

IFSM TOOLS FOR CITYWIDE ASSESSMENT AND PLANNING

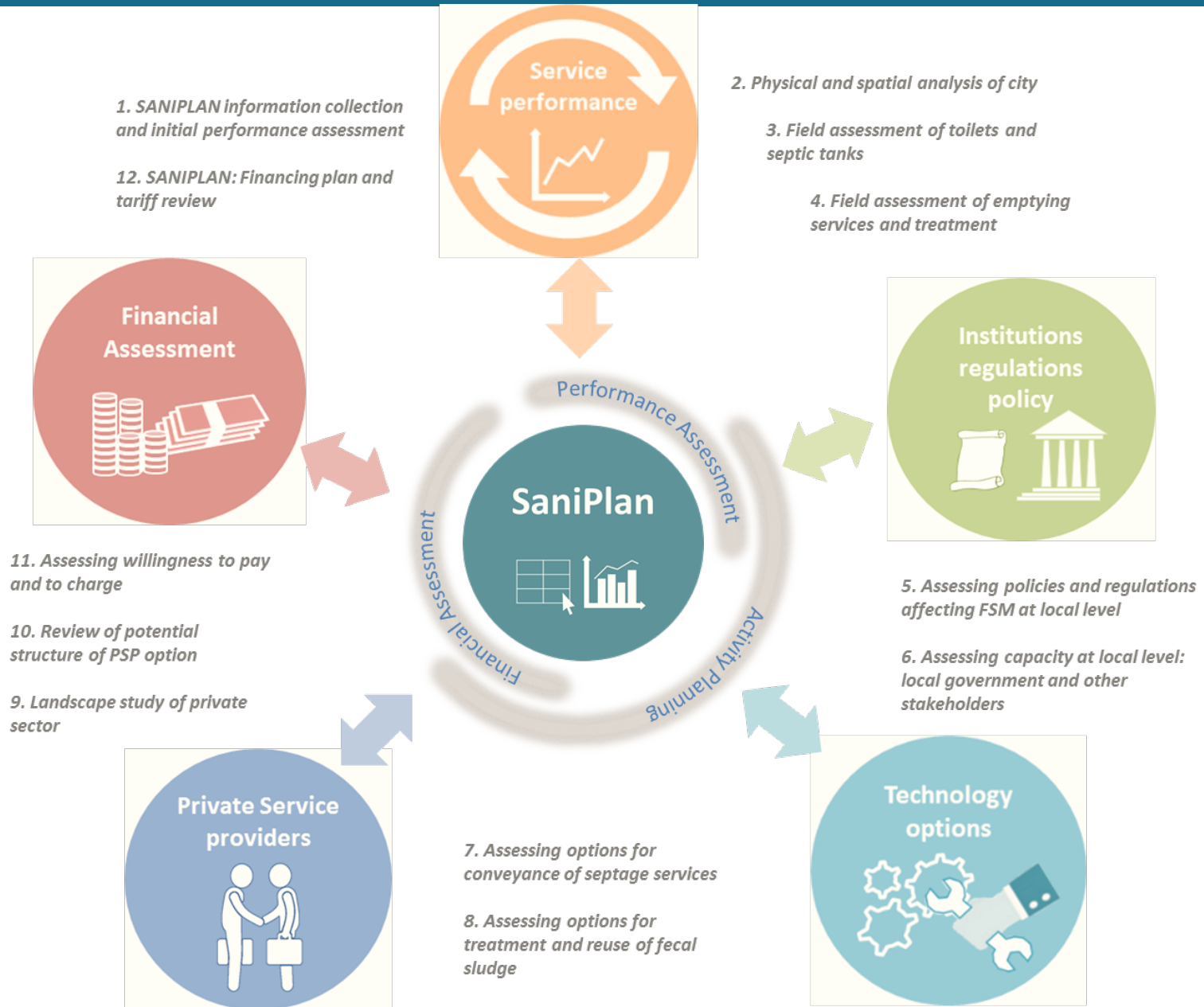
FSM Toolbox Testing Workshop
Jan 20-22

Upasana Yadav

Objective

“Main objective of tools for Citywide assessment and planning is to help users identify **key areas of assessment** for commencing IFSM planning in city facilitated by **SANIPLAN model** and **tools for data collection and field assessment** which will help making informed discussion among stakeholders and provide for ‘evidence-based’ decision making by city authorities”

Five Modules of Assessment



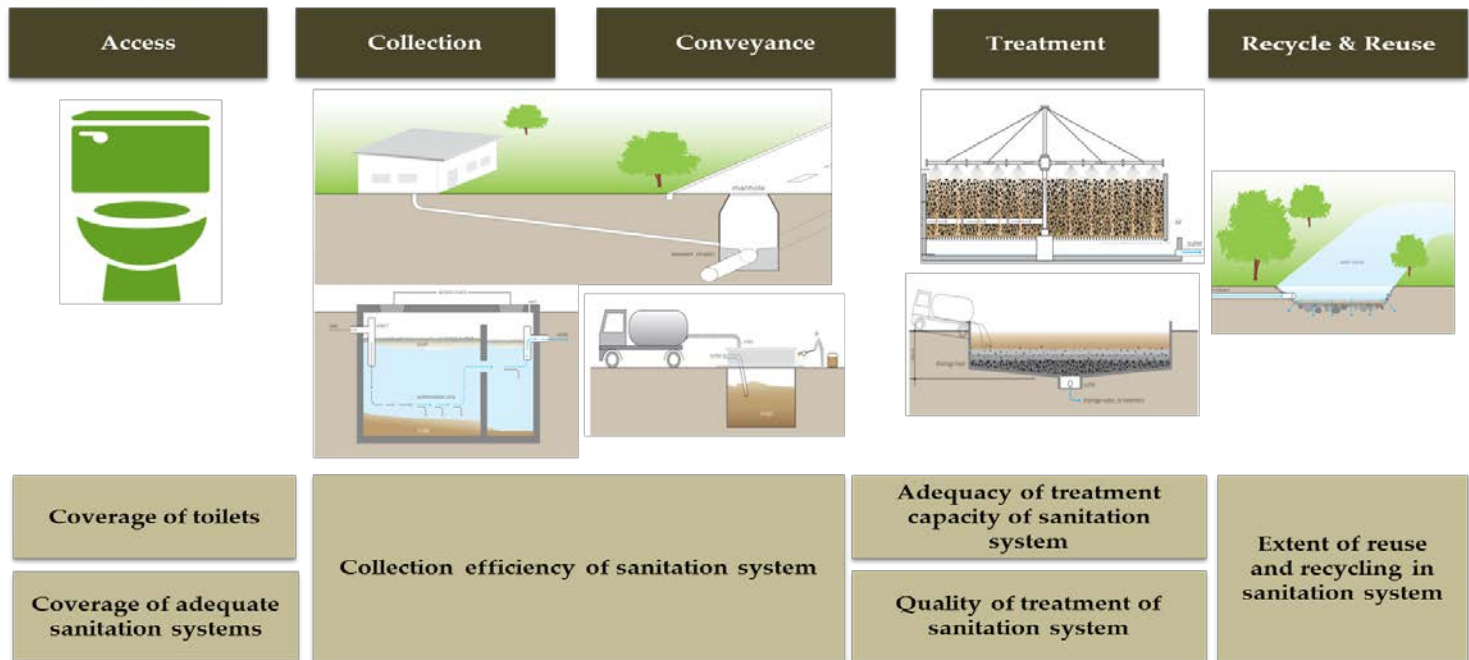
Module-1



Assessing service performance across the service chain through a city level assessment is the first step in planning process.

It is an important exercise, which provides an initial sense of the state of FSM in the city, help in understanding the context and identifying gaps in key services.

The data collection and field assessments in the city should start with a kick-off meeting with key stakeholders.

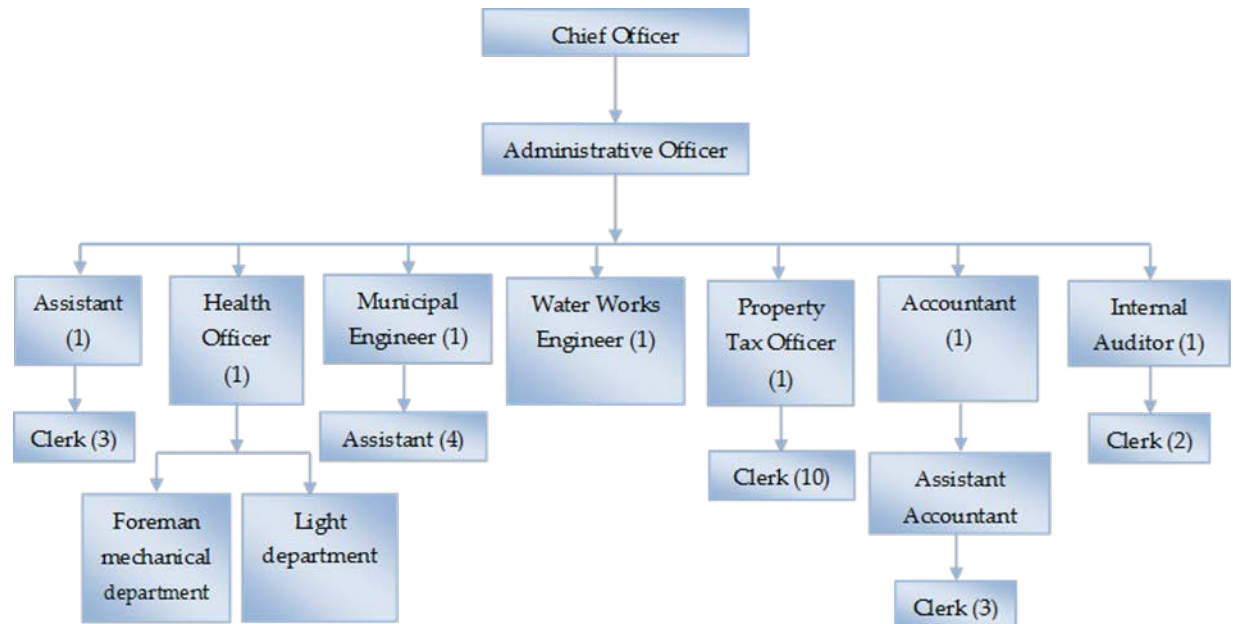


Module-2



It is important to understand and assess the prevailing enabling and regulatory environment as well as capacity of local stakeholders to manage the citywide FSM services.

This can be assessed by a review of: a) State/national policies and guidelines on FSM, b) Regulatory framework for treatment, disposal, and reuse of fecal matter, and c) assessing roles and responsibilities of local government for FSM.



Module-3



In designing a citywide IFSM service, it is important to assess technology options for each link in the service chain.

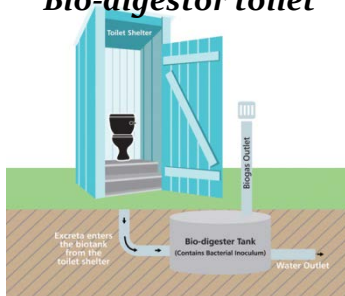
This ranges from appropriate toilets and onsite systems such as septic tanks to conveyance as well as treatment and reuse.

Toilets and Septic tanks

Twin pit



Bio-digester toilet



Emptying services

Conventional Vacuum Tanker



Mini-Vacuum Tanker (Vacutug)



Treatment technologies

Sludge drying bed



Co-composting



Module-4

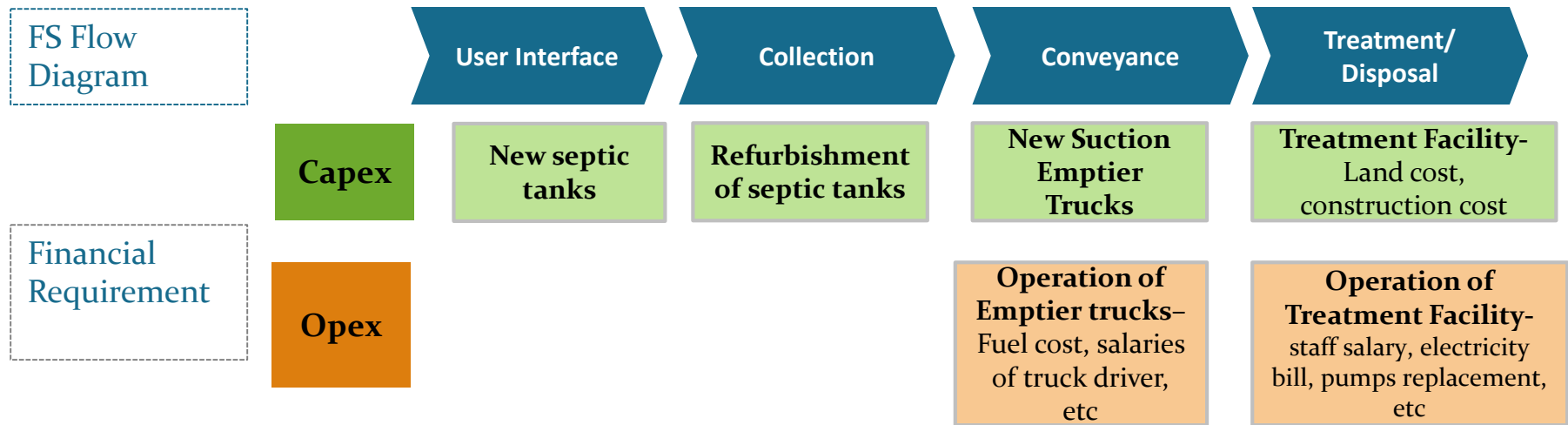


To ensure financial sustainability of FSM services, it is important to assess capacity for financing of both capital and O&M expenditure over the plan period.

This can start with an assessment of financial requirements for both capital and O&M expenditures.

The assessment also provides guidance on potential sources of finance for meeting these expenditures including through external grants, private sector investments, user contributions, external debt or through local government internal resources.

Assessment of Financing requirement across FSM service chain



Module-5

Private Service providers



While the city governments generally have the mandate to ensure service provision, often there is an active private sector that provides FSM services in the city.

It is necessary to assess the current role of private sector providers as well as their potential role in a citywide service provision

The assessment will thus need to start with a quick landscape analysis, and can be followed by a detailed assessment after the FSM strategy is developed.

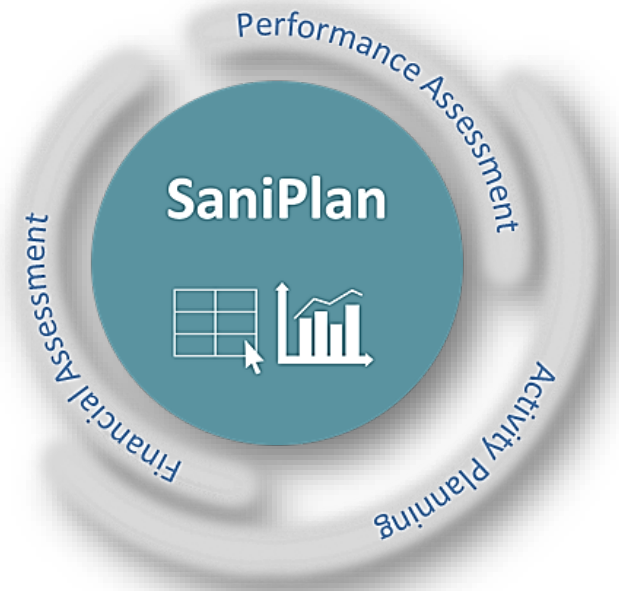


SANIPLAN

SANIPLAN is a decision support tool that provides a structured approach to planning for urban sanitation.

It is a planning tool which can support more informed stakeholder participation.

SANIPLAN has three modules: a) performance assessment, b) action planning, and c) financial planning.



SaniPlan

IFSM Planning Tool



Link to website

<https://sites.google.com/site/pasprojectifsmguide/home?previewAsViewer=1>



Integrated Faecal Sludge Management

Tools for Citywide Assessment and Planning

Citywide Integrated Faecal Sludge Management (IFSM) planning involves assessment and planning across the full service chain. Citywide approach suggests universal coverage of services in all areas and for all properties in the city. It also involves a review of the full service chain – user interface, storage, conveyance, treatment and reuse. The focus here is on providing effective and sustainable sanitation services by the local government and other service providers.

Citywide IFSM planning is a consultative process and the tools for citywide assessment presented here help informed discussion among stakeholders and provide for 'evidence-based' decision making by city authorities. The process should start off with a kick-off meeting with key stakeholders. Consultations with key stakeholders should be planned during key stages in the planning process.

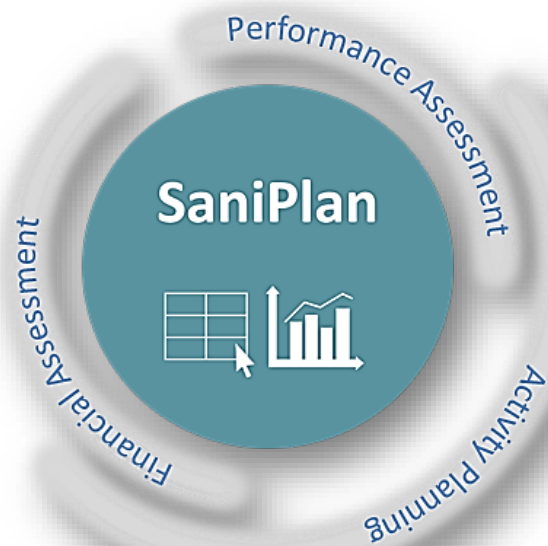
The IFSM planning process is facilitated by SANIPLAN, a decision support tool that has three main areas: a) assessment of service performance across the full service chain, b) designing an action plan to ensure service improvements across the chain, and c) developing a financing plan for both capital and O&M costs for the full plan period.

Citywide Assessment

Citywide assessment of FSM is the first key step for IFSM planning. The tools are organized around five key areas. Assessing the current situation of FSM in these five areas is important to develop a FSM plan that is technically appropriate and financially feasible at local level. Assessment in each area entails review of available information at city level, identifying information gaps, and conducting field studies where necessary.



SANIPLAN Tool



Conventional Approach versus SANIPlan approach

Conventional Approach



'PROJECT'
based approach

Focus on achieving **OUTPUTS**

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

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

SANIPLAN Approach



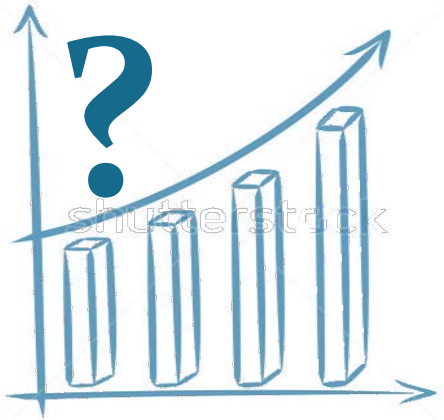
'SERVICE'
based approach

Focus on achieving **OUTCOMES**

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

Focus on developing integrated **SECTORAL SOLUTIONS**

Key Components of SANI Plan



Performance
Assessment



Action
Planning



Financial
Planning

Steps in SANI Plan



Performance Assessment



Action Planning



Financial Planning

Baseline Information

BASELINE INFORMATION FOR PERFORMANCE ASSESSMENT

water supply, wastewater and solid waste; Municipal finance past trends and future forecasts

Excel sheet in SANIPLAN : WSS info, Finance info, Municipal Finance

PERFORMANCE ASSESSMENT

Step 1. ASSESS CITY PRIORITIES

Review trends of key performance indicators and peer comparison

Excel sheet in SANIPLAN : Performance assessment

Step 2. SELECT IMPROVEMENT ACTIONS

Identify improvement actions to meet sector goals

Excel sheet in SANIPLAN : Performance assessment

ACTION PLANNING

Step 3. DEVELOP IMPROVEMENT PLAN

Design of actions in Improvement Plan – Phasing, quantity and costs

Excel sheet in SANIPLAN : WS Plan, WW Plan, SW Plan

Step 4. REVIEW IMPROVEMENT PLAN

Review impact on service performance

Excel sheet in SANIPLAN : Summary of Action Plan

FINANCIAL PLANNING

Step 5. MAKE FINANCIAL DECISIONS

Sources of funds, Tariff structures & levels, Transfer surplus to WSS

Excel sheet in SANIPLAN : Action Plan finance, Financing Plan

Step 6. REVIEW FINANCING PLAN

Review feasibility of Financing plan for CapEx and OpEx

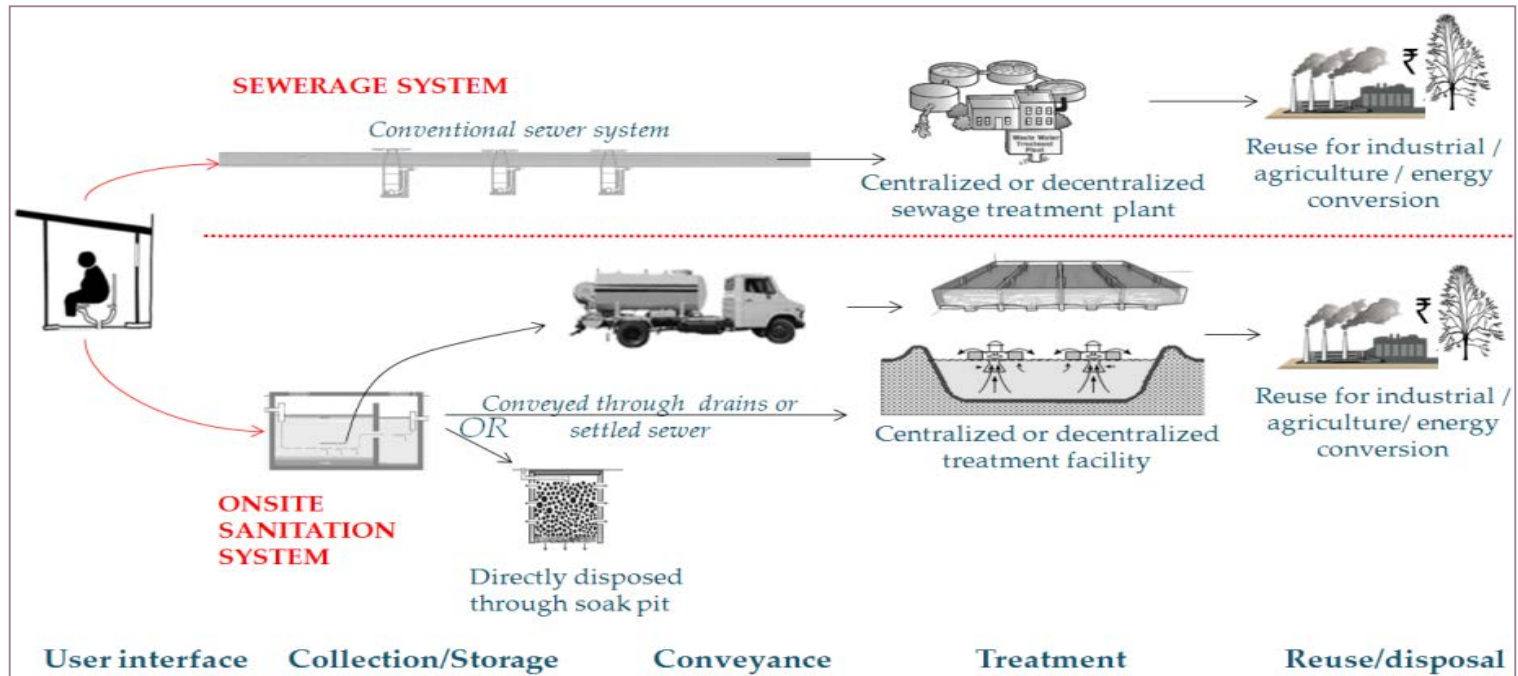
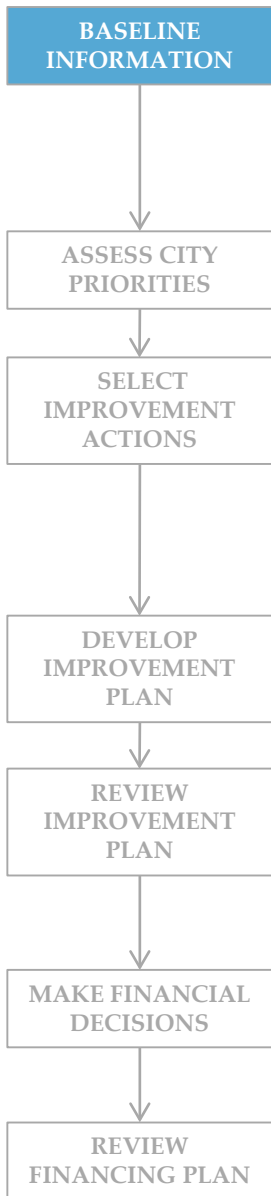
Excel sheet in SANIPLAN : Financing Plan



Step-1 Baseline Information

Base line Information for WSS across Value chain

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



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

Snapshot of WSS Info input sheet

B Details of non-sewered areas in city

i) Households with individual toilet facility

Sr. No.	Particulars		Non-slum households	Slum households
	Black water disposal system of toilets	Effluent disposal system of toilets		
1	Septic tanks	Soak pits	424	
2	Septic tanks	Open/ closed drains (unsafe)	3,816	189
3	Pit latrines (unsafe)	Open/ closed drains (unsafe)	211	2
	Total		4,451	191

ii) Emptying of septic tanks

Sr. No.	Suggested emptying cycle (number of years between successive emptying)	
1	For household level septic tanks	3
2	For septic tanks of community/public toilets	1

The USEPA suggests 3-5 years, Govt. of India suggests a 2-3 years cleaning cycle

Sr. No.	Particulars	Urban local body (ULB)	Private service providers
1	Involvement in emptying septic tanks in the city (Yes/No)	Yes	No
2	Number of suction emptier trucks used for cleaning septic tanks	1	
3	Aggregate capacity of all suction emptier trucks (kl)	5	
4	Number of trips made by a suction emptier truck (Trips/working day/truck) <i>NOTE : If trips are not made daily, then convert trip frequency into per day ratio. Eg: 1 trip is made every week then, 1/6 = 0.17 trips/ day</i>	1.0	

iii) Faecal sludge treatment and disposal (FSTD) facility

Sr. No.	Particulars	Unit	Value
1	Installed capacity of FSTD facility	Cu.m./ month	-
2	Functional capacity of FSTD facility	Cu.m./ month	-
3	Estimated percentage of by-product (manure) derived from septage treated at the plant	%	0%
4	Quantity of manure reused, if any	Cu.m./ month	-

WSS Info
sheet of
SANIPlan

Snapshot of Finance Info input sheet

Status of budgets

Particulars	2009	2010	2011	2012	2013	2014
Select type of budget figures provided for each year	Actual figure	Actual figure	Actual figure	Actual figure	Revised estimate	Budget estimate
Abbreviation for budget type	(A)	(A)	(A)	(A)	(RE)	(BE)
Availability of budget (tick if available)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

I Municipal revenue and expenditure

All figures in INR Lakhs

Sr. No.	Particulars	2009 (A)	2010 (A)	2011 (A)	2012 (A)	2013 (RE)	2014 (BE)
	Opening balance	295.2	315.2	300.2	473.3	743.5	858.0
	Property tax	89.6	85.8	86.9	142.1	200.7	250.1
	Other taxes and charges	58.7	72.6	64.6	98.0	174.3	182.5
	Other receipts (non-tax + grants)	445.0	601.6	656.0	761.9	1,013.9	971.4
	Total revenue receipts	593.3	760.0	807.5	1,002.0	1,389.0	1,403.9
	Revenue expenditure	546.5	802.1	724.7	918.3	1,169.3	1,320.7
	Capital receipts	463.5	196.5	644.0	128.9	962.6	688.2
	Capital expenditure	365.0	188.3	958.6	215.0	939.1	471.2

Budget past trends

II WSS revenue and expenditure

All figures in INR Lakhs

B FSM and Wastewater

Sr. No.	Particulars	2009 (A)	2010 (A)	2011 (A)	2012 (A)	2013 (RE)	2014 (BE)
	Wastewater related taxes and charges	-	-	-	-	-	-
	Other receipts	-	-	-	-	-	-
	Total revenue receipts	-	-	-	-	-	-
	Revenue expenditure	55.5	68.5	84.9	111.6	121.2	108.0
	Capital receipts	-	-	-	-	-	-
	Capital expenditure	-	-	-	-	-	-

III Taxes and user charges

All figures in INR Lakhs

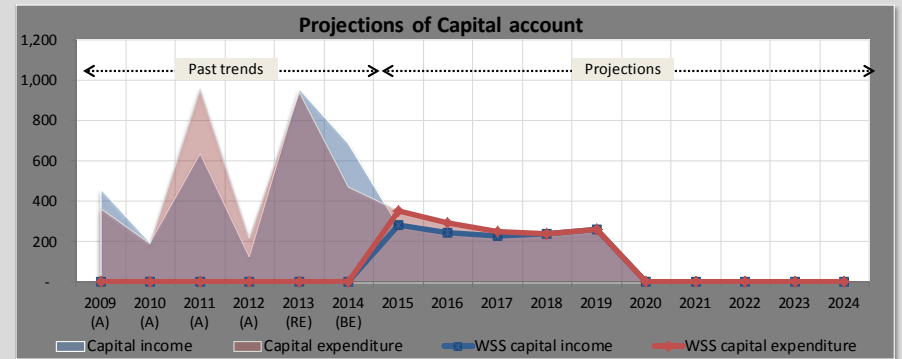
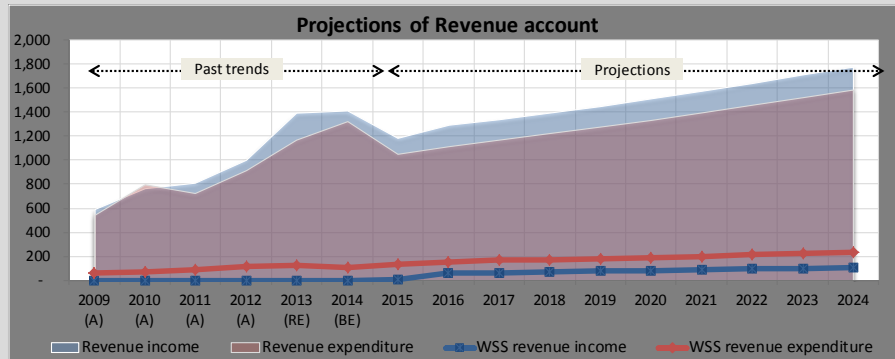
A Demand, Collection and Balance statement

Sr. No.	Particulars	2012 (A)		2013 (RE)		2014 (BE)	
		Demand	Collection	Demand	Collection	Demand	Collection
	CURRENT DEMAND						
1	General property tax	112.6	94.9	111.6	91.8	111.6	91.8
3	FSM and wastewater related taxes and charges						
5	Others	111.2	90.4	134.7	112.5	134.7	112.5
	Total	223.8	185.3	246.3	204.3	246.3	204.3
	ARREAR DEMAND						
1	General property tax	66.2	46.9	37.6	19.3	37.6	19.3
3	FSM and wastewater related taxes and charges						
5	Others	53.2	40.0	52.0	37.8	52.0	37.8
	Total	119.4	86.9	89.6	57.1	89.6	57.1

Budget Forecasting

III Municipal Finance Summary

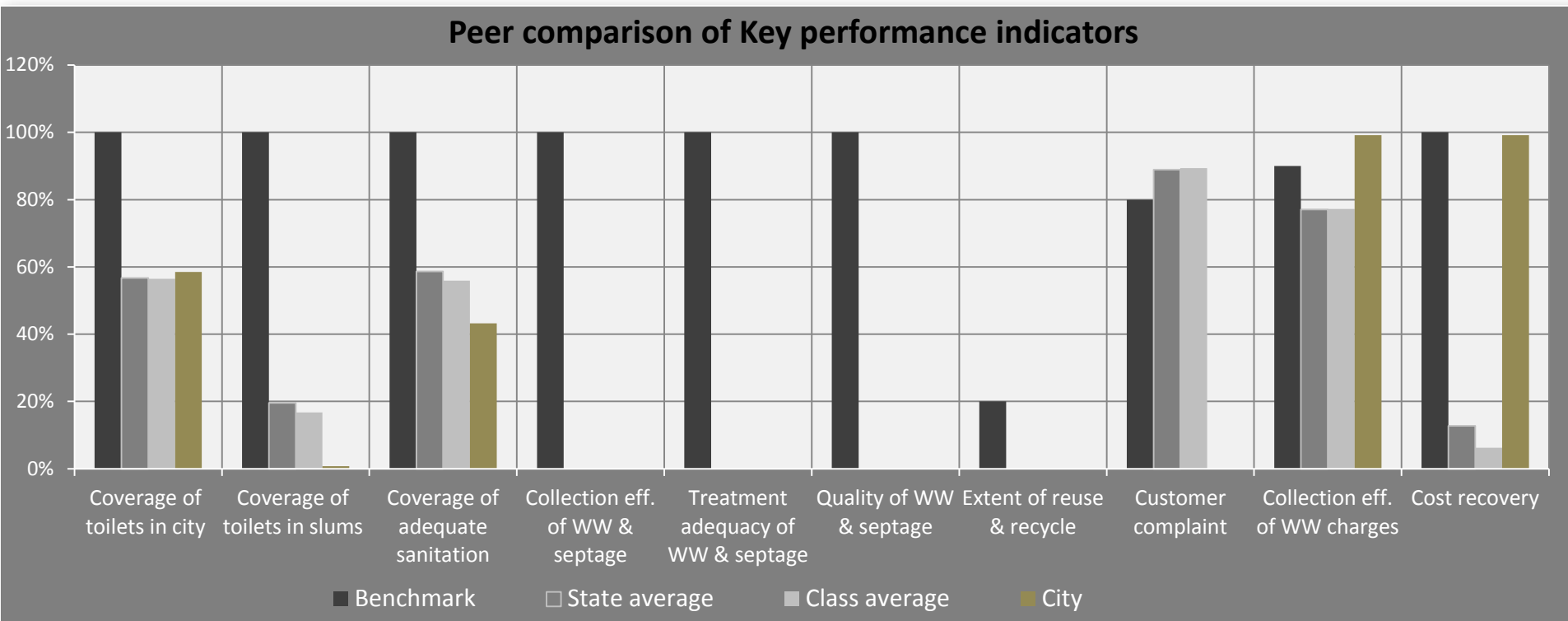
Sr. no	Particulars	2009 (A)	2010 (A)	2011 (A)	2012 (A)	2013 (RE)	2014 (BE)	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
	Opening Balance	295	315	300	473	744	858	-	58	184	323	487	659	832	1,006	1,188	1,371
Revenue account																	
Sanitation																	
1	Revenue receipts	-	-	-	-	-	-	2	58	64	70	79	82	85	97	100	104
2	Revenue expenditure	55	69	85	112	121	108	131	151	165	173	182	191	201	211	221	232
	Surplus/(Deficit)	(55)	(69)	(85)	(112)	(121)	(108)	(129)	(93)	(101)	(103)	(103)	(109)	(115)	(114)	(121)	(128)
Non-sanitation																	
3	Revenue receipts	593	760	807	1,002	1,389	1,404	1,178	1,229	1,269	1,316	1,368	1,424	1,482	1,543	1,606	1,671
4	Revenue expenditure	491	734	640	807	1,048	1,213	920	961	1,003	1,047	1,094	1,142	1,193	1,246	1,302	1,360
	Surplus/(Deficit)	102	26	168	195	341	191	258	268	266	268	274	282	289	296	304	311
Capital account																	
Sanitation																	
1	Capital receipts	-	-	-	-	-	-	282	247	226	242	259	-	-	-	-	-
2	Capital expenditure	-	-	-	-	-	-	353	296	253	242	259	-	-	-	-	-
	Surplus/(Deficit)	-	-	-	-	-	-	(71)	(49)	(26)	-	-	-	-	-	-	-
Non-sanitation																	
3	Capital receipts	464	197	644	129	963	688	-	-	-	-	-	-	-	-	-	-
4	Capital expenditure	365	188	959	215	939	471	-	-	-	-	-	-	-	-	-	-
	Surplus/(Deficit)	99	8	(315)	(86)	24	217	-	-	-	-	-	-	-	-	-	-
Extraordinary account																	
1	Receipts	153	506	137	258	297	168	-	-	-	-	-	-	-	-	-	-
2	Expenditure	154	275	192	313	598	501	-	-	-	-	-	-	-	-	-	-
	Surplus/(Deficit)	(2)	231	(55)	(55)	(301)	(332)	-	-	-	-	-	-	-	-	-	-
Overall Municipal account																	
1	Total receipts	1,210	1,463	1,589	1,389	2,649	2,261	1,461	1,535	1,559	1,628	1,707	1,506	1,567	1,639	1,706	1,776
2	Total expenditure	1,066	1,265	1,876	1,446	2,706	2,292	1,404	1,408	1,421	1,463	1,535	1,333	1,394	1,457	1,523	1,592
	Closing balance	439	513	13	416	686		58	184	323	487	659	832	1,006	1,188	1,371	1,554
								58	127	138	165	172	173	174	182	183	183



Step-2 Performance Assessment

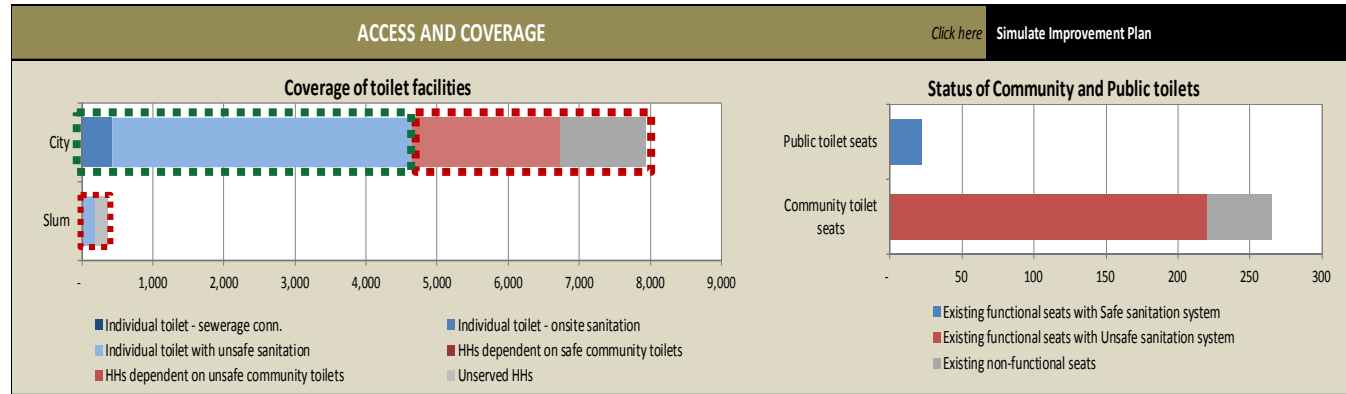
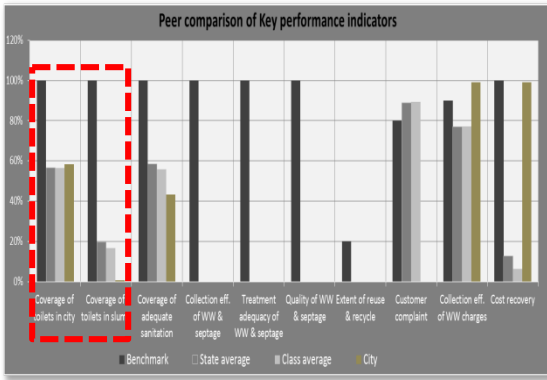


Assessment through City level Performance Indicators



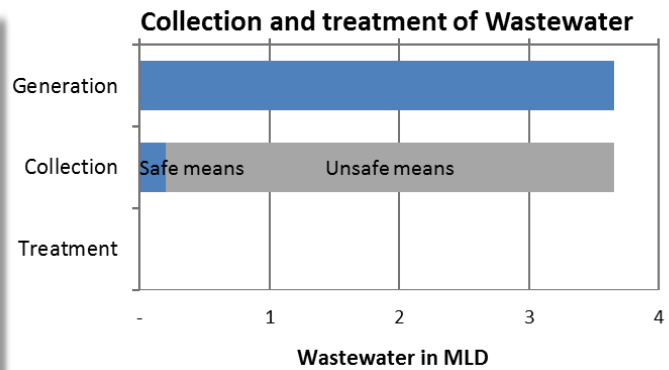
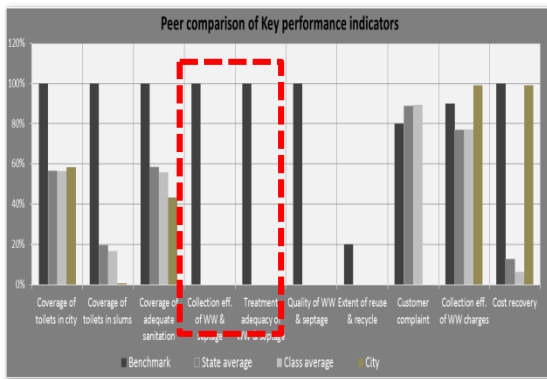
- **Coverage of toilets in the city is almost at-par with the class and state average**
- **The city lacks adequate sanitation**
- **There is no proper collection and treatment of wastewater in the city**
- **Collection efficiency of wastewater charges and cost recovery is better than the class and state average**

Assessment through Local Action indicators

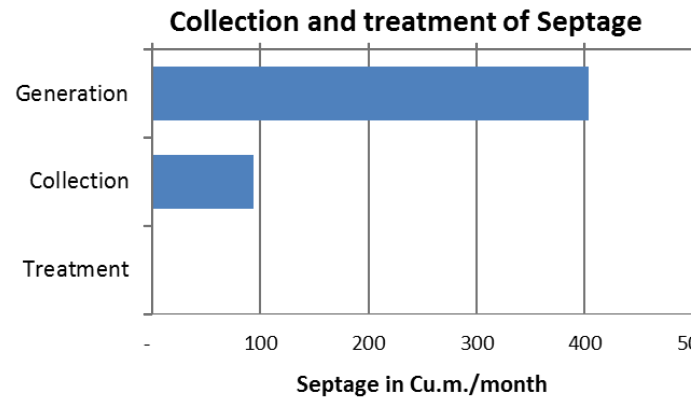


Households having latrines

Households not having latrines



There is very little safe conveyance means for wastewater and No treatment Facility



Only 2% of the septic tanks are cleaned annually
No septage treatment facility

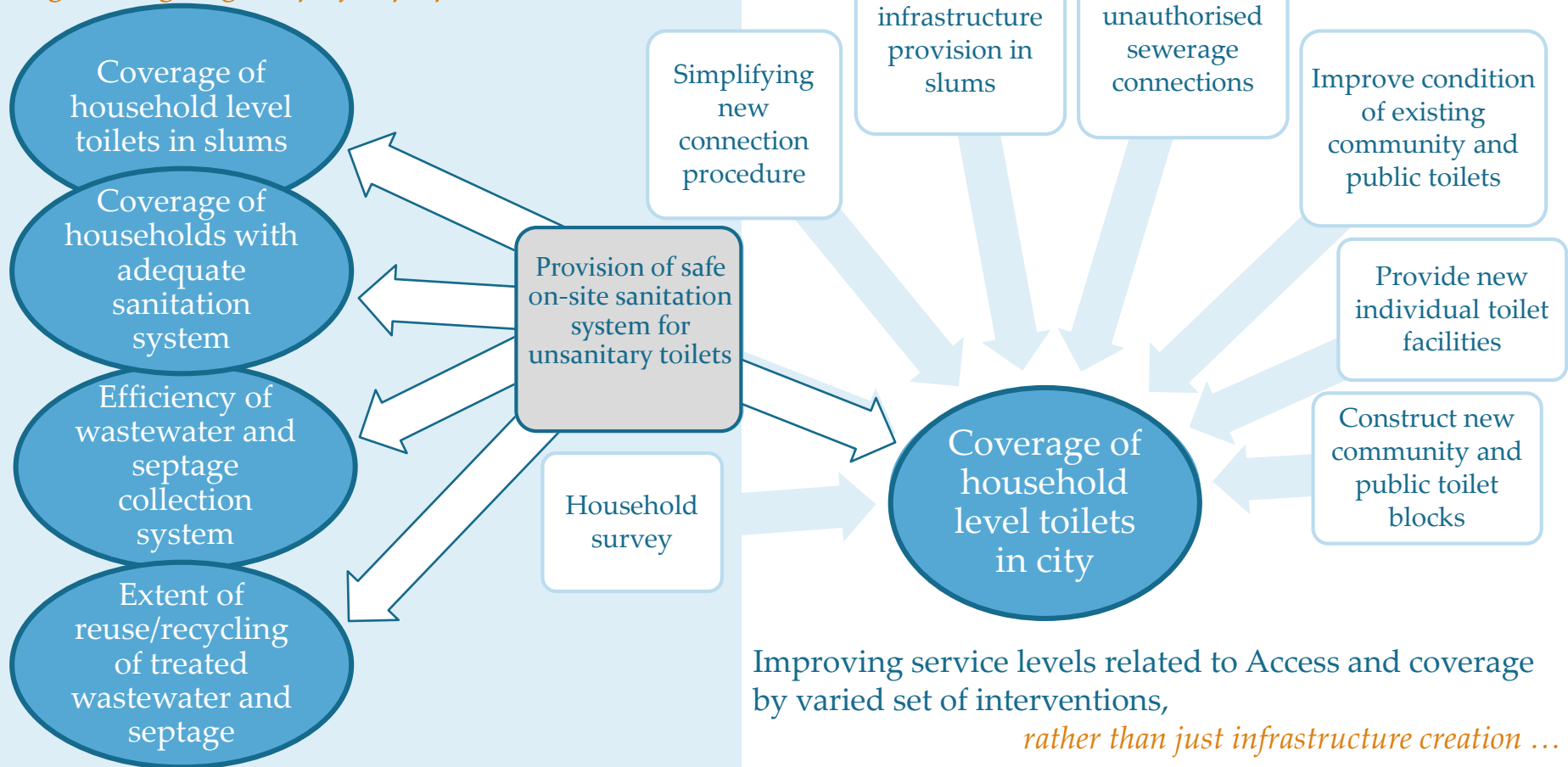
Step-3 Action Planning



Approach of Action Planning in Saniplan

Multi-layered links between improvement actions and performance indicators,

as against big singular project proposals ...



Inter-sectoral linkages are also captured in SANIPLAN

FSM Related Improvement Actions

Data
improvement
actions

Process/ policy
improvement
actions

Existing system
improvement
actions

New
infrastructure
creation

Sr No	Action
Access & coverage	
WW01	Household survey to assess wastewater services
WW02	Surveys and monitoring of open defecation sites
WW03	Computerise wastewater records
WW04	Policy for providing sanitation services in slums
WW05	Improve condition of existing individual toilets by providing safe sanitation disposal system
WW06	Improve condition of existing Community toilets
WW07	Improve condition of existing Public toilets
WW08	Refurbishment of existing septic tanks in city
WW09	Information, education and communication (IEC) campaigns for sanitation awareness
WW10	Construct new individual toilets
WW11	Construct new group toilets
WW12	Construct new community toilet blocks
WW13	Construct new public toilet blocks

Sr No	Action
Service levels & quality	
WW19	Increase septage collection with existing suction emptier trucks
WW20	Increase efficiency of all existing treatment plants
WW26	Procure new suction emptier trucks
WW27	Construct/augment fecal sludge treatment plant
WW29	Construct/augment sewage treatment plant
Efficiency in services	
WW31	Improve wastewater and septage quality surveillance
WW32	Improve processes for management of consumer complaints
WW33	Increase in reuse/recycling of treated wastewater and septage
WW34	Conduct regular wastewater and septage quality tests at laboratory, if not done
WW35	Improve consumer grievance redressal system
Financial sustainability	
WW36	Improve billing and collection of wastewater bills
WW37	Improve collection efficiency of wastewater charges and taxes

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.

Activate/
Deactivate actions

Phasing of actions

Learn more	Activate	Lay new water supply distribution network	2015	2018
Baseline		- Inhabited area not served by distribution network	Sq. km	-
		- Existing length of distribution network	Km	45.00
		- Existing percentage of households served with piped water supply	%	74%
Improvement		- Increase in length of new distribution network	Km	10
		- Additional area to be covered with new distribution network	Sq. km	1.00
		- New connections that can be given by laying distribution network	Number	1,500
Finance		- Block cost to lay distribution network	Rs lakhs/ km	20
		- O&M expenses to maintain new distribution network	% of CapEx/ annum	5%

Baseline
information

Improvement
information

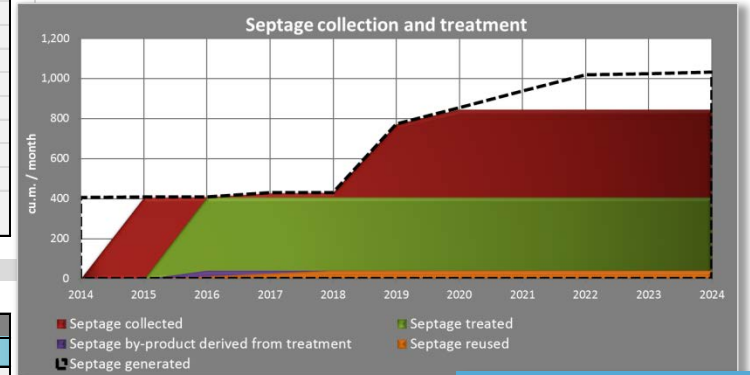
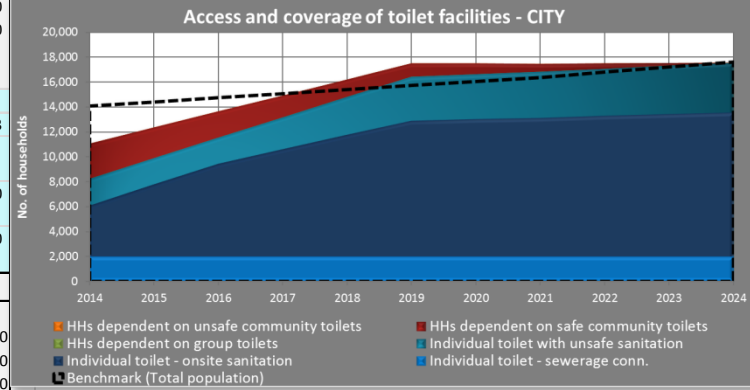
Cost and Finance
information

WW Plan sheet

2

Existing system improvement measures

Learn more	Activate	Increase septage collection with existing suction emptier trucks	2015	2017
WW19	Baseline	- Suction emptier trucks of ULB	Numbers	1.0
		- Average number of trips by a suction emptier truck of ULB	Trips/day	1.0
		- Suction emptier trucks of private operators used within city limits	Numbers	-
		- Average number of trips by a suction emptier truck of private operator	Trips/day	-
		- Suction emptier trucks of ULB that need repair and maintenance	Numbers	-
		- Additional trips that can be made by a suction emptier truck of ULB	Trips/truck/day	3
Improvement		- Additional trips that can be made by a suction emptier truck of private operator	Trips/truck/day	
Finance		- Cost of all repair and maintenance job of suction emptier trucks of ULB (lump-sum)	Rs. lakhs	2.0
		- O&M expenses incurred for additional trips made by suction emptier trucks of ULB	Rs./additional trip	150
WW20	Deactivate	Increase efficiency of all existing treatment plants		
Baseline		<u>Non-functional capacity of treatment plant as compared to total installed capacity:</u>		
		- Fecal sludge treatment facility	Cu.m./ month	0/0
		- Primary treatment plant for effluent and sullage	MLD	0/0
		- Sewage treatment plant	MLD	0/0
Improvement		<u>Non-functional capacity of treatment plant to be repaired and made functional:</u>		
		- Fecal sludge treatment facility	Cu.m./ month	
		- Primary treatment plant for effluent and sullage	MLD	
		- Sewage treatment plant	MLD	
		<u>Waste from on-site sanitation system to be treated at Sewage treatment plant, if any</u>		
		- Additional quantity of sullage to be treated	MLD	
		- Additional quantity of septage to be treated	Cu.m./ month	
		- Total cost of carrying out of this activity (lump-sum)	Rs. lakhs	
		- Additional operating costs for these treatment plants, if any	Rs. / month	
		- Additional revenue to be generated for ULB by selling treated wastewater and septage, if any	Rs./ month	



Impact of activated actions on performance

3

Create new infrastructure

PROVIDE WASTEWATER COLLECTION & CONVEYANCE SYSTEM TO HOUSEHOLDS

Learn more	Activate	Procure new suction emptier trucks	2015	2017
WW26	Baseline	- Suction emptier trucks with ULB at present	Numbers	1
		- Suction emptier trucks with private operators at present	Numbers	-
Improvement		<u>Suction emptier trucks of ULB</u>		
		- Additional trucks to be procured by ULB	Numbers	1
		- Aggregate capacity of all new suction emptier trucks	kilo liters	5.0
		- Number of trips by a suction emptier truck	Trips/ truck/day	4.0
		<u>Suction emptier trucks of Private operators</u>		
		- Additional number of trucks expected to be procured by private operators to function within city limits	Numbers	
Finance		- Aggregate capacity of all new suction emptier trucks	kilo liters	
		- Number of trips by a suction emptier truck within city limits	Trips/ truck/day	
		- Block cost for a suction emptier truck to be procured by ULB	Rs. lakhs/truck	10
		- O&M expenses for new trucks procured by ULB	% of CapEx/annum	25%

Calibration of improvement actions

Impact of Improvement Actions

Performance levels	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Access and coverage											
Coverage of households with individual and group toilets in city	58%	67%	75%	82%	90%	97%	96%	96%	95%	95%	94%
Number of households with access to individual and group toilets as percentage of total households in city.											
Coverage of households with individual and group toilets in slums	53%	62%	71%	80%	88%	96%	95%	95%	94%	94%	93%
Number of households in slum settlements with access to individual and group toilets as percentage of total slum households.											
Coverage of households with improved sanitation facility in city	85%	95%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Number of households with access to some kind of toilet facility (individual and community toilet), as percentage of total households in city (as defined by Joint Monitoring Program)											
Households resorting to open defecation in city	15%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Number of households in city without any safe sanitation facility and resort to open defecation, as percentage of total households in city.											
Households dependent on community toilet facilities	26%	28%	25%	18%	10%	3%	4%	4%	5%	5%	6%
Number of households dependent on functional community toilet facilities near their houses as percentage of total households in city.											
Non-functional community and public toilets	17%	11%	6%	0%	0%	0%	0%	0%	0%	0%	0%
Number of non-functional community and public toilet seats as percentage of total community and public toilet seats.											
Service level and quality											
Coverage of households with adequate sanitation system	5%	27%	49%	70%	90%	97%	96%	96%	95%	95%	94%
Number of households with access to safe and adequate sanitation system for wastewater disposal (sewerage or on-site) as percentage of total households in city.											
Efficiency of wastewater and septage collection system	5%	27%	49%	70%	90%	97%	96%	96%	95%	95%	94%
Aggregate quantum of wastewater collected (through sewerage and settled sewer network) at the intake of treatment plant and wastewater discharged through soak pits as percentage of normative wastewater generated in city. This indicator is calculated based on weighted average of households and wastewater collection systems.											
Adequacy of wastewater and septage treatment capacity	0%	0%	0%	3%	10%	27%	24%	21%	19%	17%	16%
Aggregate quantum of sewage, sludge and sullage to be treated with present treatment facilities as percentage of normative wastewater generated in city. This indicator is calculated based on weighted average of households and wastewater treatment facilities.											
Households with full on-site sanitation system	5%	27%	49%	70%	90%	97%	96%	96%	95%	95%	94%
Number of households with full on-site sanitation disposal system as septic tanks connected to soak pits for grey water disposal, as percentage of total households in city.											
Households with on-site sanitation and settled sewer	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Number of households with on-site black water disposal system as septic tanks connected to settled sewer/ small bore sewers for grey water disposal, as percentage of total households in city.											
Households with sewerage network services	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Number of households with individual connections to sewerage network, as percentage of total households in city.											
Spatial coverage of closed surface drains	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Municipal area covered by closed surface drains for storm water drainage as percentage of total jurisdictional area of city.											
Septic tanks cleaned annually in city	8%	34%	34%	34%	34%	32%	31%	31%	31%	31%	31%
Number of septic tanks (includes septic tanks of individual toilets, community and public toilets) cleaned annually as percentage of total septic tanks in city.											
Adequacy of sewage treatment capacity	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Quantum of sewage that can be treated at secondary treatment plants as percentage of normative sewage collected by sewerage network.											
Adequacy of treatment plant capacity for effluent and sullage	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Quantum of effluent and sullage that can be treated at primary treatment plants as percentage of normative sewage and effluent collected daily at the sewer treatment plant (norma for sewer).											
Adequacy of septage treatment capacity	0%	0%	0%	118%	107%	100%	100%	99%	98%	98%	97%
Quantum of septage that can be treated at faecal sludge treatment plant as percentage of normative septage generated in city.											

Group Work

Select and Run improvement actions which you think city should undertake for FSM over next 5-6 years

- ▣ Based on current performance assessment and
- ▣ Its impact on performance indicators

Step-4 Financial Planning



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

Funding requirement for improvement action

Summary of improvement actions

Click to view Phasing, CapEx or OpEx

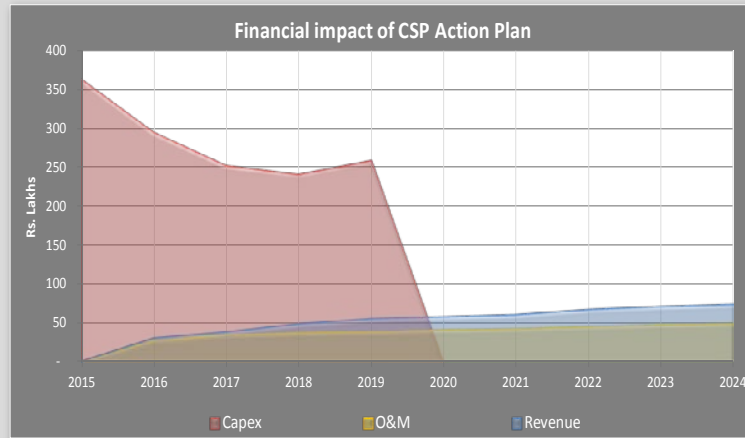
IMPROVEMENT ACTIONS		SUMMARY OF CAPITAL EXPENDITURE									
Sector colour code FSM and Wastewater		Click here to view Summary of <input type="radio"/> PHASING <input checked="" type="radio"/> CAPEX PLAN <input type="radio"/> O&M PLAN									
Actions	Type	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Policy for providing sanitation services in slums	Process/ Policy										
Improve condition of existing individual toilets by providing safe sanitation	Exisiting system	64									
Improve condition of existing Community toilets	Exisiting system	23	25	26							
Construct new individual toilets	New infrastructure	198	212	226	242	259					
Construct new public toilet blocks	New infrastructure	11	12								
Increase septage collection with existing suction emptier trucks	Exisiting system										
Procure new suction emptier trucks	New infrastructure	24									
Construct/augment fecal sludge treatment plant	New infrastructure	45	48								

Select Sources of Funds for Capital Expenditure

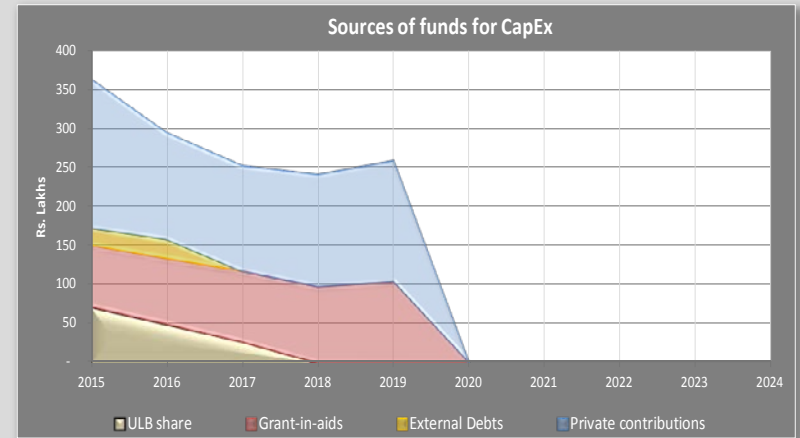
IMPROVEMENT ACTIONS		SOURCES OF FUNDS FOR CAPITAL EXPENDITURE						
Sector colour code FSM and Wastewater		Against each action, mention percentage share of funding possible through either of these funding sources (%)						
		NOTE: RE-ENTER INPUTS IN THIS TABLE EACH TIME ACTIONS ARE ACTIVATED OR DEACTIVATED						
Actions	Type	Total CapEx	Central Grants	State Grants	Debt	Private/ PPP	Beneficiary	ULB share (% and Rs. lakhs)
Policy for providing sanitation services in slums	Process/ Policy	0						100%
Improve condition of existing individual toilets by providing safe sanitation	Exisiting system	64					60%	40% 26
Improve condition of existing Community toilets	Exisiting system	74						100% 74
Construct new individual toilets	New infrastructure	1,137	10%	30%			60%	
Construct new public toilet blocks	New infrastructure	23				100%		
Increase septage collection with existing suction emptier trucks	Exisiting system	0						100%
Procure new suction emptier trucks	New infrastructure	24				100%		
Construct/augment fecal sludge treatment plant	New infrastructure	93			50%			50% 47

Snapshot of entire structure for Action Plan Finances in

Financial Summary	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Total
Capital expenditure	365	296	253	242	259	-	-	-	-	-	1,415
Additional O&M expense	1	28	36	38	39	41	43	46	48	50	371
Additional revenue	2	31	39	49	55	58	60	68	71	74	508



Sources of funds	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Total
Central Grants	20	21	23	24	26	-	-	-	-	-	114
State Grants	59	63	68	73	78	-	-	-	-	-	341
External Debts	23	24	-	-	-	-	-	-	-	-	47
Private/ PPP	35	12	-	-	-	-	-	-	-	-	47
Beneficiary share	157	127	136	145	155	-	-	-	-	-	720
ULB share	71	49	26	-	-	-	-	-	-	-	146



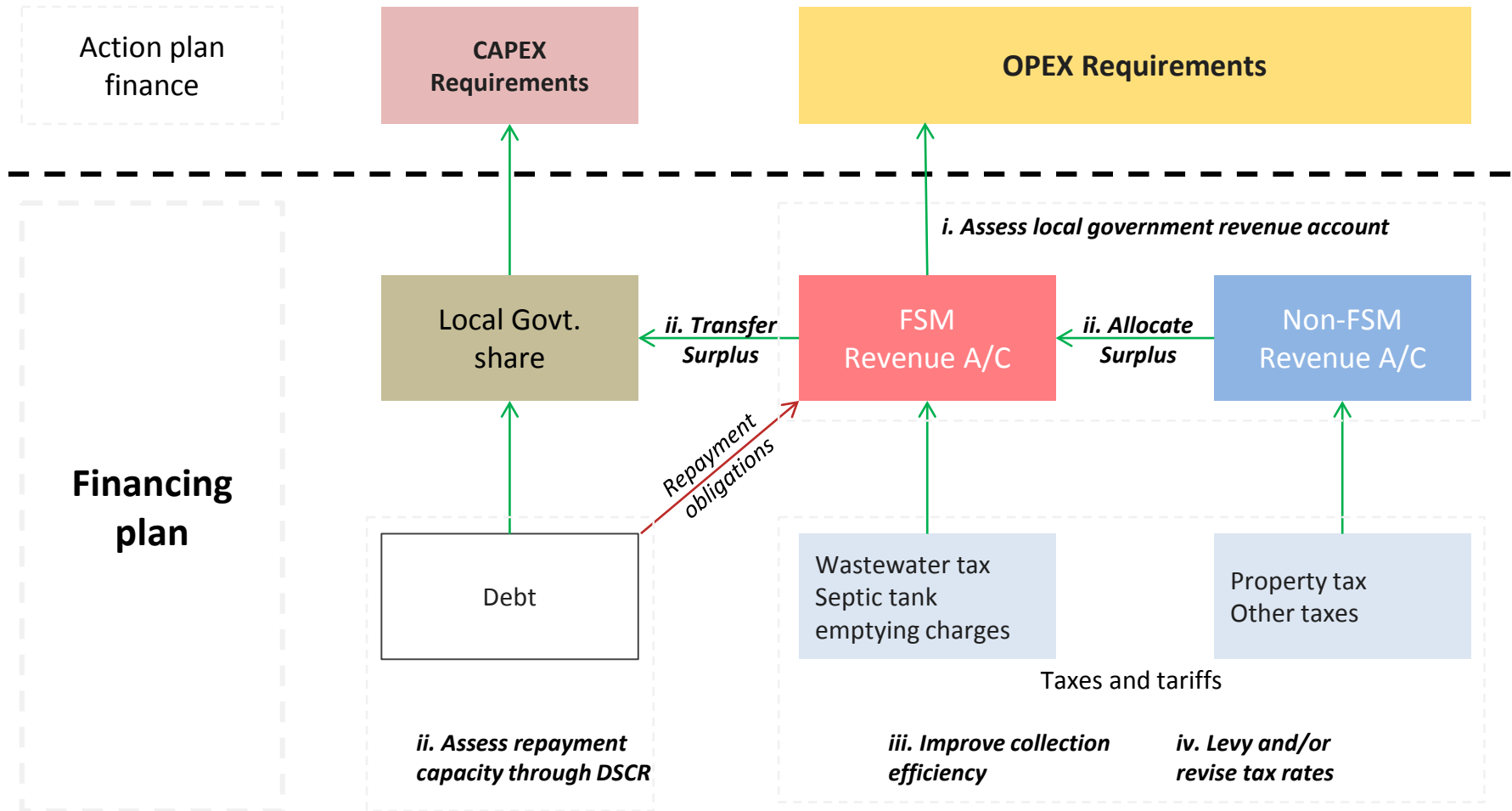
SANIPLAN II Action Plan summary

IMPROVEMENT ACTIONS		SUMMARY OF CAPITAL EXPENDITURE											SOURCES OF FUNDS FOR CAPITAL EXPENDITURE						
Sector colour code: FSM and Wastewater		Click here to view Summary of <input type="radio"/> PHASING <input checked="" type="radio"/> CAPEX PLAN <input type="radio"/> O&M PLAN											Against each action, mention percentage share of funding possible through either of these funding sources (%)						
		NOTE: RE-ENTER INPUTS IN THIS TABLE EACH TIME ACTIONS ARE ACTIVATED OR DEACTIVATED																	
Actions	Type	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Total CapEx	Central Grants	State Grants	Debt	Private/ PPP	Beneficiary	ULB share (% and Rs. lakhs)	
Policy for providing sanitation services in slums	Process/ Policy											0						100%	
Improve condition of existing individual toilets by providing safe sanitation	Existing system	64										64					60%	40%	
Improve condition of existing Community toilets	Existing system	23	25	26								74					100%	74	
Construct new individual toilets	New infrastructure	198	212	226	242	259						1,137	10%	30%			60%		
Construct new public toilet blocks	New infrastructure	11	12									23				100%			
Increase septage collection with existing suction emptier trucks	Existing system											0					100%		
Procure new suction emptier trucks	New infrastructure	24										24				100%			
Construct/augment fecal sludge treatment plant	New infrastructure	45	48									93			50%		50%	47	

Group Work

Select sources of Funds for Capital expenditure for your selected improvement actions

Financial Planning



Snapshot of Financial Planning sheet

KEY FINANCING DECISIONS

Financing Plan	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Total
FSM and WASTEWATER OPERATING PLAN											
1. Income generated from CSP actions											
Additional income generated	2	31	39	49	55	58	60	68	71	74	507
2. Revised FSM charges and tariffs Link to revise FSM and WW tariff											
Additional income generated	-	27	28	28	32	33	33	37	38	39	295
3. Revised own income sources like Property tax Link to Revise property tax											
Additional income generated	13	16	7	2	1	1	1	1	1	1	44
4. Allocate Non-FSM revenue surplus Link to Review past trends											
Non-WSS revenue surplus	258	268	266	269	274	282	289	297	304	311	2,818
Propose allocation of surplus	200	200	150	150	150	150	100	100	100	130	1,430
	78%	75%	56%	56%	55%	53%	35%	34%	33%	42%	51%
For Non-FSM sectors	58	68	116	119	124	132	189	197	204	181	1,388
	22%	25%	44%	44%	45%	47%	65%	66%	67%	58%	49%
Operating ratio	0.6	0.6	0.8	0.8	0.7	0.7	0.7	0.8	0.9	1.0	
FSM and WASTEWATER CAPITAL PLAN											
1. External sources of funds											
Already approved WSS CanIn *	-	-	-	-	-	-	-	-	-	-	-
Grants from Central & State government #	79	85	91	97	104	-	-	-	-	-	455
Private contribution through PPP and Beneficiaries #	192	139	136	145	155	-	-	-	-	-	767
* Linked from Municipal Finance sheet, # Linked from Action Plan finance sheet											
2. Allocate FSM revenue surplus for capital funding											
WSS revenue surplus	71	92	34	53	87	112	81	51	14	-	595
Propose allocation of surplus for WSS CapEx	71	92	17	-	-	-	-	-	-	-	0%
	100%	100%	50%	0%	0%	0%	0%	0%	0%	0%	0%
3. Allocate Non-FSM CapIn for FSM capital funding Link to Review past trends											
Non-WSS CapIn surplus	-	-	-	-	-	-	-	-	-	-	-
Propose allocation of	-	-	-	-	-	-	-	-	-	-	-

IMPACT OF FINANCING PLAN ON MUNICIPAL FINANCES

Budget heads	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
REVENUE ACCOUNT										
FSM and wastewater services (FSM)										
Opening balance	-	-	-	17	53	87	112	81	51	14
Revenue receipts	202	258	217	228	237	240	194	205	209	244
Revenue expenditure	131	166	183	192	203	215	225	235	246	258
FSM Revenue account status	71	92	34	53	87	112	81	51	14	-
Services other than FSM and wastewater (Non-FSM)										
Opening balance	-	-	-	-	-	-	-	-	-	-
Revenue receipts	1,178	1,229	1,269	1,316	1,368	1,424	1,482	1,543	1,606	1,671
Revenue expenditure	920	961	1,003	1,047	1,094	1,142	1,193	1,246	1,302	1,360
Non-FSM Revenue account status	258	268	266	269	274	282	289	297	304	311
CAPITAL ACCOUNT										
FSM and wastewater services (FSM)										
Opening balance	-	-	43	33	33	33	33	33	33	33
Capital receipts	365	339	243	242	259	-	-	-	-	-
Capital expenditure	365	296	253	242	259	-	-	-	-	-
WSS Capital account status	-	43	33	33	33	33	33	33	33	33
Services other than FSM and wastewater (Non-FSM)										
Opening balance	-	-	-	-	-	-	-	-	-	-
Capital receipts	-	-	-	-	-	-	-	-	-	-
Capital expenditure	-	-	-	-	-	-	-	-	-	-
Non-WSS Capital account status	-	-	-	-	-	-	-	-	-	-

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

Debt service coverage ratio	NA	47.00	7.80	11.60	13.43	13.44	11.13	7.38	3.00	1.00	-
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Total receipts	1,745	1,826	1,772	1,836	1,950	1,784	1,821	1,862	1,899	1,962
Total expenditure	1,745	1,783	1,722	1,750	1,820	1,639	1,707	1,778	1,852	1,929
Closing balance	-	43	50	86	120	145	114	84	47	33

Snapshot of setting tariff structures in SANIPLAN

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 FSM AND WASTEWATER SERVICES

Click [Back to WSS O&M Plan](#)

3. Wastewater tax based on flat rate

Are wastewater charges based on flat rate levied presently by ULB?	NO					Mode of charging	Flat rate/unit					
							0					
If No, and if planned to levy then start it from which year?	Year					2015	Number of properties					200
Percentage increment in flat rate based user charges	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024		
					20%		20%	20%	20%			

4. Wastewater tax linked to general property tax

Is property tax linked wastewater tax levied presently by ULB?	NO					% of general property tax	0.0%				
If No, and if planned to levy then start it from which year?	Year										
Revised percentage of general property tax for wastewater tax	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	

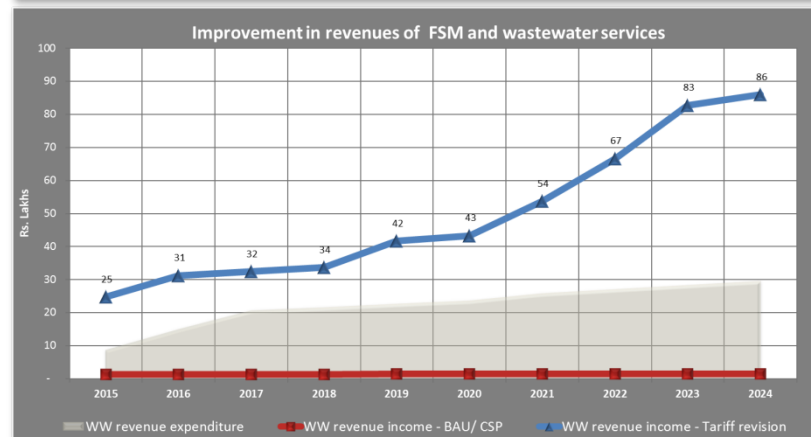
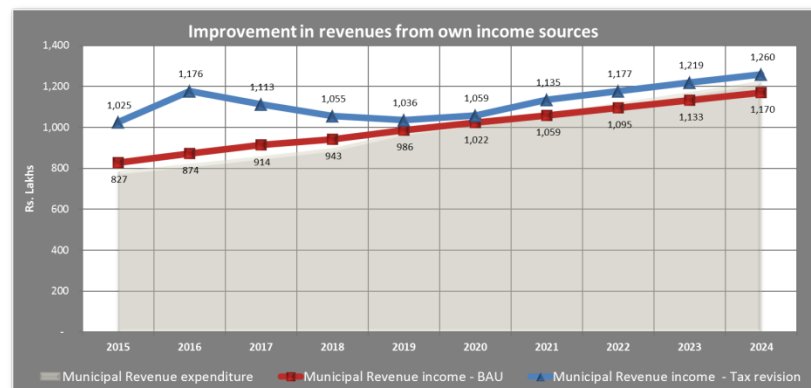
5. Septic tank emptying charges

Does the city provide septic tank emptying service	No					Mode of charging	Flatrate/unit					
							0					
If No and if planned to levy, then start it from which year?	Year					2017	Annual charge for scheduled emptying					
If Yes and charged at time of emptying, when does the city plan to charge annually and provide scheduled emptying	Year						Annual charge for scheduled emptying					
Percentage increment in flat rate based user charges	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024		

6. Sewerage user charges

Is sewerage user charges levied presently by ULB?	NO					Rs/connection/annum	0				
If No, and if planned to levy then start it from which year?	Year										
Percentage increment in user charges	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	
				20%			20%				

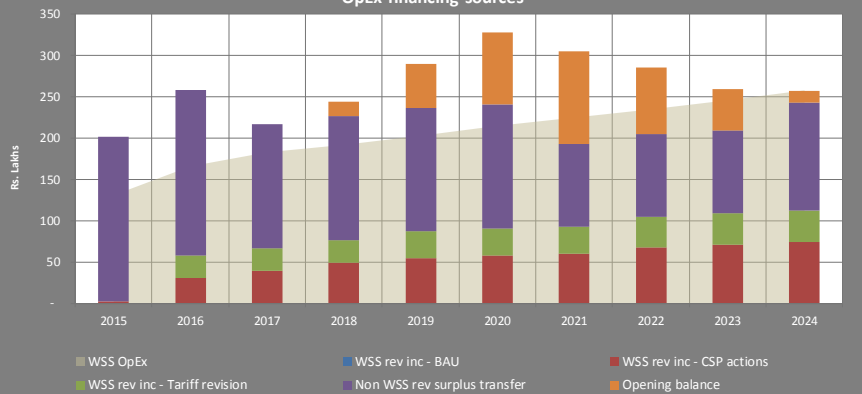
Visual display of impact on revenues



Snapshot of CapEx and OpEx plan summary in SANIPLAN

FSM AND WASTEWATER OPERATING PLAN

OpEx financing sources



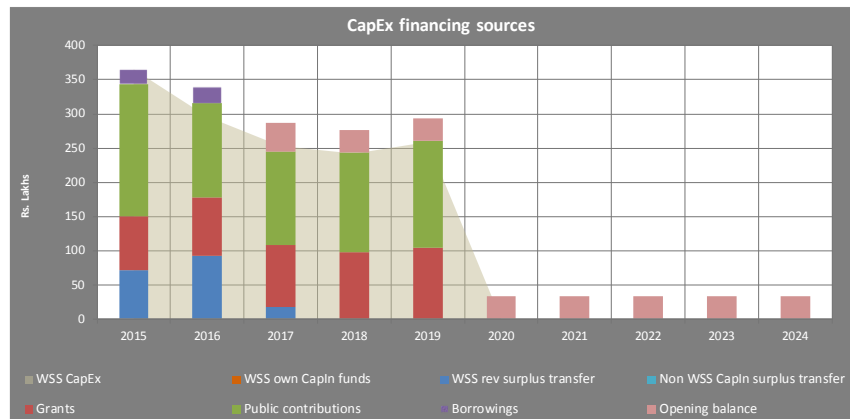
Snapshot of Operating plan summary and tariff structures

REVIEW OF TAXES AND CHARGES

Average tax demand (per household per annum)	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Property tax	1156	1156	1156	1156	1156	1156	1156	1156	1156	1156	1156
Wastewater tax	0	0	0	0	0	0	0	0	0	0	0
Annual septic tank emptying charges	0	0	300	300	300	330	330	330	363	363	363
Sewerage tax	0	0	0	0	0	0	0	0	0	0	0
Annual demand from HHs depending on septic tanks	1156	1156	1456	1456	1456	1486	1486	1486	1519	1519	1519
Annual increment	-	0%	26%	0%	0%	2%	0%	0%	2%	0%	0%
Operating ratio feasible:	-	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

FSM AND WASTEWATER CAPITAL PLAN

CapEx financing sources



REVIEW OF EXTERNAL FUNDING

Sources of funds	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Total
Already approved CapIn	0	0	0	0	0	0	0	0	0	0	0
Internal fund transfers for CapEx	71	92	17	0	0	0	0	0	0	0	180
Grant-in-aids	79	85	91	97	104	0	0	0	0	0	455
Private contributions	192	139	136	145	155	0	0	0	0	0	767
Borrowings	23	24	0	0	0	0	0	0	0	0	47
Debt servicing requirement	0	2	5	5	7	5	8	8	7	7	57
DSCR feasible:	-	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	-

Snapshot of Capital plan summary and external sources of funds

Group Work

Simulate the Financial plan to assess implication on tariff for different scenarios

SANIPlan Dashboard

Sanitation options for comparison

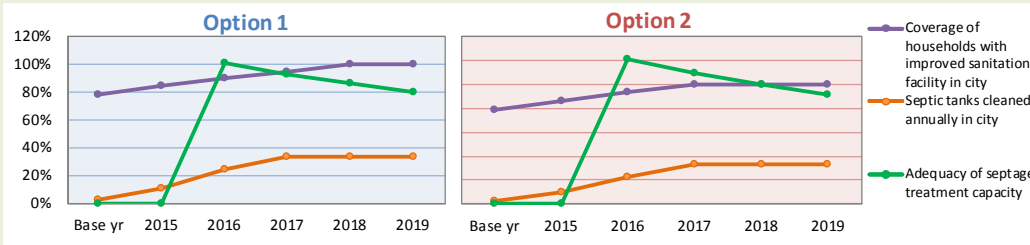
Create your options by selecting appropriate mode to improve coverage of toilets, wastewater management and financing mechanism

Select Toilet option	<input type="text" value="Individual toilets"/>	<input type="text" value="Individual toilets"/>	Select Toilet option
Select Conveyance regime	<input type="text" value="Regulated- 3 yrs"/>	<input type="text" value="Regulated- 3 yrs"/>	Select Conveyance regime
Select Treatment technology	<input type="text" value="SDB"/>	<input type="text" value="Sintex Package treatment Plant"/>	Select Treatment technology
Select financing mechanism	<input type="text" value="Innovative finance"/>	<input type="text" value="Innovative finance"/>	Select financing mechanism

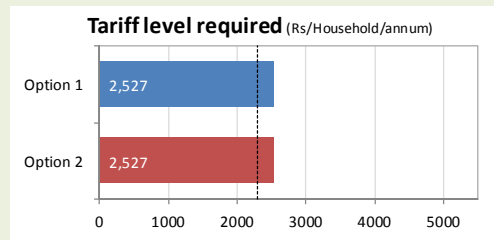
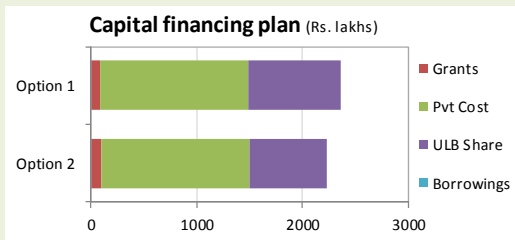
	Option 1	Option 2
Toilet	Individual toilets	Individual toilets
Conveyance	Regulated- 3 yrs	Regulated- 3 yrs
Treatment	SDB	Sintex Package treatment Plant
CapEx	2161.59	2177.36
O&M	19.91	29.15

All figures are in Rs. Lakhs

Impact on service levels



Financial implications



Summary of Action plan

Select mode:

	2015	2016	2017	2018	2019
Option 1					
Improve existing individual toilets	168.5	180.3	-	-	-
New individual toilets	292.8	313.2	335.2	358.6	383.7
Increase septage collection with	0.7	0.7	0.8	-	-
New suction emptier trucks	10.0	10.7	11.4	-	-
Fecal sludge treatment plant	95.0	-	-	-	-
Option 2					
Improve existing individual toilets	170.3	182.2	-	-	-
New individual toilets	292.8	313.2	335.2	358.6	383.7
Increase septage collection with	0.7	0.7	0.8	-	-
New suction emptier trucks	10.0	10.7	11.4	-	-
Fecal sludge treatment plant	107.0	-	-	-	-

SaniPlan Dashboard: Compare Options (1/2)

SANIPLAN Dashboards for IFSM enable easy selection and comparison of a set of options during a stakeholder consultation.

Users can choose across: a) toilet coverage, b) Conveyance mechanism c) treatment options and d) financing.

The dashboards compare their impacts on a) expenditure requirements, b) service performance, and c) financial implications.

The graphic illustrates a comparison - between septage treatment options - for a small town; though similar levels of service can be achieved in both options, Sludge Drying Bed (SDB) treatment option -comes out as economical and with low O&M cost.

Sanitation options for comparison

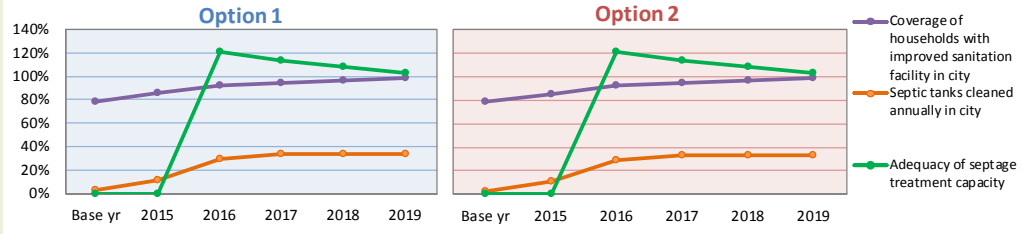
Create your options by selecting appropriate mode to improve coverage of toilets, wastewater management and financing mechanism

Select Toilet option	Individual + Community toilets	Individual + Community toilets	Select Toilet option
Select Conveyance regime	Regulated- 3 yrs	Regulated- 3 yrs	Select Conveyance regime
Select Treatment technology	SDB	Sintex Package treatment Plant	Select Treatment technology
Select financing mechanism	Innovative finance	Innovative finance	Select financing mechanism

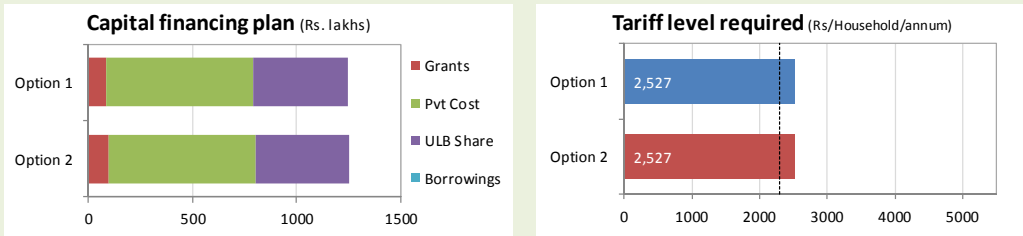
	Option 1	Option 2
Toilet	Individual + Community toilets	Individual + Community toilets
Conveyance	Regulated- 3 yrs	Regulated- 3 yrs
Treatment	SDB	Sintex Package treatment Plant
CapEx	1185.55	1196.11
O&M	22.39	31.63

All figures are in Rs. Lakhs

Impact on service levels



Financial implications



Summary of Action plan

Select mode: CAPITAL EXPENDITURE

Option 1	2015	2016	2017	2018	2019	Option 2	2015	2016	2017	2018	2019
Improve existing individual toilets	170.3	182.2	-	-	-	Improve existing individual toilets	170.3	182.2	-	-	-
Improve existing Community toilets	4.2	4.5	-	-	-	Improve existing Community toilets	4.2	4.5	-	-	-
New individual toilets	107.0	114.5	122.5	131.1	140.3	New individual toilets	106.8	114.2	122.2	130.8	139.9
New community toilet blocks	38.5	41.2	-	-	-	New community toilet blocks	38.5	41.2	-	-	-
Increase septage collection with	0.7	0.7	0.8	-	-	Increase septage collection with	0.7	0.7	0.8	-	-
New suction emptier trucks	10.0	10.7	11.4	-	-	New suction emptier trucks	10.0	10.7	11.4	-	-
Fecal sludge treatment plant	95.0	-	-	-	-	Fecal sludge treatment plant	107.0	-	-	-	-

SaniPlan Dashboard: Compare Options (2/2)

As compared to previous scenario of individual toilets, option of individual and community toilets are low in capital expenditure but has high lifecycle cost.

Thank You

Email: pas@cept.ac.in



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<http://fb.com/pas.cept>