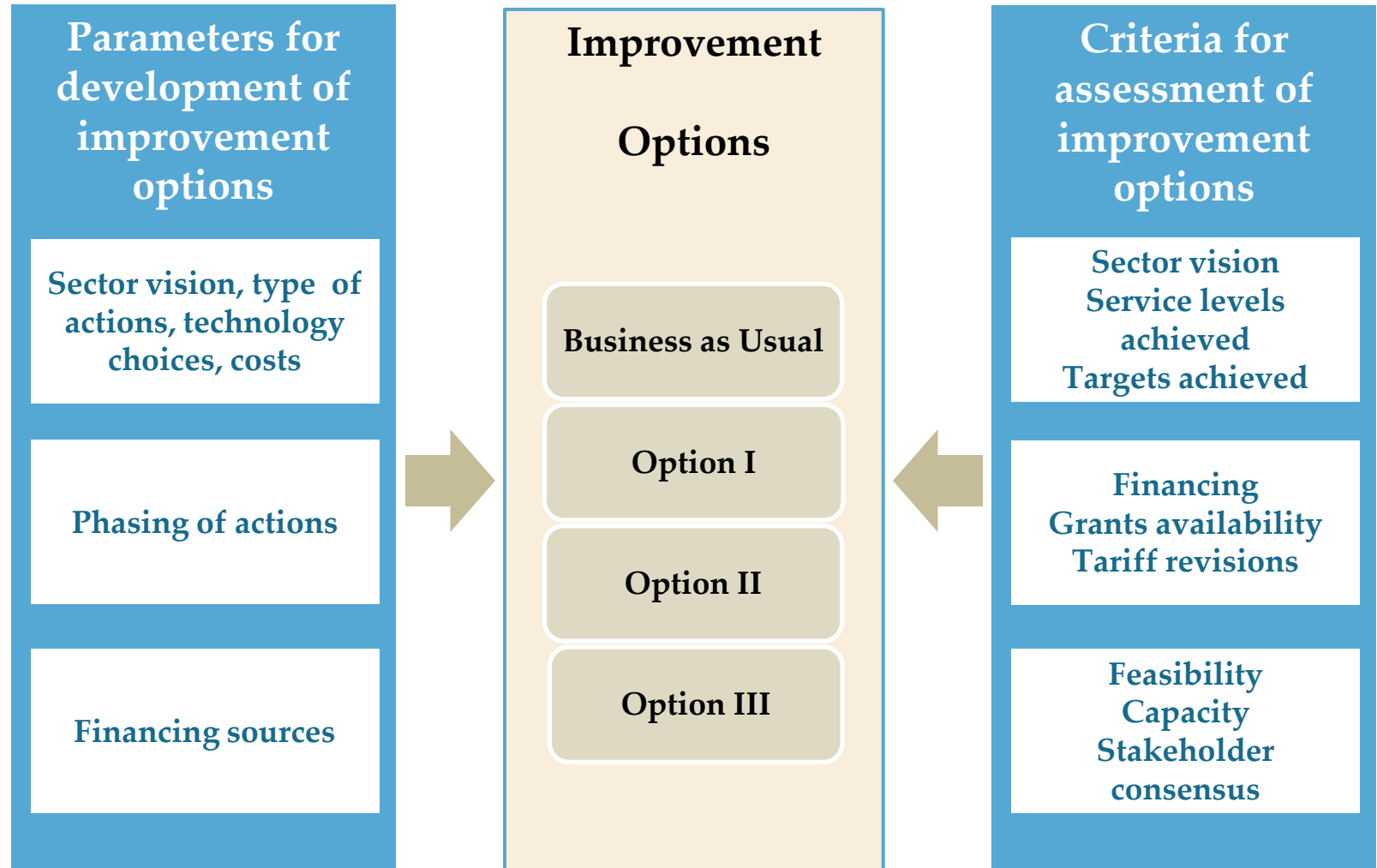


# PIP Plan options

# Preparation of PIP plan options for evaluation

Each improvement option can comprise of

- Discrete set of actions to achieve different performance level
- Assess different technologies
- Capture varying phasing of actions
- Vary financing arrangements
- Assess improving efficiency & low-no cost actions and capital asset projects



# Snapshot of Performance Improvement Plan Summary in PIP model



## KEY ASPECTS OF PERFORMANCE IMPROVEMENT PLAN

CLICK HERE TO CUSTOMIZE KPI WIGHTAGES FOR SECTOR SCORE. BY DEFAULT ALL KPIS ARE GIVEN EQUAL WIGHTAGES.

Name of PIP option: **City sanitation plan**

### PERFORMANCE ASSESSMENT

Sector scores (% improvement)	Water supply	Wastewater	Solid waste
Start year of Plan - 2013	63%	46%	46%
End year of Plan - 2023	92%	120%	66%

### ACTION PLAN SUMMARY

Improvement actions (Nos. of actions)	Water supply	Wastewater	Solid waste
Data improvement	1	1	2
Process/ policy improvement	0	2	4
Existing system improvement	5	10	4
New infrastructure	2	10	7

Financial implications (Rs. Lakhs)	Water supply	Wastewater	Solid waste
Capital expenditure	157	966	38
Operating expenditure/ annum	2.9	21.9	155.9
Revenue generation/ annum	75.6	79.3	0.7

### FINANCING PLAN SUMMARY

**CapEx Plan**

Average DSCR = 6.8

**OpEx Plan**

Average Operating ratio = 0.6

Tariffs (Rs/HH/ annum)	Property tax	Water supply	Waste water	Solid waste
Start year of Plan - 2013	694	960	35	40
End year of Plan - 2023	3123	2880	375	628

## IMPACT OF PERFORMANCE IMPROVEMENT PLAN ON WSS SECTORS

SCENARIO NAME	Sewerage network			
<b>A) Summary of impact on service levels and finances</b>				
Improvement in sectoral performance	Improvement in service levels (sectoral scores)		Finances of PIP actions (Future values of investments)	
	Start of Plan period - 2013	End of Plan period - 2023	PV of capital costs	NPV of Municipal O&M
Water supply services	60%	83%	1371	410
Wastewater services	38%	59%	2642	-187
Solid waste services	40%	49%	176	-836
<b>B) Summary of Financial Plan</b>				
Funding sources for WSS operations and investments	Internal surplus from Non-water supply & sanitation	Income of water supply & sanitation	Grant-in-aids	External Borrowings
<b>Total funds required = Rs. 12391.06 lakhs</b>	5707 46%	4443 36%	757 6%	1485 12%

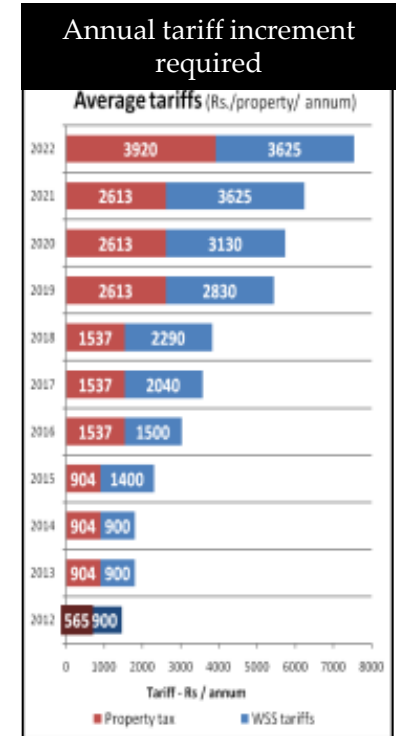
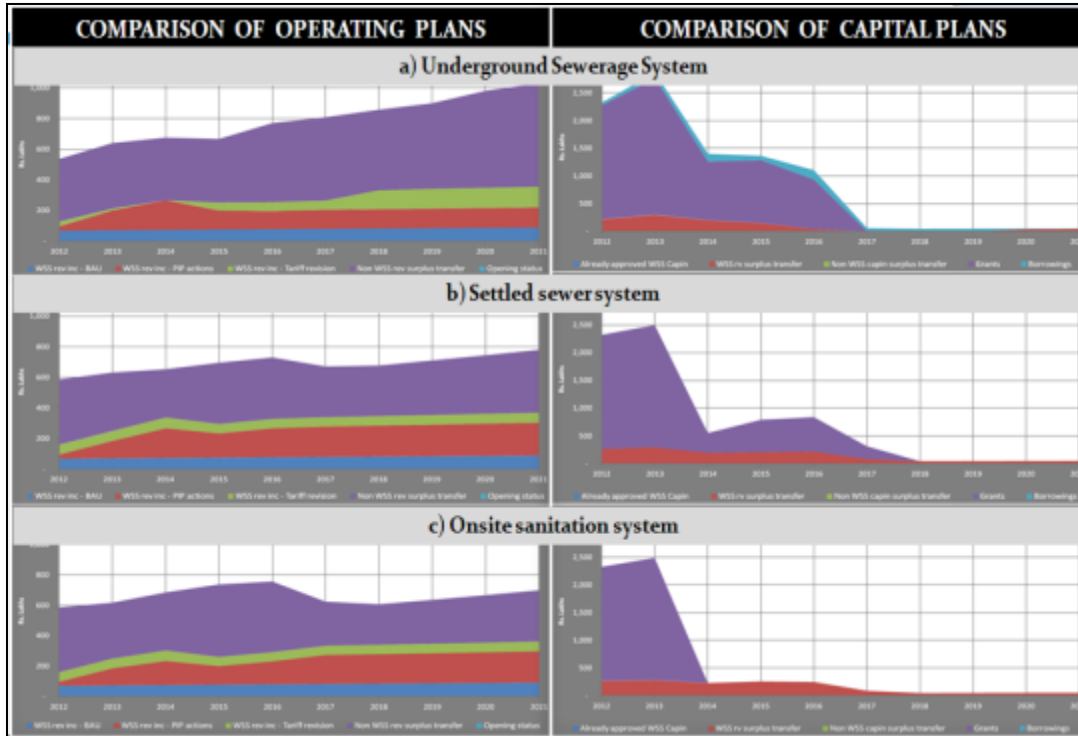
# Application of PIP model for a city - Comparison of PIP Options for a City

Three sanitation options were simulated for a city in PIP Model to assess its impact on services and finances:

- i) Conventional underground sewerage
- ii) Settled sewer system
- iii) On-site sanitation system

The Model was simulated to provide similar outreach of services with all sanitation options, the financial impact of these options varied considerably. A sample result of these results are shown here.

PIP options	Capital Finances					Operating Finances		Tariff increase required Base tariff = Rs.1465/HH/yr
	Sources of funds (Rs cr)					Average/yr (Rs cr)		
	Grants	ULB funds		Private	Total Capex	Add. Opex	Add. Revenue	
Internal funds		Debt						
I) Business as Usual scenario with committed projects	42.6	9.1	-	-	51.7	0.9	0.9	Rs. 2066
II) Proposal with only Wastewater Technology Options								
A. Citywide Sewerage	76.1	9.9	7.0	1.5	94.5	2.3	1.2	Rs. 3602
B. Citywide Settled sewer	60.5	14.7	-	2.0	77.2	1.4	1.7	Rs. 2055
C. On-site sanitation system	42.6	15.7	-	4.7	63	1.0	1.5	Rs. 2055



# Thank you

PIP Model is available at

*[www.pas.org.in](http://www.pas.org.in)*

For more information, write to us at

*[pas@cept.ac.in](mailto:pas@cept.ac.in)*