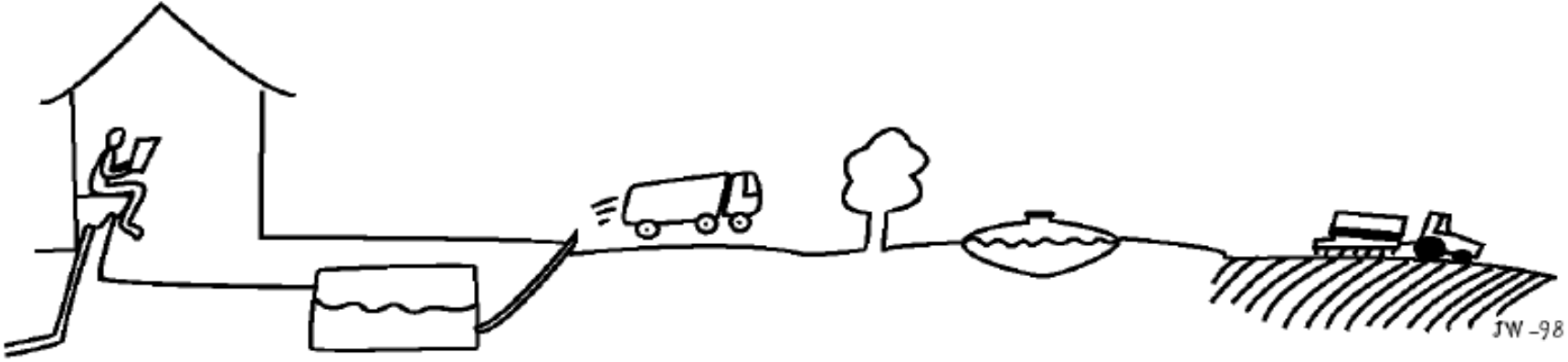
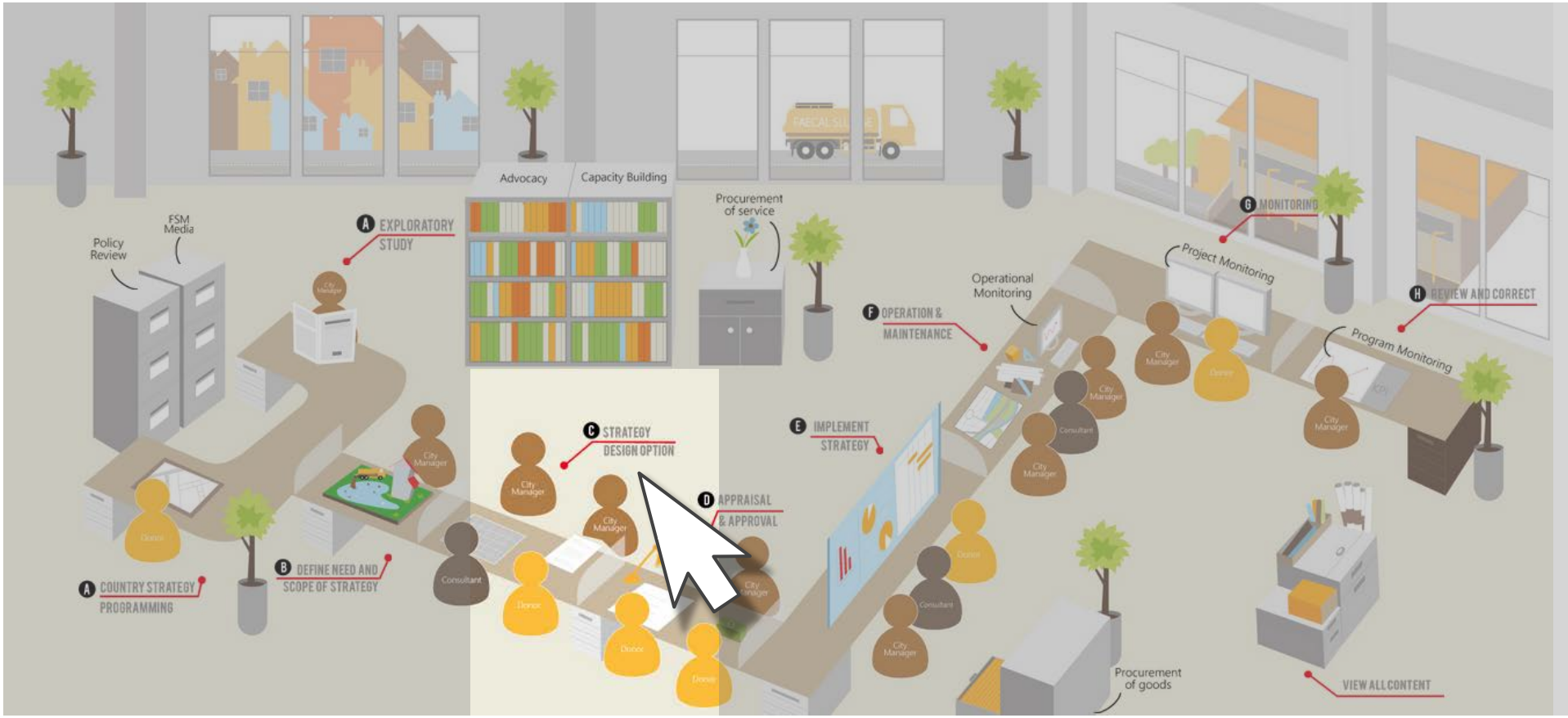


SaniPlan – IFSM Tools For Citywide Assessment and Planning

pas performance assessment system

PAS Project, CEPT University, Ahmedabad

Location of Tool in IFSM Toolbox . . .



Location of Tool in IFSM Toolbox . . .

I want to..

Procure Services

..by hiring relevant consultants for project preparation / design
PROCUREMENT DOCUMENTS

Identify viable solutions

..by assessing the existing institutional setup and regulatory framework
REGULATORY & INSTITUTIONAL SETUP ASSESSMENT TOOL

..by analysing stakeholder needs and collaborating with the selected stakeholders for the project
STAKEHOLDER ANALYSIS TOOL

..by evaluating the technical and financial viability for a project
FINANCIAL & TECHNICAL ASSESSMENT TOOL

..by implementing the gravity method to analyze the proper location for the treatment plant.
AIT LOGISTIC AND OPERATION PLANNING TOOL

..by assessing the potential environmental impacts of the project
ENVIRONMENT IMPACT ASSESSMENT SAMPLE REPORTS

..by assessing the potential social impacts caused by the project
SOCIAL IMPACT ASSESSMENT SAMPLE REPORT

..by studying the possible market opportunities for reuse products
MARKET ASSESSMENT SAMPLE FORMAT

..by assessing the sustainability of the project technologies
SUSTAINABILITY CHECKLIST (COMING SOON)

Reports
SAMPLE FEASIBILITY REPORT

Tools Developed by partners

Assess the current FSM situation

to develop a FSM plan that is technically appropriate and financially feasible at the local level
SaniPlan – IFSM Tools for Citywide Assessment and Planning by PAS

Understand

..what technologies are being used in my [illegible] can improve them
SaniPlan Tool

Objective of the tool . . .

"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"

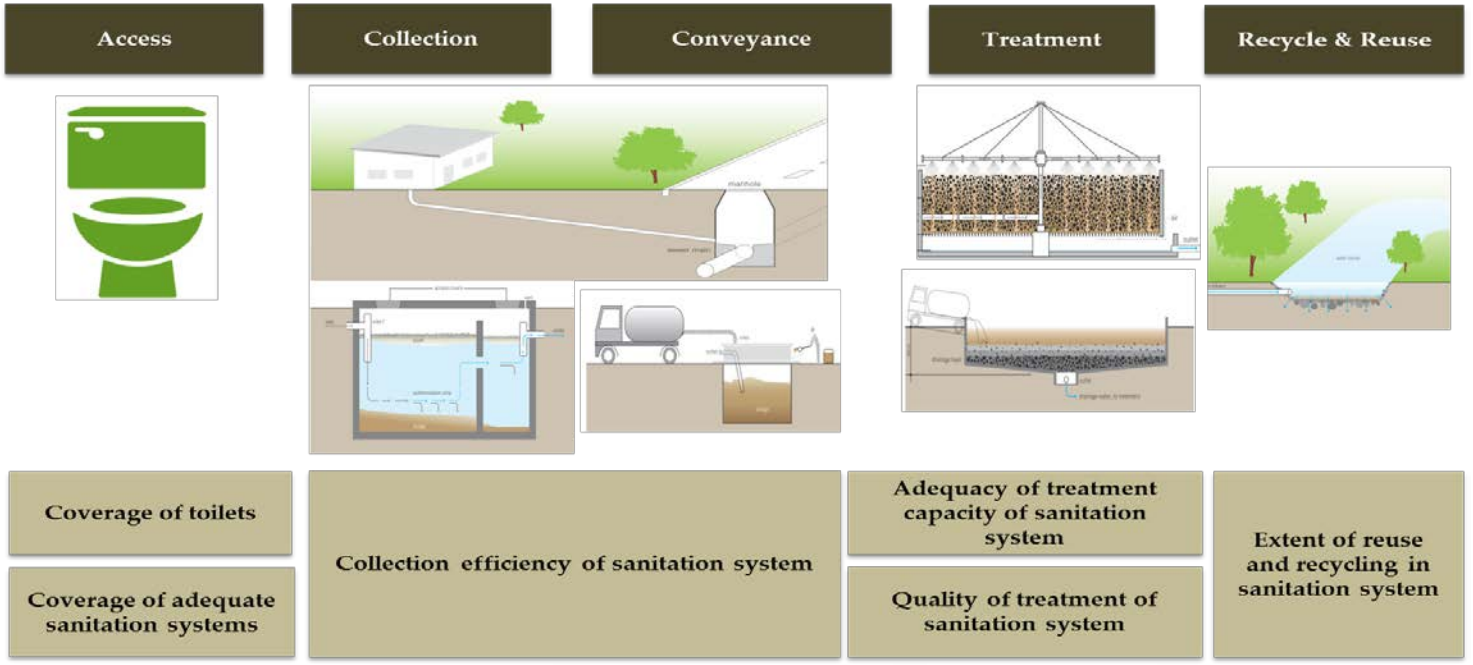
Five Modules of Assessment . . .

Module 1 : Assessing Service Performance Across the Full Service Chain

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 1 :
Assessing service performance across the full service chain

- Assessment through City level Performance Indicators
- Assessment across each link in the service chain
- Summary and vision

Citywide Sanitation assessment through Indicators - SAN Benchmarks

Citywide Sanitation Indicators (Sewerage system + Onsite systems)	
1. Coverage of toilets	Percentage of properties with access to toilet facility in the city
2. Coverage of adequate sanitation system	Percentage of households with individual or group toilets connected with adequate sanitation systems (sewer network/ septic tank / double pit system) to total households in the city.
3. Collection efficiency of sanitation system	Weighted average of collection efficiency of each sanitation system, weighted by share of households dependent on each sanitation system.
4. Adequacy of treatment capacity of sanitation system	Weighted average of adequacy of treatment plant capacity available for each sanitation system, weighted by share of households dependent on each sanitation system.
5. Quality of treatment of sanitation system	Weighted average of quality of treatment of each sanitation system, weighted by share of households dependent on each sanitation system.
6. Extent of reuse and recycling in sanitation system	Weighted average of extent of reuse of treated wastewater and sludge after adequate treatment as a percentage of wastewater and sludge received at the treatment plant, weighted by share of household dependent on each sanitation system.

Field-based service performance assessment across service chain (1/2)

Assess field level service performance across each link in the service chain

- **Access**: Describes the **type of toilet facilities** the user accesses.
  - Dependency on of individual, community and public toilets
  - Spatial variations where possible

- **Collection of septage**: Describes the **ways of collecting**, storing, and sometimes treating the **fecal waste** generated by the users
  - Assess dependency on onsite systems (septic tanks, double pits etc)
  - Assess details related to location, size, design and access for emptying

Field-based service performance assessment across service chain (2/2)

Assess field level service performance across each link in the service chain

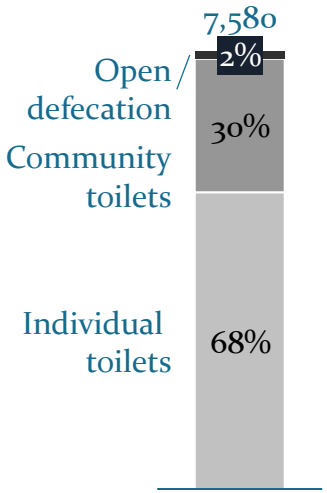
- **Conveyance of septage**: Describes **transport of waste** from collection to the treatment / disposal site
  - Assess available infrastructure (septic tank emptiers)
  - Process for septic tank emptying by public and/or private agencies
  - Capture details related to type/size of trucks
  - Coverage in different parts of the city
  - Monitoring and complaint redressal systems

- **Septage treatment, disposal and reuse**: Describes the way in which the waste is treated, disposed off or reused
  - Identify present location where the septage is being treated / dumped
  - Extent and nature of reuse

Summary: Identify gaps across the sanitation value chain (1/2)

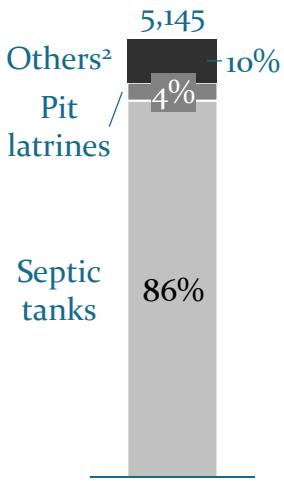
Access | Collection | Conveyance | Treatment | Disposal/Reuse

Access to type of sanitation
(Number of HH)



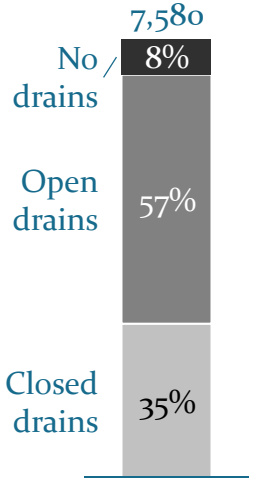
- ~ 135 HH practice OD in City X
- ~2,300 HH are dependent on community toilets
- 29% of non-slum HHs are also dependent on community toilets

Method of collection of waste[1]
(Number of HH)



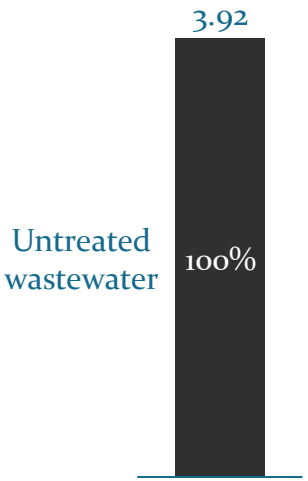
- ~500 HH with access to individual toilets depend on primitive methods of collection of waste
- Septic tanks are over sized and some lack access manhole covers

Methods of conveyance of waste
(Number of HH)



- ~600 HH have no drains for conveyance of wastewater
- Only ~2% of septic tanks are cleaned per year

Treatment of wastewater
(in MLD)



- ~3.9 MLD of waste water is untreated
- No treatment facility for fecal sludge

Disposal of waste
(in MLD)

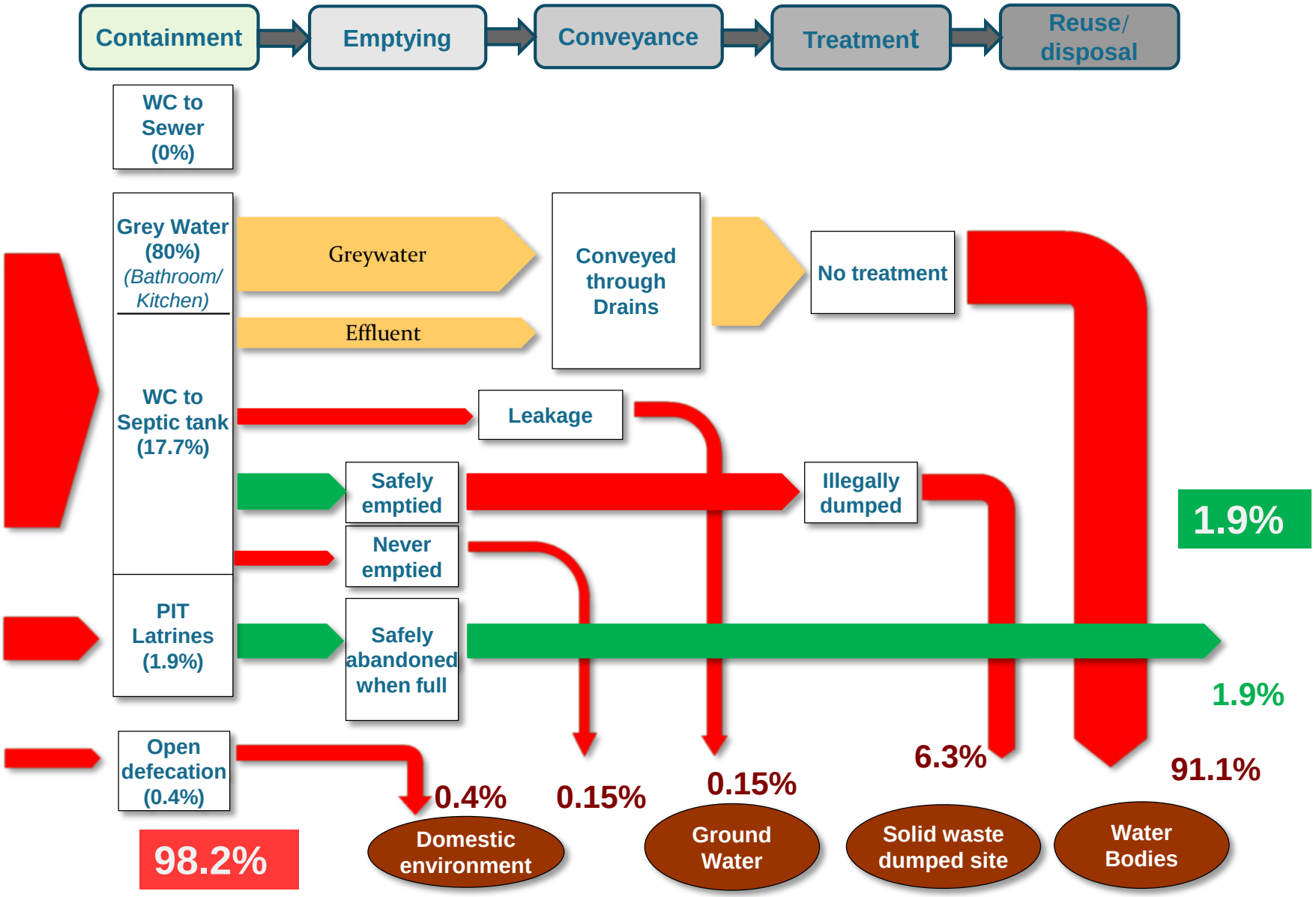
- ~3.9 MLD of wastewater is dumped into river Krishna
- Fecal waste is dumped into the open

Note: (1) Collection only for HH with individual toilets, (2) Includes low quality sewerage network and primitive methods such as latrines serviced by animals

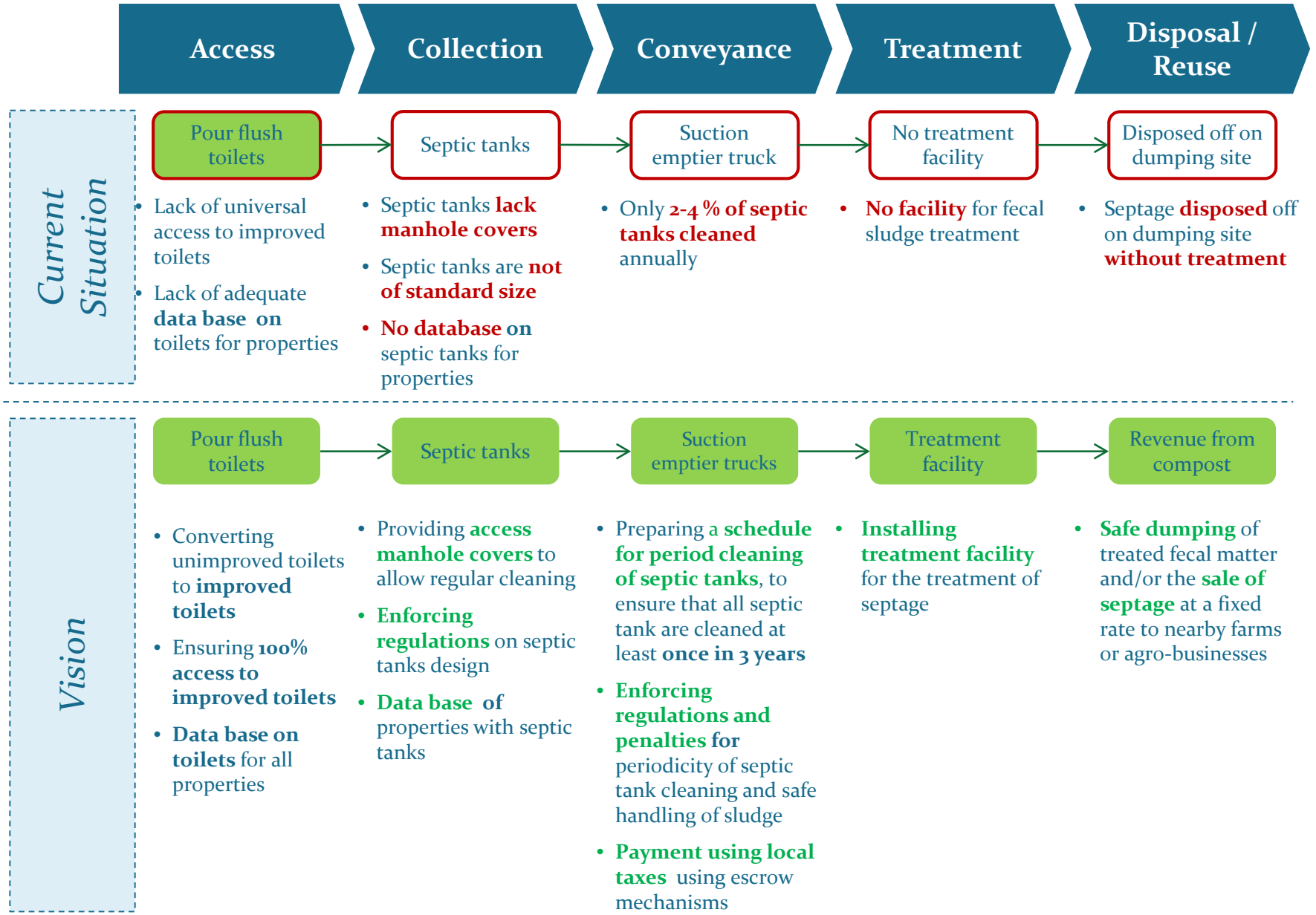
Source: Adapted from:, City Sanitation Plan of Wai , PAS Project – CEPT University

Summary: Identify gaps using a wastewater flow diagram (2/2)

Existing Situation

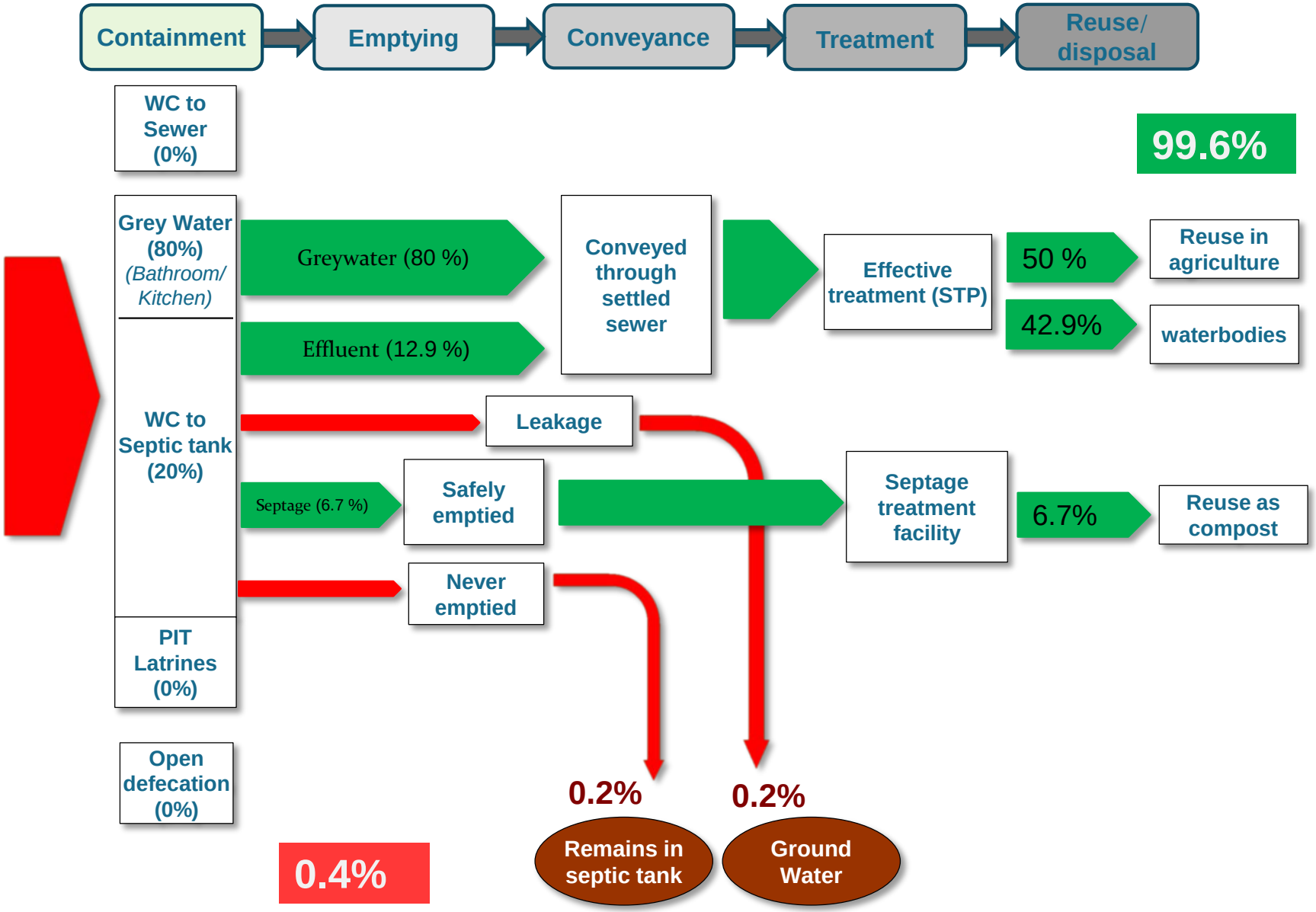


Vision: Developing vision for end-to-end IFSM Plan (1/2)



Vision: Developing vision for end-to-end IFSM Plan (2/2)

Proposed Situation



Module 1 : Tools

TOOLS available for ASSESSING service PERFORMANCE across the service chain

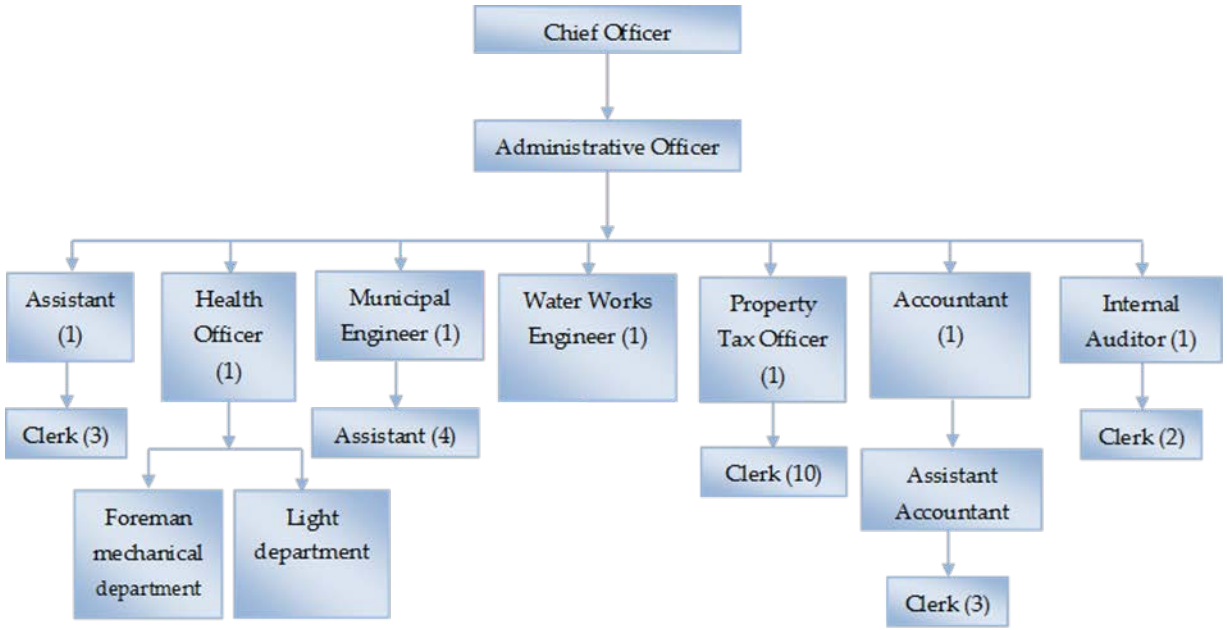
Assessment areas		
Assessment through City level Performance Indicators	Assessment across each link in the service chain	Summary and vision

Assessment Tools	Download
1. SANIPLAN: Information collection and initial performance assessment	a. SaniPlan , SaniPlan-FSM b. Data for SaniPlan Input:List of sources
2. Physical and spatial analysis of city	a. Sample maps
3. Field assessment of toilets and onsite systems	a. SaniTab tool (Android installer .apk file/ sample questionnaire) b. Manual for Surveyors c. Template for survey of small contractors and masons d. Template for technical assessment of onsite systems
4. Field assessment of emptying services and treatment	a. Template: Onsite system emptying service b. Template: Wastewater quality assessment

Module 2: Enabling Environment: Policy, Regulation and Institutions

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 2 :
Enabling Environment: Policy, Regulation and Institutions

- National and state policy and guidelines on FSM
- Regulatory regime for FSM and the institutional roles
- Assessing local capacity for FSM

National and state policy and guidelines on FSM

- The **municipal legislations/constitutions** often **provide roles** and **responsibilities** of local governments on sanitation

- Often there is a national/state level policy on FSM
  - If such a **policy does not exist**, it becomes **difficult** to **convince local** governments about FSM practices. In such cases, it is useful to share highlights of such policies from other states/countries

- If the **policy exists**
  - Highlight **key aspects** of this **policies** to the **city government** officials and other **stakeholders**
  - Identify **roles** and **responsibilities** of various actors at local level
  - Identify **areas of compliance** for local government

Review of national/state policies

Specific aspects to be **reviewed** include:

a) National and State (Province) laws and policies that provide the **overall framework for FSM**;

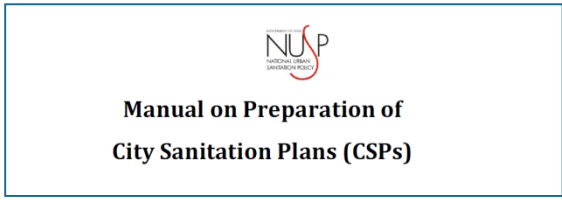
b) **financial provisions** related to **grants** for project funding or **subsidies** for facilities for different components of the service chain,

c) **Rights** and **responsibilities** of **citizen** and **local governments** and other **service providers**, and

d) **Equity aspects** in the policies and programmes through analysis of budgetary allocations for specific groups and locations

Example: India - Review of National Policies and Plans

- One of the major **thrust areas** of **AMRUT** is **Septage Management**
- **NUSP** has accorded **high importance** to **plan and implement** actions for the organized and **safe management** of **fecal matter** from **on-site installations**.
- It highlights the **importance of safe and hygienic facilities with proper disposal**. It emphasizes proper disposal and treatment of sludge from on-site installations (septic tanks, pit latrines, etc.); and proper operations & maintenance (O&M) of all sanitary facilities.
- **Recommends** developing a **Septage Management Plan** (SMP) as a **part** of city sanitation plans (**CSP**)
- **Septage Management Advisory** of Government of India provides references to CPHEEO guidelines, BIS standards, and other resources for preparing SMP / FSM plan.



Regulatory regime for FSM and the institutional roles

- **Regulatory framework** for each **link** of the **FSM chain** may be **different**
  - For **user interface** – e.g. toilets and containment – it is the **building regulations** and/or urban planning regulation that prescribe minimum sizes and type of toilets
  - The **health department** of local government generally **regulates waste water discharge** (drains, stagnant water pools etc.)
  - For **waste treatment and disposal** to natural water bodies, the **state/national environmental regulations** provide guidance

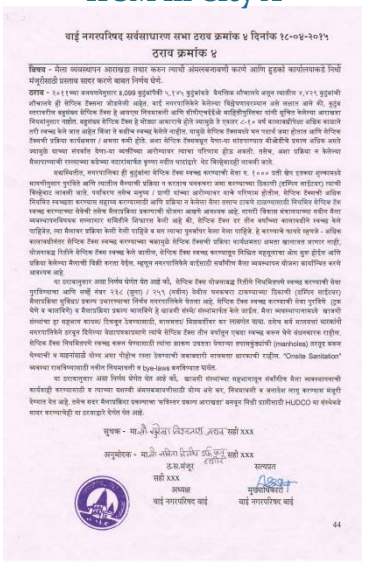
- It is also **important** to **identify** the **roles** and **responsibilities** of **local government** and **state level agencies** in **regulating septage** in cities.

Example: Local Government can make regulations/bye-laws for effective implementation of IFSM plan

In case of lack of adequate policies and design standards for onsite sanitation, Local government needs to formulate **bye-laws and rules for management of septage** in following broad areas:

- **Septic tank design and methods of approval of building plans to comply with rules**: to ensure septic tanks of standard size are installed in new constructions
- **Periodicity of de-sludging**: to ensure septic tanks are cleaned every 3 years **De-sludging procedures**: to ensure safe handling of fecal sludge
- **Sanitation tax**: to persuade households to clean septic tanks regularly
- **Penalties:** to deter irregular cleaning and use of substandard septic tanks
- **Licensing and reporting of private players:** to empanel private service providers for septic tank emptying services and O&M of treatment plant through , integrated contracts
- **Monitoring:** There is also a need for **regular monitoring and inspection** of septic tanks and de-sludging procedures to facilitate the implementation of bye-laws

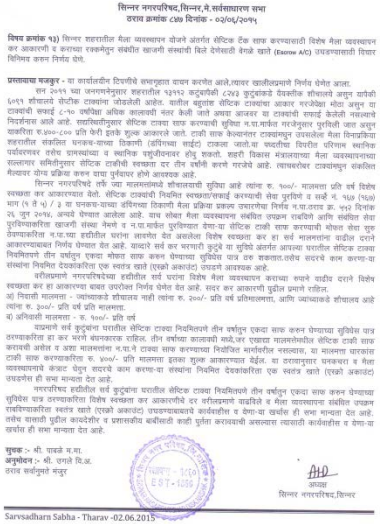
Resolution for undertaking IFSM in City X



वाई नगरपरिषद सर्वसाधारण सभा ठराव क्रमांक ४ दिनांक १८-०४-२०१५

ठराव क्रमांक ४

Resolution for Sanitation taxation for IFSM in City X



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Sarvsadharn Sabha - Tharav -02.06.2015

Page 13

Assessing local capacity for FSM

- Understand the **governance** and **institutional mechanism** of the **local government** (or the agency responsible for FSM), and review of city wide plans, if any; especially those **related to sanitation**

- **Assess** the **organizational structure** and **responsibilities** related to **septage management** in the agency

- **Review of outsourcing** contracts and its management

- **Capacity assessment** of local government and **gaps for IFSM** – e.g. developing contracts and monitoring mechanisms

Module 2 : Tools

TOOLS available for ASSESSING policies, REGULATIONS and CAPACITY of Local government

Assessment areas		
National and state policy and guidelines	Regulatory regime for FSM and the institutional roles	Assessing local capacity for FSM

Assessment Tools	Download
5. Assessing policies and regulations affecting FSM at local levels	a. Sample policies and guidelines (NUSP , FSM guidelines GOI / GoM , GoTN , FSM in Urban Maharashtra , Other Sanitation Acts)
6. Assessing capacity at local level: local government and other stakeholders	a. Examples of Process mapping b. Examples of citizens charter c. Interview guide for local government to assess capacity for PSP

Module 3: Technology options for FSM services

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-digestor toilet

Emptying services

Conventional Vacuum Tanker

Mini-Vacuum Tanker (Vacutug)

Treatment technologies

Sludge drying bed

Co-composting

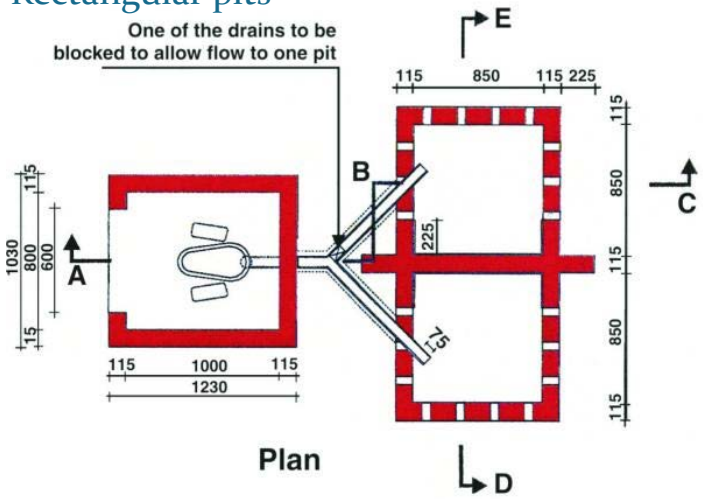
Module 3 :
Technology options for FSM services

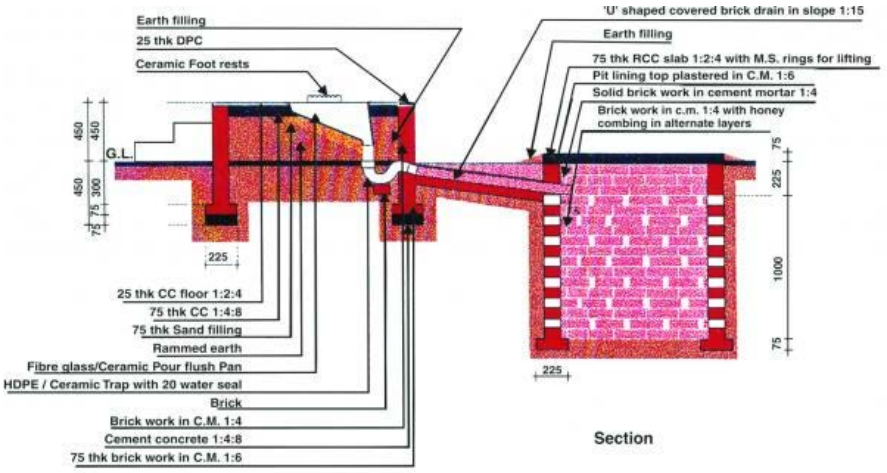
- Assessing technical options for toilets and septic tanks
- Assessing options for emptying services and conveyance
- Assessing options for treatment and reuse of fecal sludge/septage

Assessing options for User interface (1/3)

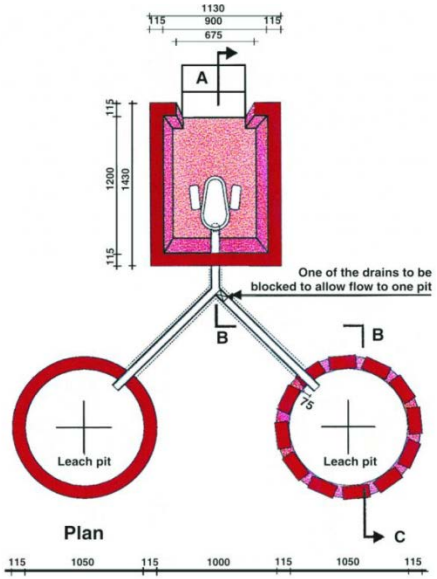
A. Pour Flush toilet with twin pits

Rectangular pits





Circular pits



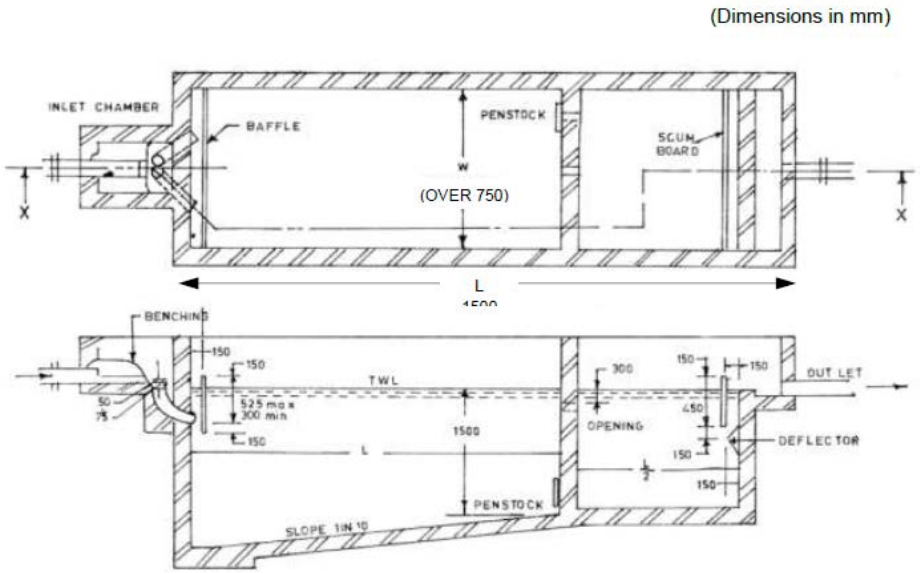
Detailed Design

Source: Sulabh, India

Assessing options for User interface (2/3)

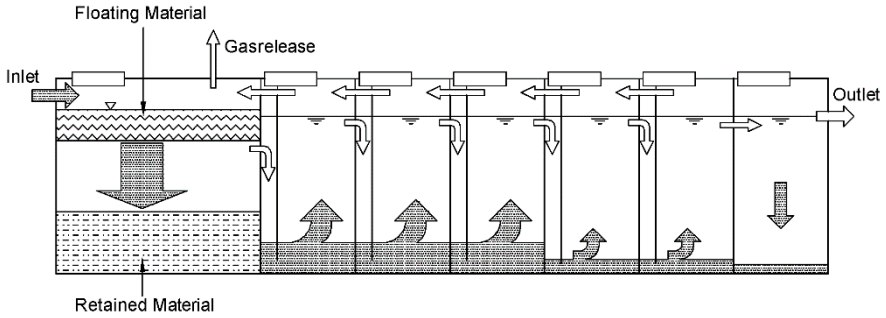
B. Toilet with Septic tanks

Typical sketch for two compartment septic tanks for 5 users

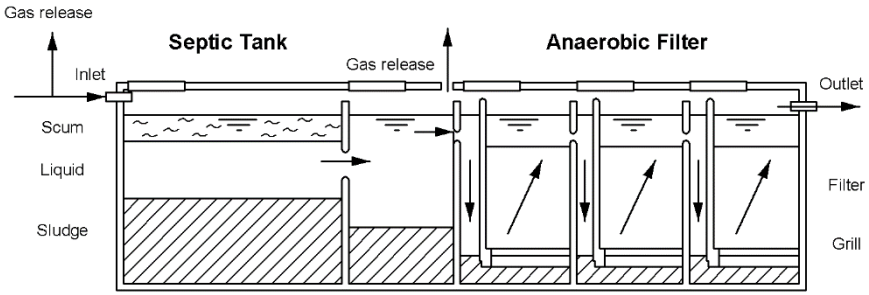


B. Toilet with Improved Septic tanks

Anaerobic baffled reactor



Multi chamber anaerobic filter



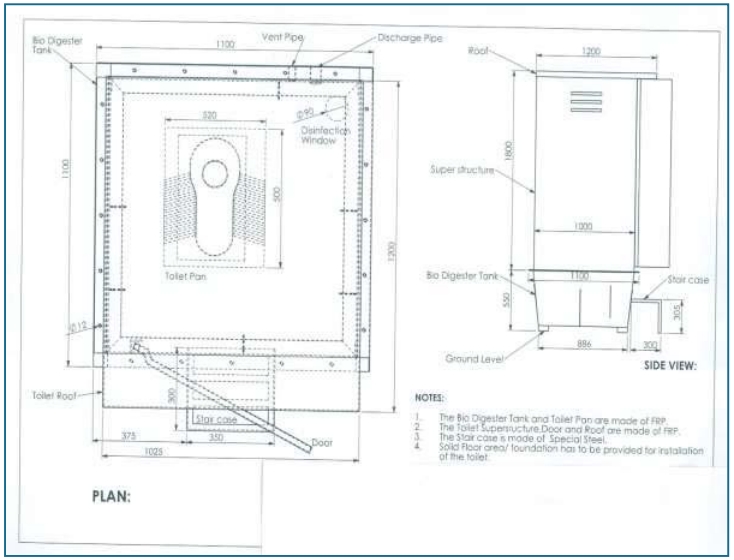
Detailed Design

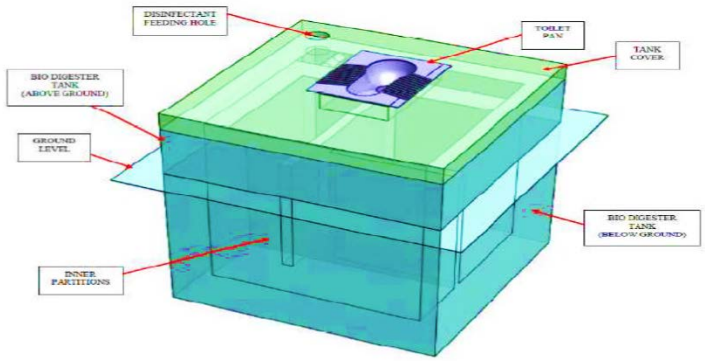
Source: Manual on Sewerage and Sewage Treatment Systems, CPHEEO, 2013, Part A: Engineering

Assessing options for User interface (3/3)

D. Bio-Digester toilets

E. Bio-toilet



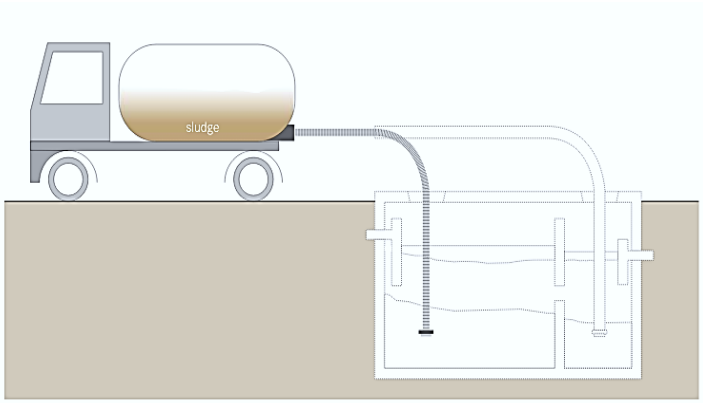


Source: SBM guidelines

Assessing options for emptying services and conveyance

"When the Septic tank is Full".

Often a septic tank is emptied when its full. There is a tendency to use/build oversized septic tanks to avoid frequent emptying. It is important to assess how often a septic tank is emptied. Such information will need to be gathered through a household surveys.



Sketch adopted from compendium of sanitation systems and technologies, Eawag

Example

In India: the Central Public Health Engineering and Environmental Organization (CPHEEO) suggests:

"***Yearly desludging of septic tank is desirable***, *but if it is not feasible or economical, then* ***septic tanks should be cleaned at least once in two - three years***, *provided the tank is not overloaded due to use by more than the number of persons for which it is designed*"

Pg 9-22, CPHEEO Manual

Looking at Recommendations for desludging

Desludging of Septic tanks

- **De-sludging** of septic tanks - using **mechanical devices**
- **De-sludging frequencies** of septic tanks once every **2 to 3 years**, or when the tank becomes one third full
- Periodical desludging will help **reduce the pollution levels in the effluent**
- **1-2 inch of sludge** should be **left in tank** to **facilitate** future **decomposition**
- **Regular desludging** activities will **require well-organized** community and **public/private service providers**
- **Tanks should not be scrub** cleaned or **washed with detergent**

Transportation

- **Vehicles** are available in different **capacities** from **2,000 to 12,000 litres**.
- Small scale vacuum trucks called **Vacutug** are recommended f**or areas inaccessible** to large vehicles
- The **no. of** cleaning **machines** - based on frequency of **cleaning**, **distance** of location **of treatment facility** and local conditions
- A **Transportation Plan** should be formulated which **should include**:
  - **Scheduling** and routing for **trucks**
  - **Customer** service **protocols**
  - **Locating** tanks and cleanouts with **proper pumping** equipment operation and worker safety
  - Transportation requirements, including rules of the road
  - **Disposal procedures** at the treatment facility
  - **Routine service** of equipment
  - **Recordkeeping** for all tanks pumped and wastes discharged at the disposal facility

Source: Government of India, Ministry of Urban Development, Advisory of septage Management, 2013

Vehicular options for septage collection

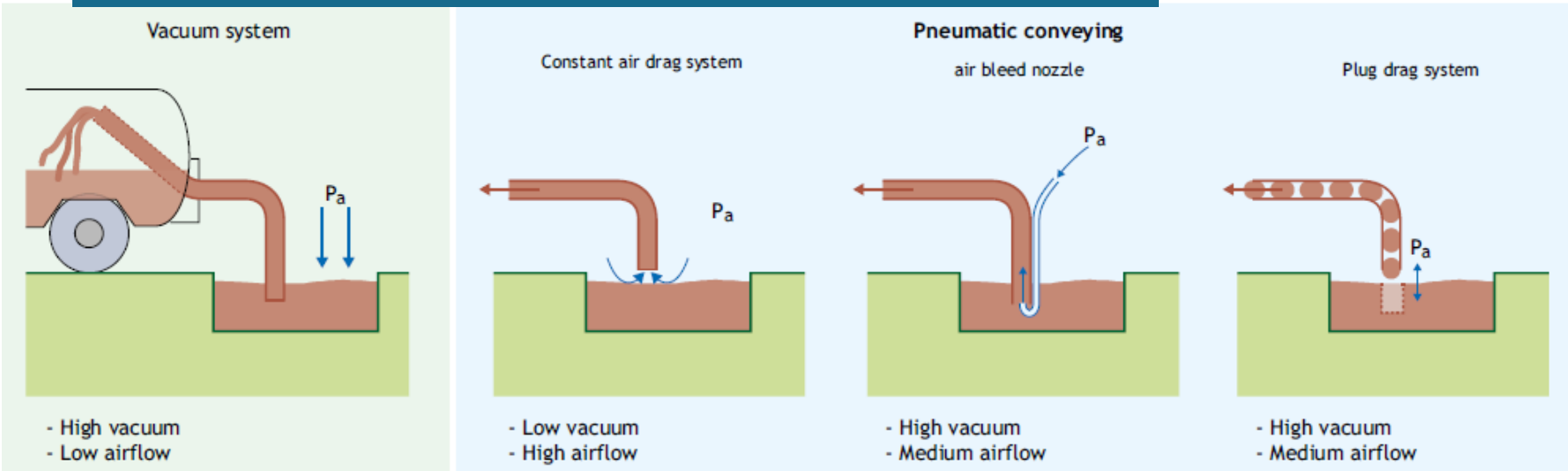
Conventional Vacuum Tanker

For septic tanks which have proper access roads, a larger vehicle maybe used

Mini-Vacuum Tanker (Vacutug)

For septic tanks located in narrow lanes or those that do not have proper access roads, smaller vehicles maybe used

Four types of vacuum sludge removal techniques



Source: STRANDE, L. (Editor); RONTELTAP, M. (Editor); BRDJANOVIC, D. (Editor) (2014): Faecal Sludge Management. Systems Approach for Implementation and Operation. London: IWA Publishing. Pg-81

Assessing options for treatment and reuse of fecal sludge/septage

Treatment / Reuse / Disposal

- Treatment at **existing sewage treatment plants**
  - Septage addition at the **nearest sewer** manhole
  - Septage addition **at the STP**
  - Septage addition to **sludge digesters/sludge drying beds**
- Treatment at **independent septage treatment plants**
  - **Space is not a constraint** : Lime treatment, Sludge drying beds, Anaerobic baffled reactor, stabilization pond, Constructed wetland, co-composting with solid waste
  - **Space is a constraint** : Mechanical Dewatering system
- Properly **treated sludge** can be **reused** to reclaim parched land by application **as soil conditioner**, and/or as a **fertilizer**






Comparison across various aspects for treatment options that convert septage to compost

Sr No	Technologies / Parameters	Sedimentation ponds /Settling Tank/ Thickening ponds	Sludge drying bed / Unplanted sludge drying bed	Planted sludge drying bed	Co - Composting	Deep row entrenchment	Mechanical Dewatering	Waste stabilization pond (Non - aerated)	Advanced nutrient recovery
1	Expertise for design	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
2	Built with Local materials	Yes	Yes	Yes	Yes	Yes	No	Yes	No
3	Expertise for construction	No	No	No	No	No	Yes	Yes	Yes
4	Expertise for operations	No	No	Yes	No	No	Yes	Yes	Yes
5	Capital cost	Low	Moderate	Moderate	Low	Low	High	Variable	Very High
6	Land required	High	Moderate	High	High: cold climates, average : warmer climates	High	Low	High	Low
7	O & M cost	Low	Low to Medium	Low	Medium	Low	High	Low	Very High
8	Resting period (i.e No. of days / months / years)	SP : 8-12 Months; ST: 2-4 months	10-15 days	2-3 years / 5-6 Years	6-8 weeks	-	-	Anaerobic ponds - 1 to 7 days Facultative ponds - 5 to 30 days	-

Quality Standards for Reuse of treated Septage. . .

- ***Dewatered septage/sludge use as a fertilizer in agriculture , should satisfy criteria of Class A Bio-solids of US EPA :***
  - Fecal coliform density < 1000 MPN/g total dry solids
  - Salmonella sp. Density < 3MPN/4g total dry solids
  - Helminth egg concentration < 1/g total dry solids (WHO, 2006)
  - E – Coli of 1000/g total solids (WHO, 2006)

- ***As per MSW Rules, 2000 compost quality should not exceed the prescribed limit as below:***

Parameter	Concentration not to exceed (mg/kg dry basis, except for pH and carbon to nitrogen ratio)
Arsenic	10
Cadmium	5
Chromium	50
Copper	300
Lead	100
Mercury	0.15
Nickel	50
Zinc	1000
C/N ratio	20 – 40
pH	5.5 – 8.5

Properly **treated sludge** can be **reused to reclaim parched land** by application as soil conditioner, and/or as a fertilizer.

Deteriorated land areas, which cannot support the plant vegetation due to lack of nutrients, soil organic matter, low pH and low water holding capacity, can be **reclaimed and improved by the application of treated septage**

Drip irrigation is the preferred irrigation method for **settled septage effluent** when irrigation is feasible. Crops which could be safely grown are corn, fodder, cotton, trees including fruit trees, eucalyptus and poplar.

Aquaculture can be practiced for **settled septage effluent** when **freshwater is available to achieve dilution to ensure dissolved oxygen is above 4 mg /l**. Fish species of tilapia and carp are preferred since they tolerate low dissolved oxygen

Source : Advisory note on Septage management in Urban India, MoUD Jan 2013 &
Guidelines for 'Open Defecation Free Towns' under the Mahatma Gandhi Swachhata Mission, 2015

Module 3 : Tools

TOOLS available for ASSESSING TECHNOLOGY options across service chain

Assessment areas		
Assessing technical options for toilets and septic tanks	Assessing options for emptying services and conveyance	Assessing options for treatment and reuse of fecal sludge/septage

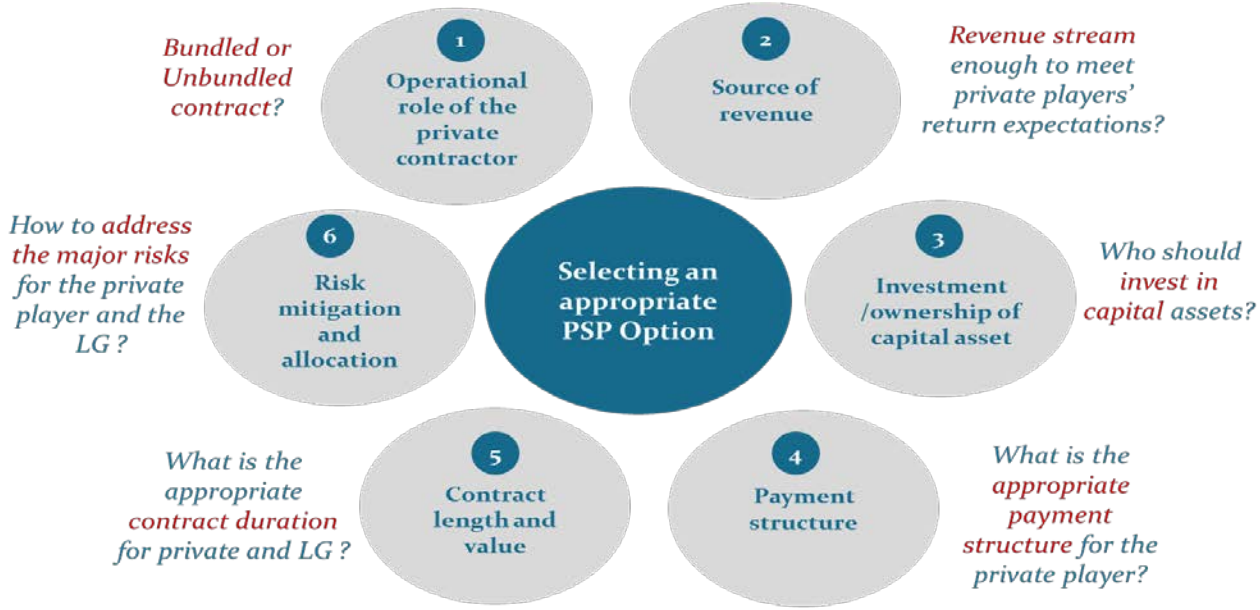
Assessment Tools	Download
7. Assessing options for conveyance of septage services	a. Determining infrastructure required for septic tank emptying cycle b. Template for licensing of septage transporter c. Template manifest form for emptying
8. Assessing options for treatment and reuse of fecal sludge	a. Factors influencing selection of treatment facilities

Module 4 : Potential of private sector role across the service chain

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.



Module 4 :
Potential of private sector role across the service chain

- Assessing local government capacity for PSP
- Landscape study of private sector
- Develop and review potential structure of PSP option

Assessing local government capacity for PSP

- Main objective is to **understand experience** of **Local government** with **planning and implementing** engagements with the **private sector.**

- To understand the **process of implementing** a private sector engagement right from the evaluation of need for the project to the contracting of the project

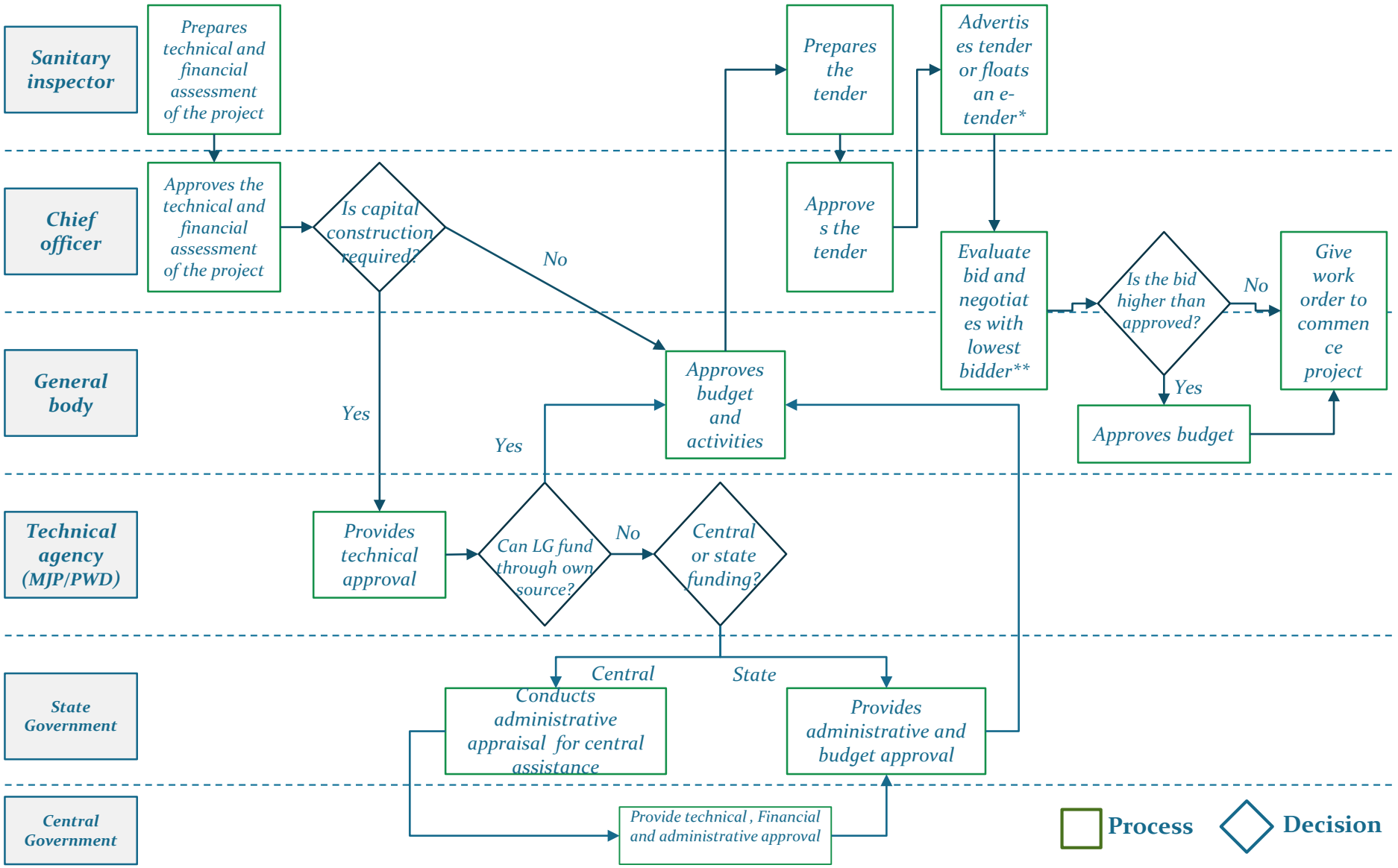
- To learn about **key challenges** encountered before, during and after awarding the contract (including contract negotiation, monitoring, execution of work etc.), as well as the **positive practices** that have enabled success.

Assess the existing contracts which the LG have taken up . . .

Sector	Type of the contract	LG responsibilities	Contractor responsibilities
	• Management contract for door collection of waste and cleaning of drains	• Fixed monthly payment made to the contractor	• Door to door collection of waste and cleaning to drains • Provision of labor required • Provision, Operation and maintenance of trucks
	• Management contract for the O&M of vermi-compost treatment plant	• Monthly payment made to contractor for operation and maintenance of compost plant constructed by the LG	• Provision of labor, equipment and utilities for the plant • Sale of compost, 50% of the proceeds of which, need to paid to the LG
	• Management contract for the O&M of community toilets	• Monthly payment made to contractor • Payment for utilities	• O&M of community toilets along with regular cleaning and repairs
	• Management contract for cleaning of pre-monsoon drain cleaning	• Fixed monthly payment made to the contractor	• Undertaking cleaning of drains • Provision of labor required • Provision of equipment required to undertake cleaning

Source: Artwork from the Noun project, Interviews with Wai city officials, City contract documents

Understand the key processes involved in implementing private engagements. . .



Note: Functions highlighted over the dotted line are done by both the stakeholders. *If tender value is over INR 1 million, e-tendering is required

Source: Interviews with Wai city officials, City contract documents

Understand the Overall satisfaction of the officials related to provision of private sector services . . .

"Our experience with these contracts has been quite good. The LG has not received any complaints so far. It is a relief for our staff."

- A city Engineer

"We are paying more than we did when we did these activities ourselves. However, the service levels have improved and we have shifted a lot of our burden on to the private player. For example, we constantly faced issues with theft and vandalism in community toilets. That is now the responsibility of the private player to keep this toilets operational."

- A city Sanitary Inspector

Source: Interviews with Wai city officials

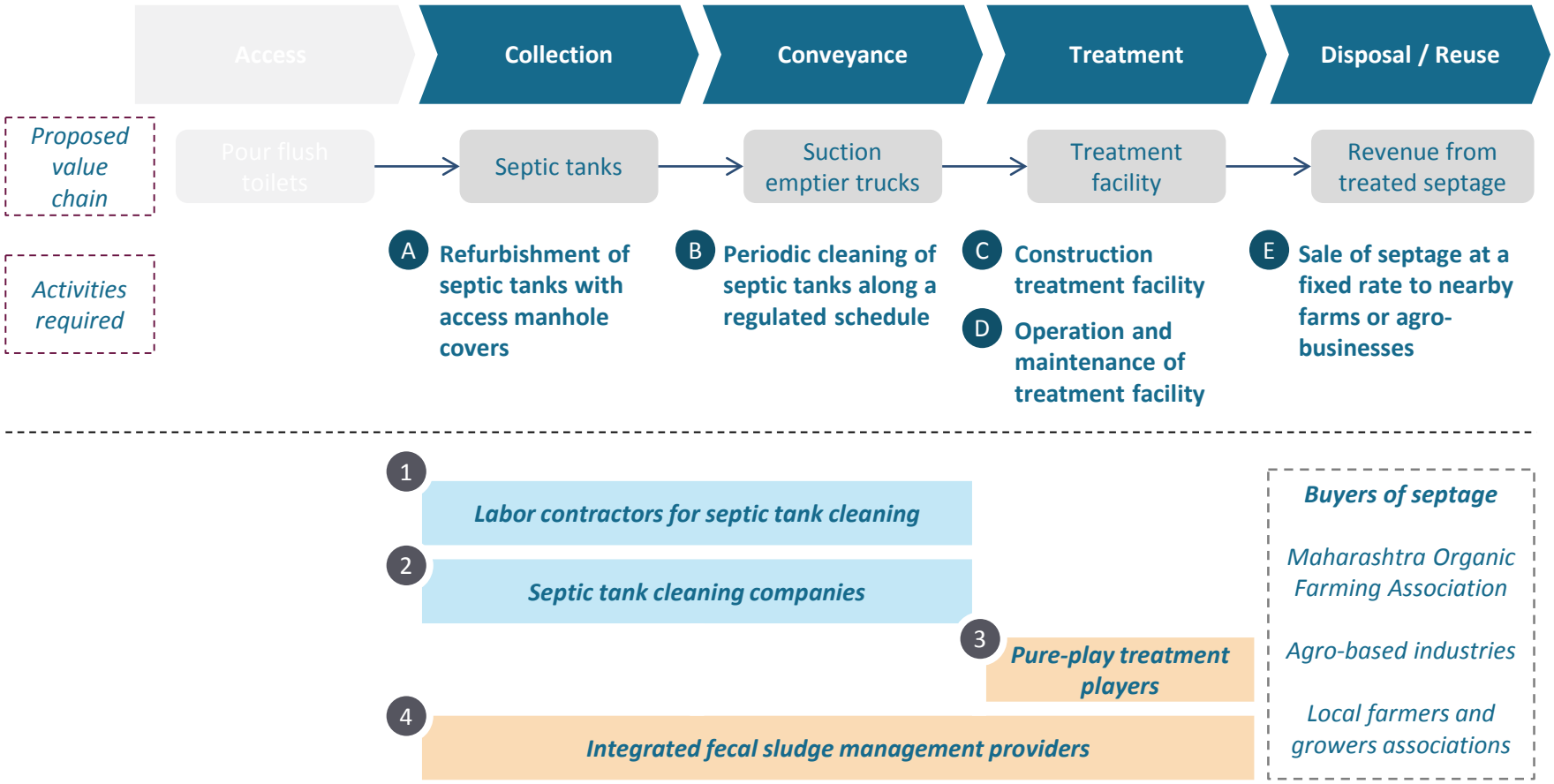
Assess what kind of support needs to be provided to the LG in terms of assessments, developing contracts and monitoring mechanisms (1/1)

	Technical and Financial assessment	Contract development	Procurement process	Monitoring
Current status and key gaps	• Undertaken by sanitary inspector, engineer and LG staff	• Three year management contracts prepared by the LG staff with a fixed fee payable monthly • Have key dispute resolution, termination and complaint redress clauses	• Lowest bid meeting minimum criteria is chosen	• 3 supervisors oversee work done by a contractor in their assigned area. Daily reports are compiled which are inspected by the SI
Capacity building needed	• Prepare technical and financial assessments for proposed solutions	Develop a systematic contracting framework which: ✓ Links payment to explicitly monitored service levels or outputs ✓ Addresses risks affecting the public and private players such as termination, payment delay and cost escalation	• Strengthen current framework for bid evaluation to include metrics for quality and level of service delivery	Draft a systematic monitoring framework that ✓ Clearly measures outputs or outcomes ✓ Is clearly tied to payment incentives ✓ Can be effectively implemented by LG staff
Degree of Need for capacity building				

Landscape study of private sector

- **Explore private players** for septage management **operating within city area or nearby town**
- **Assess work profile, interests and capacity** of private sector doing septage management activities
- **Explore willingness of players** to undertake various activities in the sanitation value chain as per their competencies and interests

Explore private sector participation for septage management



Small scale players (<10 employees)

Medium scale enterprises (>10-50 employees)

Note: Unbundle contracts as far as possible to gauge private sector capacity

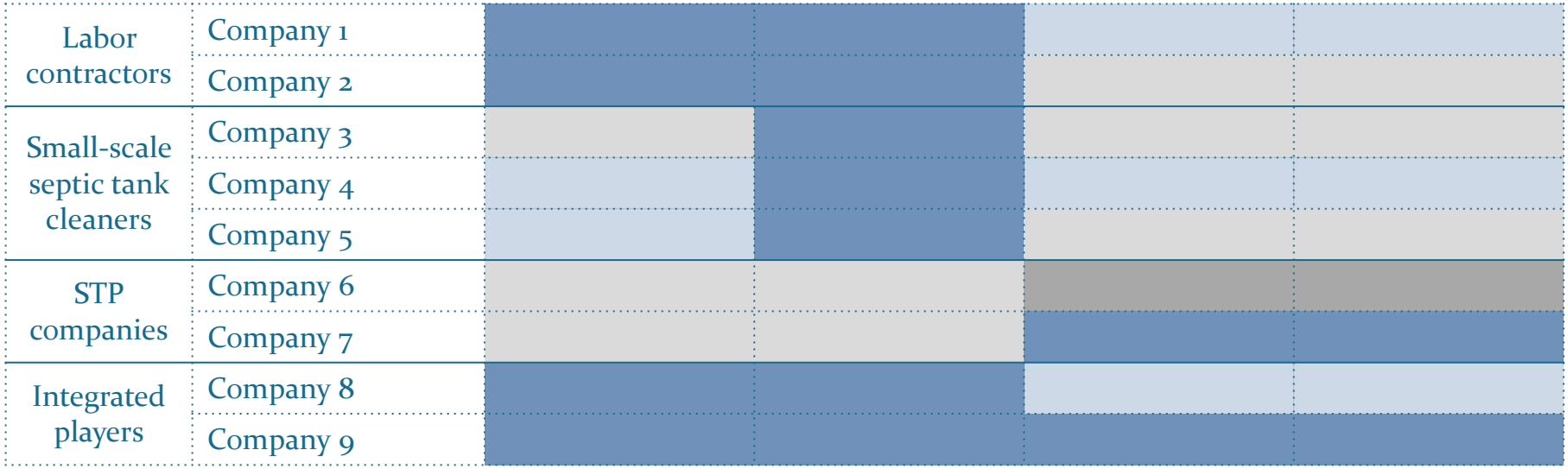
Exploring willingness of players to undertake various activities in the sanitation value chain as per their competencies and interests

Activities required

- A — Refurbishment of septic tanks with access manhole covers
- B — Periodic cleaning of septic tanks along a regulated schedule
- C — Construction of treatment facility
- D — Operation and maintenance of treatment facility

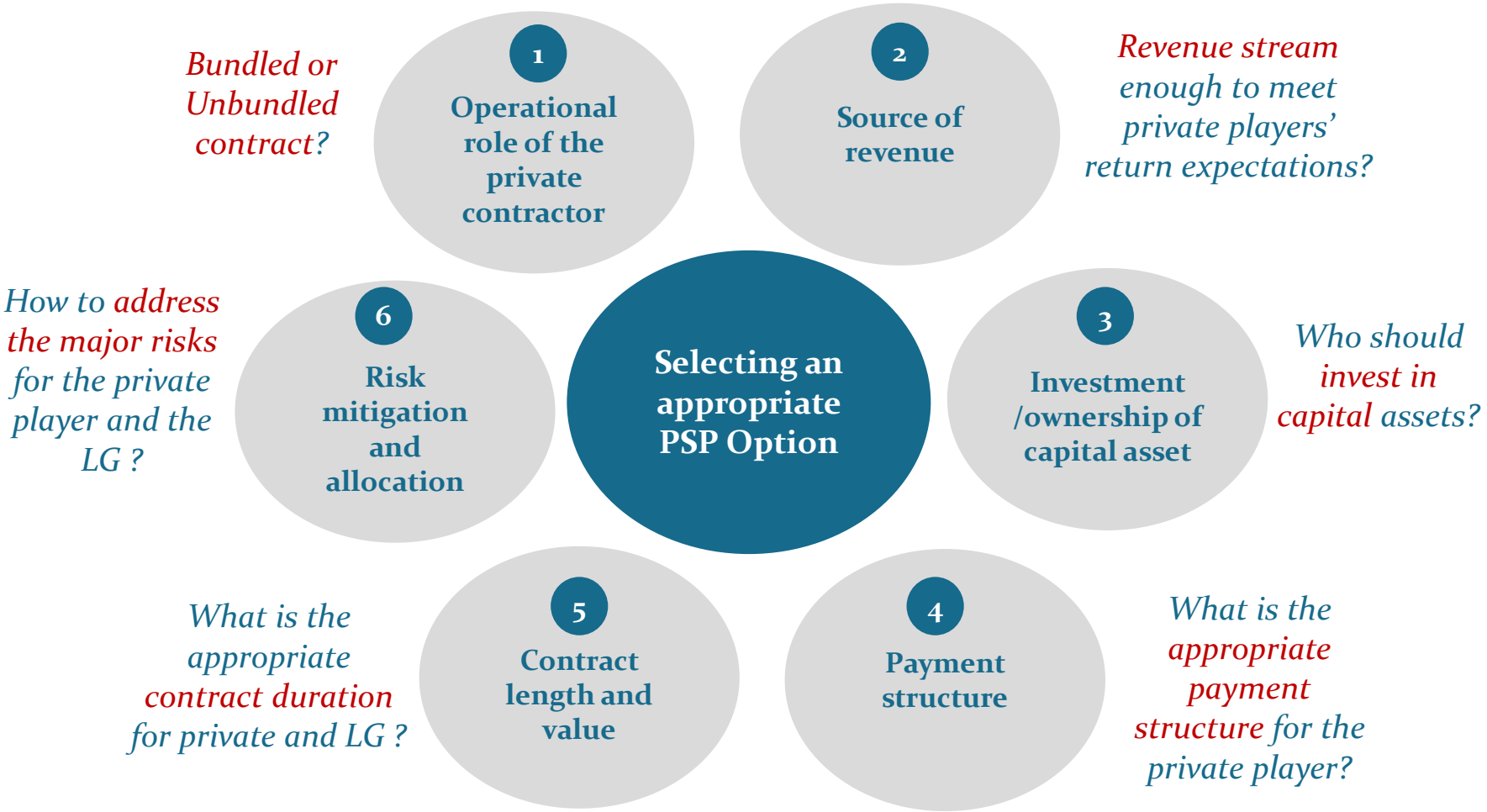
Key

- Interested, with previous experience
- Interested, no previous experience
- Experienced, not interested
- Not interested, not experienced



Assess interests of private sector for various activities

Develop and review potential structure of PSP option



Follow six processes in structuring a PSP option for septage management

Formulate possible PPP structures for activities

Contracts	Source of revenue	Ownership of asset	Payment method	Contract length and value
1A Refurbishment and cleaning of septic tanks + O&M of SDBs	*LG*	Private player	Recurring fixed fee with Fixed fee per unit for refurbishment	2-3 year, ~INR 32-36 lakhs in City Y and ~INR 15-17 lakhs in City X
1B Construction of SDBs	*LG*	LG	Overall fixed fee on a pre-decided schedule	~ INR 96 lakhs in City Y and ~71 lakhs in City X lasting the time period of construction
2A Refurbishment and cleaning of septic tanks	*LG*	Private player	Recurring fixed fee with Fixed fee per unit for refurbishment	2-3 year, ~INR 27-32 lakhs in City Y , ~INR 11-13 lakhs in City X
2B Construction and O&M of SDBs	*LG*	ULB	Overall fixed fee on a pre-decided schedule + recurring fixed fee for O&M	12-18 months, Construction cost plus ~5-6 lakhs annually for O&M in City Y and ~4-5 lakhs in City X
3A Integrated contract involving refurbishment, cleaning of septic tanks, construction and O&M of SDBs	*LG*	Trucks – Private SDBs- LG	Recurring fixed fee for cleaning and O&M with Fixed fee for Construction and Fixed fee per unit for refurbishment	Payment for refurbishment, cleaning and O&M as in 1A above; payment for construction as in 1B above

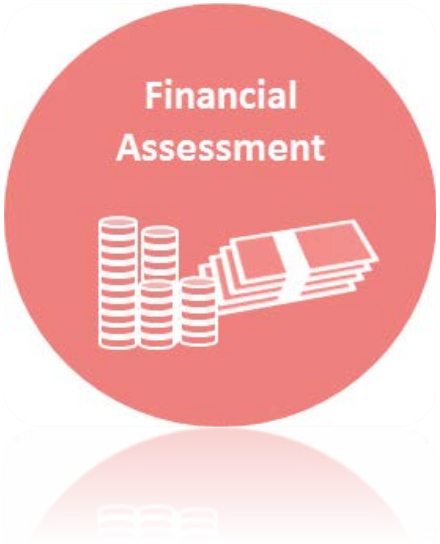
Module 4 : Tools

TOOLS available for ASSESSING potential for PRIVATE sector PARTICIPATION

Assessment areas		
Assessing local government capacity for PSP	Landscape study of private sector	Develop and review potential structure of PSP option

Assessment Tools	Download
9. Guide to a landscape study of private sector	a. Interview guide for Private sector players
10. Review of potential structure of PSP option	a. Interview guide for Local government about FSM-PSP structure and contracts b. Interview guide for Private sector about FSM-PSP structure contracts c. Model contract/bid documents (O&M / construction)

Module 5: Financial Assessment



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

FS Flow Diagram	User Interface	Collection	Conveyance	Treatment/ Disposal
Financial Requirement – **Capex**	**New septic tanks**	**Refurbishment of septic tanks**	**New Suction Emptier Trucks**	**Treatment Facility-** Land cost, construction cost
Financial Requirement – **Opex**			**Operation of Emptier trucks–** Fuel cost, salaries of truck driver, etc	**Operation of Treatment Facility-** staff salary, electricity bill, pumps replacement, etc

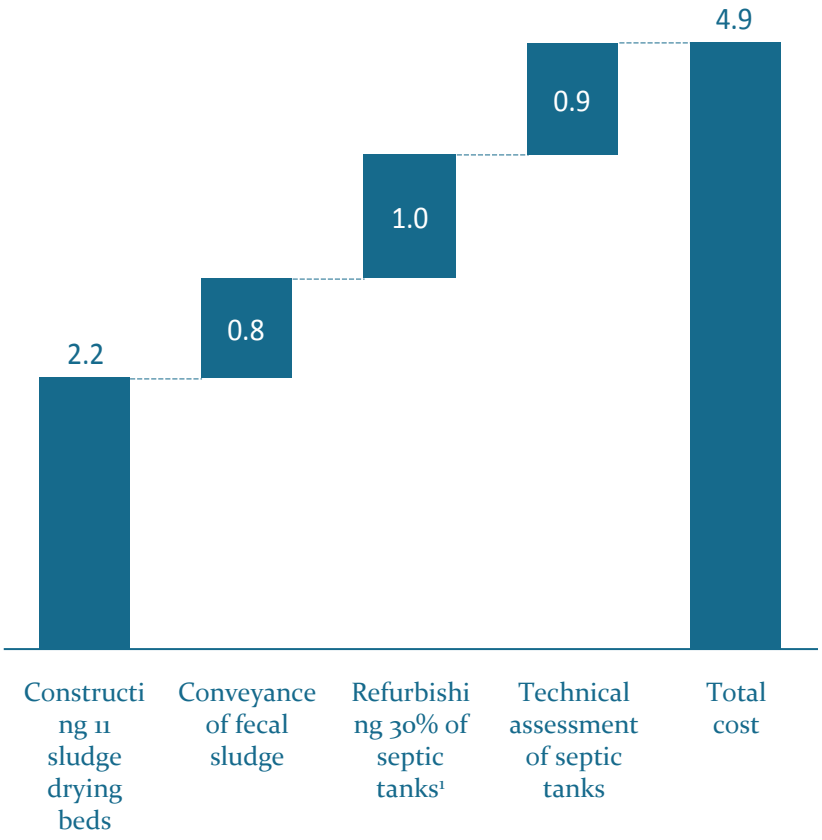
Module 5
Financial Assessment

- Assessment of finance requirements and potential sources
- Potential sources of finances for capital/ O&M expenditures
- Review of required tariffs

Assessing FSM financing requirements

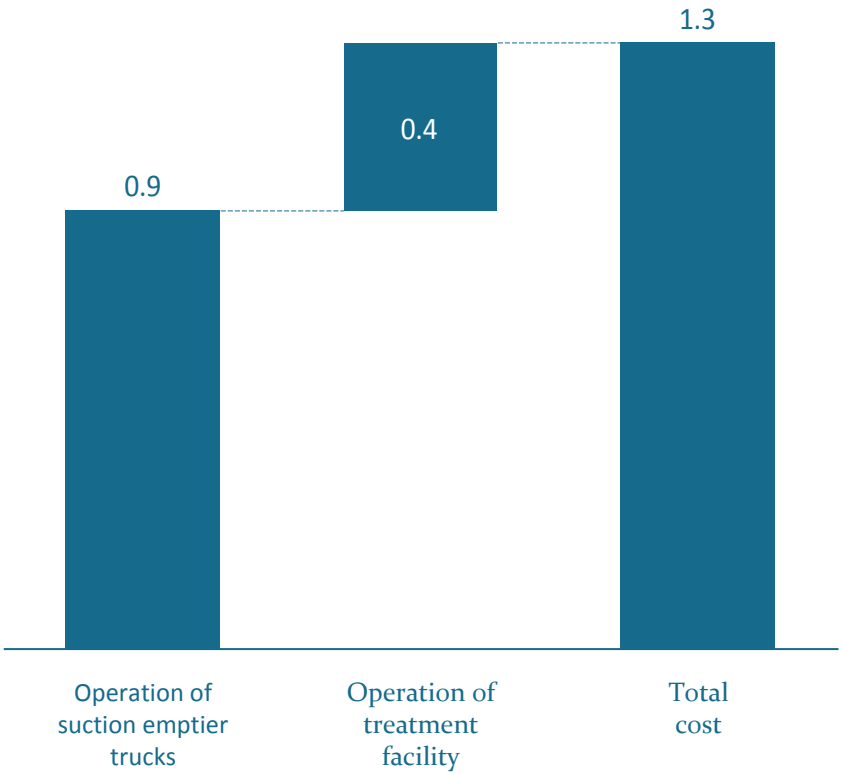
Capital expenditure

Investment required on capital assets for septage management in *City X*
(INR in million)



Operating expenditure per year

Investment required per year on O&M for septage management in *City X*
(INR in million)

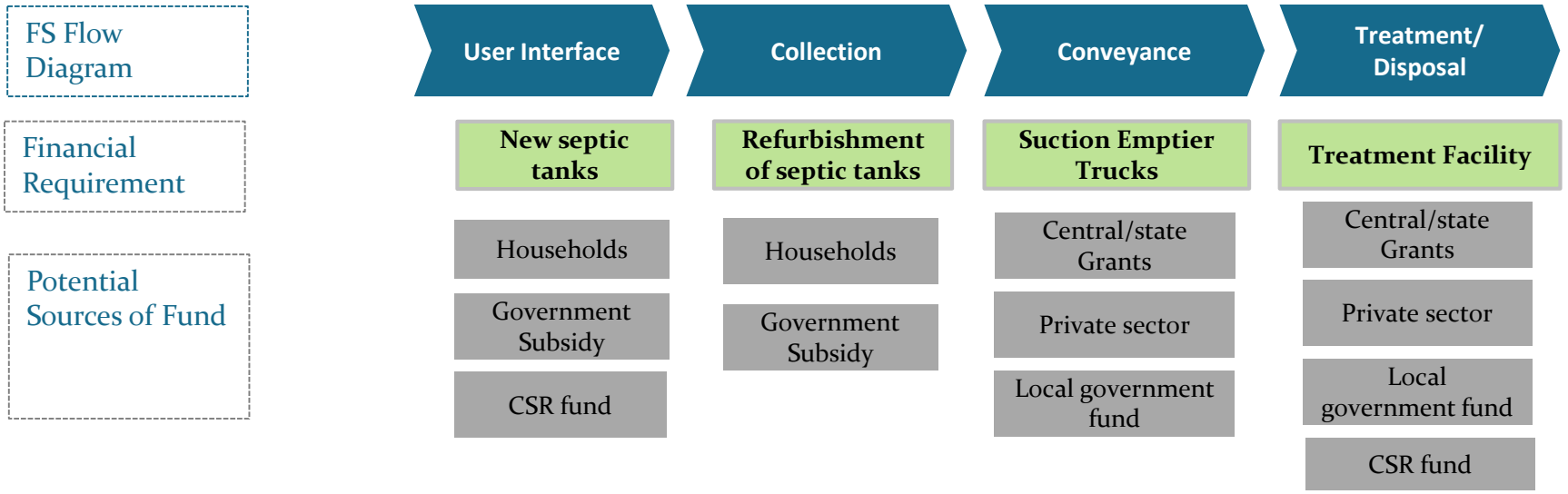


Note: (1) As per discussions with the LG, this cost can also be borne by private households

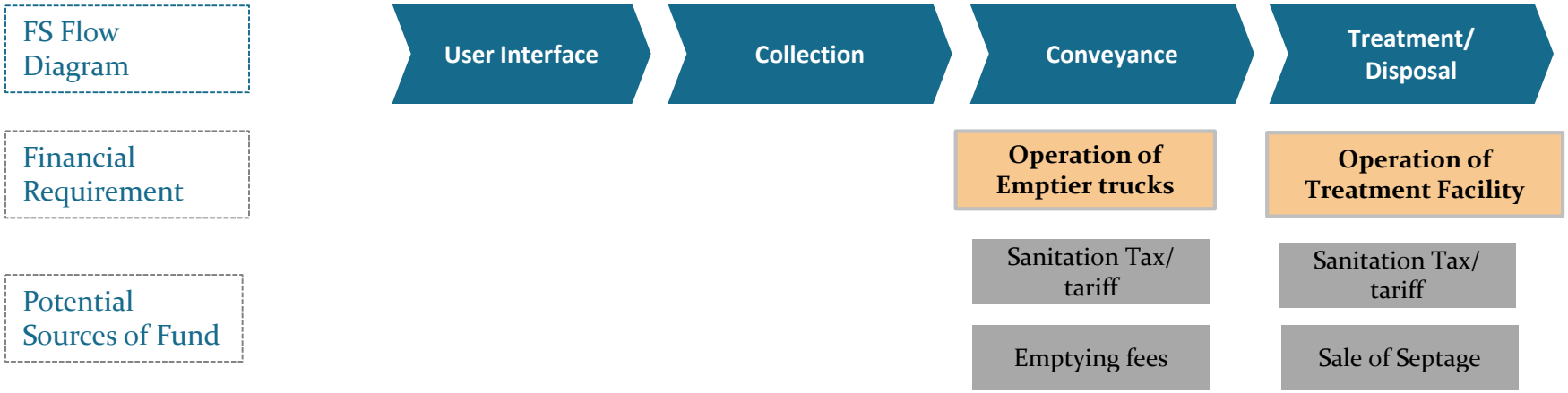
Source: Presentation on septage management plan of Wai , CEPT University

Potential sources of finance

A. Potential sources of finance for Capital Expenditure



B. Potential sources of finance for O&M Expenditure



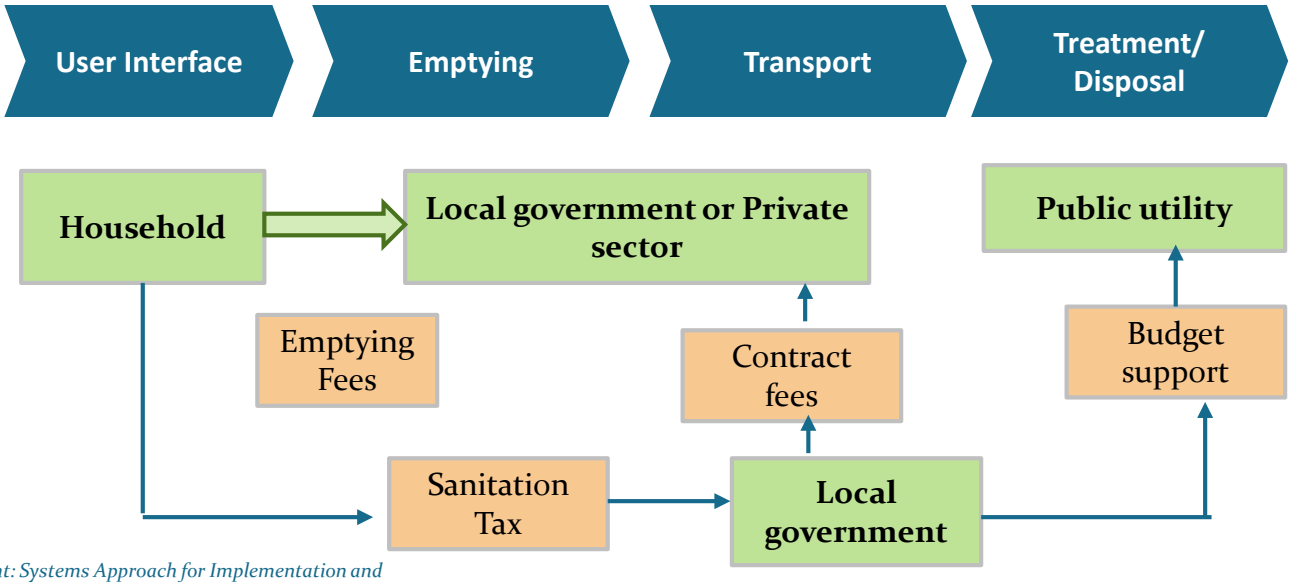
Review of required tariffs

- Local government become financially sustainable by leving taxes and/or user charges so as to recover O&M costs of recent urban development programmes.
- It is therefore imperative that any proposed investment plan includes ways to recover O&M costs.
- Besides meeting operating expenses, the ULB is required to keep sufficient surplus to meet repayment obligations in addition to its committed capital expenses.

Assessment of current tariffs levels across FSM service chain

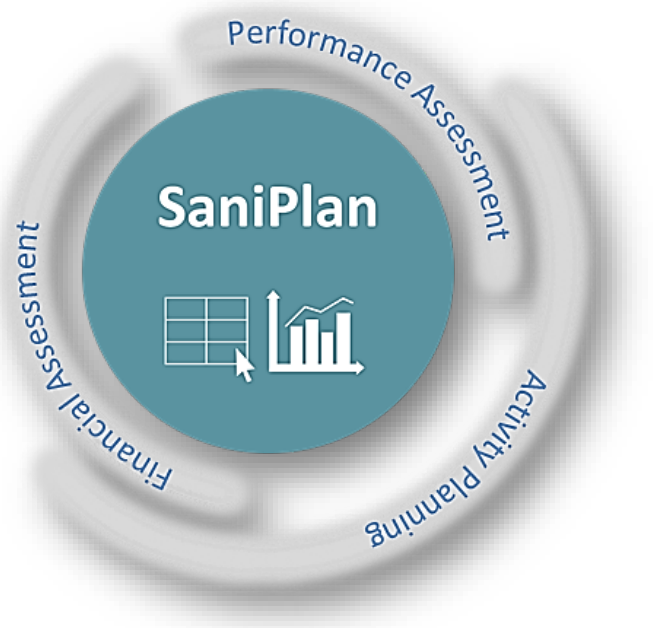
FS Flow Diagram

Existing tariff flow



Source: Diagram adopted from Faecal Sludge Management: Systems Approach for Implementation and Operation, Linda Strande, Mariska Ronteltap, Damir Brdjanovic, IWA 2014

All this activities can be undertaken in 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

Module 5 : Tools

TOOLS available for

ASSESSING

FINANCE

Assessment areas		
Assessment of finance requirements and potential sources	Potential sources of finances for capital/ O&M expenditures	Review of required tariffs

Assessment Tools	Download
11. SANIPLAN: Financing plan and tariff review	a. SaniPlan , SaniPlan-FSM b. Financial planning using SaniPlan
12. Assessing willingness to pay and to charge	a. Questionnaire: Assessing willingness to pay b. Sample resolution by local government

Link to website . . .

pas performance assessment system

Search this site

HOME

SaniPlan - IFSM
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.

City-wide 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 – IFSM Toolkit

Video on how to browse the website . . .

SaniPlan - IFSM toolkit

pas performance assessment system

CEPT UNIVERSITY

Thank you

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