सत्यमेव जयते

Government of Rajasthan

FAECAL SLUDGE AND SEPTAGE MANAGEMENT

AN ORIENTATION MODULE FOR RAJASTHAN

PART A - PRESENTATION SLIDES

SCBP

CMAR

C-WAS Center for Water and Sanitation

CEPT UNIVERSITY

NIUA National Institute of Urban Affairs

RCUES Mumbai

All India Institute of Local Self-Government

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TITLE
FAECAL SLUDGE AND SEPTAGE MANAGEMENT —
An Orientation Module for Rajasthan, Part A - Presentation Slides

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CONTENT
This module is compiled of material extensively prepared by C-WAS CEPT University and RCUES, AIILSG, Mumbai.

DISCLAIMER

The full module should be referenced as follows:
NIUA (2018) “Faecal Sludge and Septage Management — An Orientation Module for Rajasthan, Part A - Presentation Slides”. Text from this module can be quoted provided the source is acknowledged.

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FOREWORD

The state of Rajasthan has been determined in working towards improving sanitation, hygiene and waste management since the launch of Swachh Bharat Mission Urban in 2014 and it gives me an immense pleasure to acknowledge that the state is one step closer towards fulfilling the vision for Swachh Bharat under the leadership of Honorable Prime Minister of India Shri. Narendra Modiji.

On this line, under the guidance of Smt. Vasundhara Raje, Hon. Chief Minister of Rajasthan, Government of Rajasthan is working for 'Swachh Urban Rajasthan' with every citizen to make communities open defecation free. I highly appreciate the collaborative efforts undertaken by Directorate of Local Bodies and National Institute of Urban Affairs, Delhi and All India Institute of Local Self Government, Mumbai under the Sanitation Capacity Building Platform (SCBP) supported by Bill and Melinda Gates Foundation (BMGF) in undertaking capacity building of the urban local bodies staff/officials for ODF, ODF sustainability and FSSM under the SCBP project.

The Government of Rajasthan is actively participating to encourage the ULBs by engaging with them through these workshops as a result of which various cities have already started planning for FSSM in their respective ULBs.

On behalf of GoR, I am pleased to launch this module as a guiding light for the effective implementation of FSSM activities at city level, as it is essential to strengthen the knowledge base of officials within the state. I am sure that this module will prove useful to other states and cities in sensitizing their officials and adopting a systematic approach to meet the goal of making their cities clean, safe and healthy.

I extend my best wishes to all urban local bodies for moving towards this mission, thus making the vision of 'Swachh Bharat' come true.

Dr. Manjit Singh
Additional Chief Secretary
LSG Department, Rajasthan

FOREWORD

The Swachh Bharat Mission Urban (SBMU) emanates from the vision of The President of India: “We must not tolerate the indignity of homes without toilets and public spaces littered with garbage. For ensuring hygiene, waste management and sanitation across the nation, a “Swachh Bharat Mission” was launched.

Under the leadership Dr. Manjit Singh, Principal Secretary, Department of Local Self Government, Urban Rajasthan is actively working towards ODF+ Rajasthan. Following the National Policy on Faecal Sludge and Septage Management, released on Feb, 2017, Government of Rajasthan has also prepared State Faecal Sludge and Septage Management (FSSM) Policy Guidelines, considering the
challenges of urban sanitation in the State.

During this journey, various workshops and awareness activities on ODF and Fecal Sludge Septage Management (FSSM) were organized by National Institute of Urban Affairs, Delhi (NIUA) and All India Institute of Local Self Government (AIILSG), Mumbai under the Sanitation Capacity Building Platform with active participation of all ULB officials. I would like to acknowledge them for this support that has helped in moving towards ODF and ODF+ cities.

This module contains the strategies which needs to be adopted to make cities ODF, ODF sustainability, planning parameters for faecal sludge and septage management, various technology options and financial aspect of FSSM.

I wish that the ULBs of GoR, will make best use of the learnings from these programmes and move towards achieving the target of Swachh Rajasthan.

Mr. Pawan Arora (IAS)
Director cum Joint Secretary
Local Self Government Department
Government of Rajasthan

Acknowledgement

Following the "Swachh Bharat Mission" launched by Shri Narendra Modi, Hon. Prime Minister of India on 15th Aug'14, Government of Rajasthan has aimed for Swachh Urban Rajasthan. To achieve the goal, Government of Rajasthan has enabled the financial & administrative framework for ULBs and encouraging beneficiary led demand approach for toilet construction. To sensitize the ULBs regarding the concept of ODF, ODF+ and faecal sludge and septage management, National Institute of Urban Affairs, Delhi (NIUA) and All India Institute of Local Self Government, Mumbai (AIILSG) under Sanitation Capacity Building Platform (SCBP) has been working with the Government of Rajasthan by conducting various workshops on ODF & FSSM and related exposure visits.

SCBP is thankful to the Government of Rajasthan for extending their support. We sincerely express our gratitude to Dr. Manjit Singh, Additional Chief Secretary, Local Self Government Department (LSGD) , GoR for allowing us to develop the module and providing necessary mandate to conduct this project.

We also extend our gratitude to Mr. Pawan Arora, Director and Joint Secretary from , Local Self Government Department (LSGD) , GoR for their continuous support, encouragement and valuable suggestions throughout the development of the module.

We gratefully acknowledge the continuous support of Mr. Bhupendra Mathur, Chief Engineer, DLB, Dr. Himani Tiwari, Co-ordinator, City Managers' Association, Rajasthan (CMAR) and State nodal agencies - Rajasthan Urban Infrastructure Development Project (RUIDP), Directorate of Local Bodies (DLB), Rajasthan Urban Drinking Water Sewerage and Infrastructure Corporation Limited (RUDSICO).

The major part of this project involves the participation of ULB officials and Elected Representatives. This project would not have been possible without the zestful contribution of Urban Local Bodies and relevant stakeholders in the sanitation sector. SCBP would like to extend its sincere gratitude to all of them.

We would also like to appreciate Ms. Utkarsha Kavadi, Director, RCUES of AIILSG, Mumbai and AIILSG team members, Ms. Shweta Nagarkar, Ms. Amita Pathria and Mr. Hari Haihyvanshi for their efforts and enthusiasm in preparation and successful implementation of this module.

This module contains the strategies which needs to be adopted to make cities ODF+, planning parameters for faecal sludge and septage management, various technology options available and financial aspect of FSSM. We believe that this module will make a valuable contribution to develop a comprehensive understanding of sanitation sector and to accomplish the goal of clean and healthy cities.

About
Sanitation Capacity Building Platform

National Institute of Urban Affairs (NIUA) is a national nodal institute that works closely with the Ministry of Housing and Urban Affairs (MoHUA), Government of India. The Sanitation Capacity Building Platform (SCBP) anchored by NIUA aims to build local capacity for planning, designing and implementing non-sewer decentralized sanitation solutions, with specific focus on Faecal sludge and septage management (FSSM) and waste water.

SCBP is a partnership of various research organizations and non-profit institutions (CPR, BORDA/ CDD, CEPT, CSTEP, UMC, CSE, CPR, WASHi, iDECK, Dasara, Ecosan Services Foundation, AIILSG). The platform works in in partnership with national nodal training institutes working for Atal Mission for Rejuvenation and Urban Transformation (AMRUT) and Swachh Bharat Mission (SBM), with universities and research organizations and all stakeholders in the urban sanitation space. SCBP is supported by a grant from the Bill and Melinda Gates Foundation (BMGF).

SCBP is supporting the state of Rajasthan in terms of technical assistance and capacity building for ULBs after the project launch in the state in July 2017. This handbook covers the orientation module for FSSM conducted for all ULBs in the state.

About the book

This handbook is a compilation of efforts undertaken under the Sanitation Capacity Building Platform (SCBP) for building capacities of ULB officials and Elected Representatives of all ULBs in the State of Rajasthan. It is meant to be freely used by any organisation (public or private), national and state level training institutes, AMRUT and SBM Training institutes: for conducting a one to one and a half day basic Orientation Training on Feacal Sludge and Septage Management(FSSM).

The Handbook has been developed based on the experience of delivering FSSM trainings to ULB officials by NIUA and RCUES of AIILSG Mumbai under its SCBP project in the year 2017-2018. The trainings were planned at division level covering all the ULBs of Rajasthan with a target audience of Chief Executive Officers, Engineers, Elected Representatives and other relevant officials of the ULBs.

The handbook is divided into two parts:

Part A: Presentation slides
Part B: Reading and Reference Material

This handbook is Part A of the handbook of faecal Sludge and Septage Management – Orientation module. Part A consists of presentation slides along with key information/highlights used during trainings to be read together with Part B consisting of reading and reference material shared with the participants during the training for better understanding and internalisation of concepts.

The Handbook presents the key learning elements for the basic training module covering aspects of faecal Sludge and Septage Management and ODF+: ODF sustainability, overview and planning of FSSM, treatment options and financing options of FSSM, within the context of India.

List of Abbreviations

AIILSG	All India Institute of Local Self-Government
BMGF	Bill & Melinda Gates Foundation
BORDA	Bremen Overseas Research & Development Association
CAPEX	Capital Expenditure
CBO	Community based organisations
CDD	The Consortium for DEWATS Dissemination Society
CEPT	Centre for Environmental Planning and Technology
CMAR	City Managers' Association Rajasthan
CPHEEO	Central Public Health and Environmental Engineering Organization
CPR	Centre for Policy Research
CSR	Corporate Social Responsibility
CSTEP	Centre for Study of Science, Technology & Policy
CT	Community Toilet
Cu.m.	Cubic Metre
C-WAS	Centre for Water and Sanitation
DEWATS	Decentralized Wastewater Treatment System
ECOSAN	Ecological Sanitation
FC	Finance Commission
FSSM	Faecal Sludge and Septage Management
FSTP	Faecal Sludge Treatment Plant
HH	Household
IEC	Information Education and Communication
IHHL	Individual Household Latrine
IWK	Indah Water Konsortium
LPCD	Litres Per Capita per Day
MLD	Million Litre per Day
MoHUA	Ministry of Housing and Urban Affairs
MoUD	Ministry of Urban Development
NGO	Non-governmental Organization
NIUA	National Institute of Urban Affairs
NUSP	National Urban Sanitation Policy
O&M	Operation and Maintenance
OD	Open Defecation
ODF	Open Defecation Free
OPEX	Operational Expenditure
OSS	On-site Sanitation
PPP	Public Private Partnership
PT	Public Toilet
RCUES	Regional Centre for Urban and Environmental Studies
SBM	Swachh Bharat Mission
SBMU	Swachh Bharat Mission Urban
SCBP	Sanitation Capacity Building Platform
SHGs	Self help groups
SLB	Service Level Benchmark
SMP	Septage Management Plan
WSP	Water and Sanitation Program
UNICEF	United Nations International Children's Emergency Fund

Contents

Introduction to the module

Training and capacity building programmes of AIILSG are designed in such a way that they would be beneficial to the ULB officials in implementing missions and policies effectively at the city level. Understanding the importance of knowledge sharing and peer learning in the process of achieving targets, AIILSG, Mumbai encourages exchange of ideas within the state and the ULBs.

Over the past experience of more than 40 years, AIILSG, Mumbai has conducted more than 350 Programmes, training more than 11,000 municipal officials and elected representatives from various states in India.

The training programmes to be conducted in Rajasthan have been arranged in such a way that they are interactive, encouraging the participants to share their knowledge and understand the scenario in all the participating cities. Experts and practitioners from leading organizations working for faecal sludge management are invited to deliver technical sessions to strengthen the knowledge base of the participants making them aware of know-hows of respective subjects. Various case studies of already implemented projects are highlighted.

Along with technical sessions, group interactions are also arranged so that the participants share their issues and challenges considering on-ground practices and find viable solutions for the same with the help of experts. The sequence of the programmes that can conducted is explained in the following diagram:

This handbook consists of two modules:

Part A - Presentation slides
Part B - Reading and Reference Material

Each session in the module is explained in detail along with the key points/message to be conveyed in that session. Reading material developed for these programmes for distribution to the participants is attached at the end of each of the two modules.

We would like to acknowledge C-WAS, CEPT university for their contribution in terms of resource material for this module.

Introduction to faecal Sludge and Septage Management (FSSM)

Faecal Sludge is raw or partially digested, in a slurry or semisolid form, the collection, storage or treatment of combinations of excreta and black water, with or without grey water. Faecal sludge is the solid or settled contents of pit latrines and septic tanks. Faecal sludge (FS) comes from onsite sanitation systems. India's bigger cities have large, centralized sewerage systems with vast underground pipelines, pumping stations and huge treatment plants. These systems are expensive to build and even more expensive to operate effectively, as they require continuous power, a large amount of water, skilled operators and extensive electro-mechanical maintenance. It is for this reason that India's 7,000+ small towns do not have systems and are unlikely to be covered by centralised sewerage systems in the near future.

In the past, sludge management from onsite facilities has not been a priority of engineers or municipalities, and has traditionally received little attention. Onsite technologies have traditionally been viewed as only temporary solutions until sewers could be built. The National Family Health Survey-3 (NFHS, 2005- 06) reported that 17% urban households in India did not have access to any toilets at home, 24% households were sharing toilets (technologies not specified), about 19% had their toilets connected to sewers, the majority had on-site installations. In contrast with the large proportion of on-site installations, limited attention has been accorded to proper construction, maintenance management and safe disposal of septage from septic tanks and pit latrines.

In recent months, Sanitation agenda has been at the forefront of development agenda in India. The Government of India has launched Swachh Bharat Mission and AMRUT where the emphasis is on eradicating open defecation and also provide proper infrastructure in cities. Most of the ULBs in Rajasthan do not have sewer system and its construction is also expensive as compared to onsite disposal systems. With the rapid rate of construction of individual toilets with increased use of onsite disposal system, the need to formalize and strategically implement the FSSM system has been established. The need for waste water management has also been established in recent months. Given this, Government of Rajasthan (GoR) aims at cities to become ODF+ and ODF++, by implementing proper septage and waste water management along with its safe treatment.

Need for FSSM workshops

With the rapid rate of construction of individual toilets with increased use of onsite disposal system, the need to formalize and strategically implement the faecal sludge management (FSM) system has been established. Given this, Government of Rajasthan (GoR) aims at cities to become ODF+ and ODF++, by implementing septage management and treatment of faecal matter. Generating awareness about faecal sludge and septage management and its linkages with public and environmental health amongst ULB officials is necessary for appropriate implementation. Capacity building programmes for ULBs is therefore essential since Government of Rajasthan is committed to encourage ULBs to implement FSSM plans.

Therefore, orientation programmes for all ULBs in Rajasthan are conducted under Sanitation Capacity Building Platform (SCBP) to support Rajasthan Government and the orientation programmes are the first set of training of the three phased training programme planned for Rajasthan.

References:
Making cities open defecation free, Swachh Maharashtra Mission Urban, Urban Development Department, Government of Maharashtra, handbook vol. 1, Feb 2016
Changemakers, Swachh Maharashtra Mission Urban, Urban Development Department, Government of Maharashtra, October 2016

Objectives:

The training programmes are integrated with the ongoing capacity building activities planned under SBM/AMRUT at the state level. By the end of the workshop the participants are expected to achieve:

- Understanding the importance of ODF cities.
- Understanding the challenges and solutions to address these challenges for achieving ODF status.
- Understanding of various sanitation financing options to become ODF.
- Role of multiple stakeholders like NGOs/SHGs etc. in become ODF.
- Understanding the need of ODF sustainability.

This workshop is the first in a series of multiple workshops planned by NIUA and AIILSG under the Sanitation Capacity building platform.

Target Audience:

The training module targets the stakeholders ranging from State officials, Commissioner/Executive officials, Junior/Assistant Engineer, Elected Representatives and Private Sector Consultants/NGOs and Masons.

Expected outcome:

Participants will be exposed to various city level strategies that can be implemented in their respective cities to become open defecation free.

Methodology:

For effective implementation of strategies at city level, it is essential to strengthen the knowledge base of officials within the state. The training programs are conducted to highlight the challenges that are faced at the city level and strategies to tackle these challenges to become ODF. Learning from other states are shared with the participating ULBs. Experts from various states are invited to share their experiences and discuss viable options to plan for ODF cities in Rajasthan.

The workshops are conducted in participatory mode. Sessions ensure active engagement of participants; encouraging them to articulate the challenges to become open defecation free.

Ideal number of participants per workshop:

Since the workshops are planned in a participatory mode, a small group is generally ideal so that maximum learning and internalization is achieved. The ideal number of participants per workshop is 30.

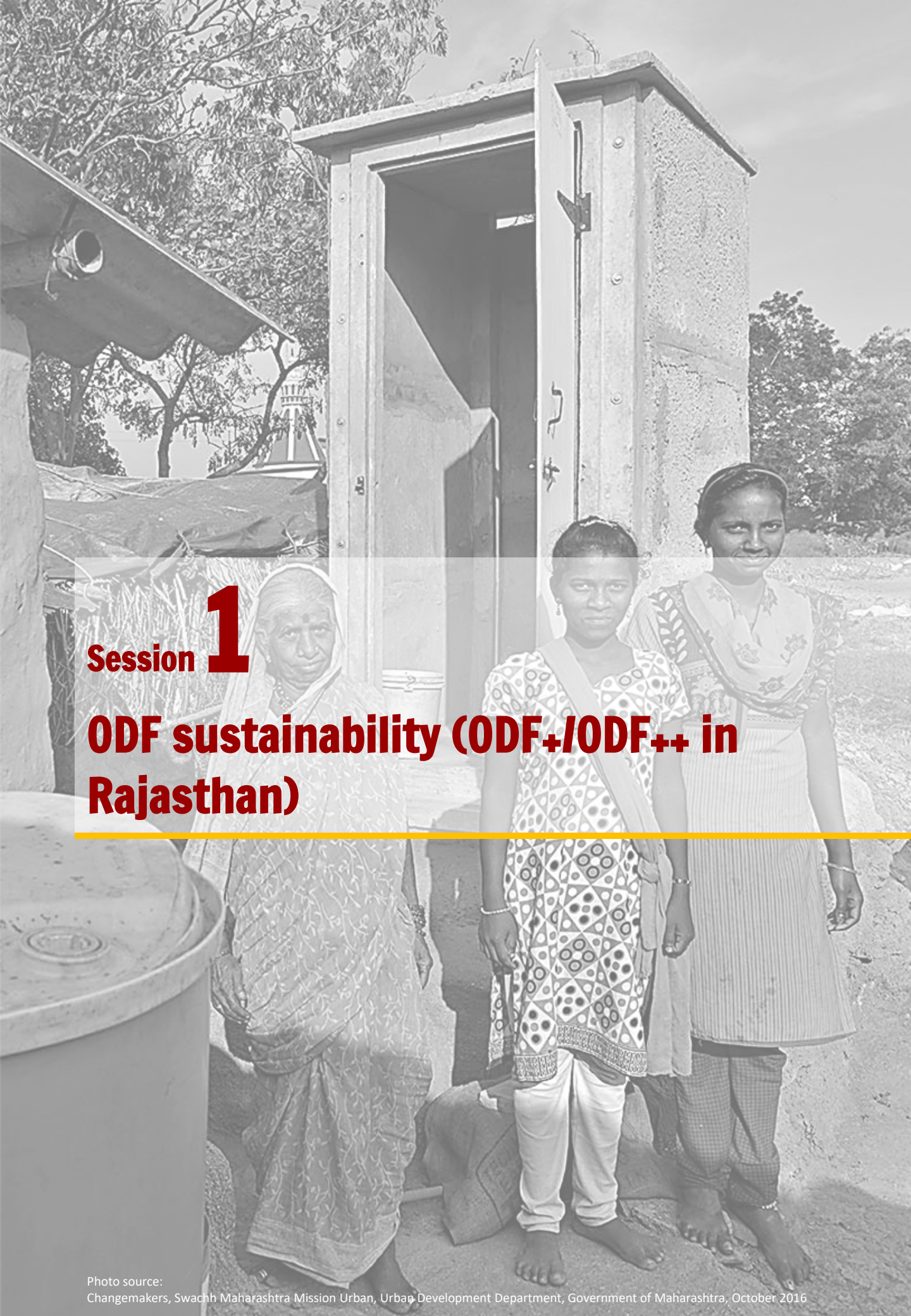
Agenda:

Building capacities for ODF+/faecal sludge and septage management for all ULBs in Rajasthan			
Session	**Time**	**Subject**	**Content**
	10.00 - 10.30	Registration	
	10.30 – 11.00	Welcome address, round of introduction, pre-training quiz	*10-15 questions for ULBs to answer*
Session 1	11.00 – 11.30	ODF Sustainability (ODF+/ODF++) in Rajasthan	*Rajasthan data analysis and State's strategy of SBM guidelines, Journey of Maharashtra as case study, Concept of ODF+ and ++*
	11.30 – 11.45	*What are the current practices and challenges in FSSM to achieve ODF+ and probable solutions for the same*	*Interaction /Group Discussions/ ULB wise Submissions*
	11.45 – 12.00	**Tea break**	
Session 2	12.00 – 12.45	Overview and planning of faecal Sludge and Septage Management (FSSM)	*FSSM Overview - the value chain explained as a brief overview. Focus on collection and conveyance – Designs of STs, scheduled emptying and financing aspects linked to it*
	12.45 – 13.00	*Plan scheduled emptying of STs in your cities – calculate infrastructural requirements*	*ULB wise/ Group Exercise*
	13.00 – 13.45	**Lunch Break**	
Session 3	13.45 – 14.15	Treatment options for FSSM	*Focus on treatment options/ facilities for FSS and financing aspects linked to it*
	14.15 – 14.30	*Devanhalli/ Wai/ Sinnar Movie*	
Session 4	14.30 – 15.00	Financing options in FSSM	*Overview of various funding options and focus on contracting for private sector involvement*
	15.00 - 15.20	*Plan FSSM for your city– calculate financial requirements*	*ULB wise/ Group Exercise*
	15.20 - 15.45	*Post-training quiz/ summing up of learnings with tea break*	
	15.45 - 16.00	Feedback/ Certificate Distribution	

SCBP

National Institute of Urban Affairs

RCUES Mumbai



Session 1

ODF sustainability (ODF+/ODF++ in Rajasthan)

Photo source:
Changemakers, Swachh Maharashtra Mission Urban, Urban Development Department, Government of Maharashtra, October 2016

Objective:

To co-relate the first step of becoming ODF with the process of being ODF+ in reference to the planning of septage management for the cities.

Format:

ULB wise group discussion

Duration:

45 mins

Key points to be covered:

•Overview of sanitation strategy adopted by the State of Rajasthan and data analysis in comparison with other states.
•Challenges faced by the ULBs at city level and probable interventions that can be adopted for those challenges.
•Strategies that can be adopted to tackle urban issues like space constraints, land tenure issues, lack of funds, coverage and maintenance of community/public toilets etc.
•Example of approach followed by the state of Maharashtra to make and sustain cities ODF.
•Concept of ODF sustainability (ODF+/ODF++) and FSSM with detailed examples of cities of Wai and Sinnar in Maharashtra.

Steps to ensure ODF sustainability and move to ODF+

Is ODF sustainability important?

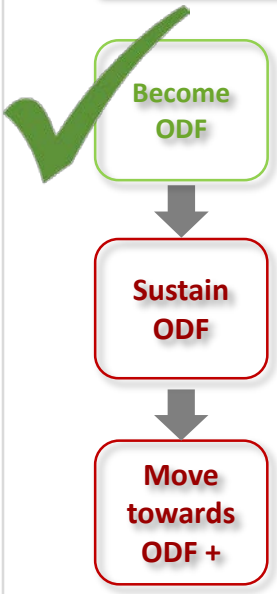
Why?

Health, environment, cleanliness, dignity

Highlights:

- Becoming and ensuring status of ODF as one of the most crucial components of Swachh Bharat Mission Urban.
- Importance of ODF sustainability to achieve healthy and clean communities.

Steps to ensure ODF sustainability and move to ODF+



Ensure that everyone has **access to toilets** and no single person is found defecating in open at any time of the day.

Ensure that the cities maintain their status of ODF through development of a **framework for regular monitoring.**

Framework for increasing IHHL coverage and implementing plans for **safe management of septage and waste water** to keep cities clean and healthy.

Highlights:

- Once the city becomes ODF, ensuring that the status is maintained and regular monitoring is done for the same.
- Moving towards ODF+ through planning and implementation of faecal sludge and septage management.

Steps to ensure ODF sustainability and move to ODF+

1. Conducting IEC activities for **behavioral change.**
2. **Involving multiple stakeholders** like elected representatives, schools, donors, NGOs, SHGs, CBOs and citizens.
3. Development of identified **OD spots into clean and useable public spaces.**
4. **Ensuring usage** of individual household latrines (IHHL).
5. Ensuring **adequate access** to public toilets at important public spaces.

Highlights:

- Essential points that need to be ensured for sustaining ODF and moving towards ODF+.
- Behavioral change as the most crucial step towards ODF sustainability.
- Ensuring usage of IHHL and ensuring adequate and clean access to PTs and development of spots where OD is frequently observed which can ensure that the city remains ODF.

Steps to ensure ODF sustainability and move to ODF+

6. Ensuring **regular cleaning and maintenance** of community/public toilets.
7. Establishing a ULB level system for regular monitoring of status of ODF in a city.
8. **Moving towards ODF+** by ensuring:
   - Effective collection of faecal waste
   - Treatment of collected faecal waste

faecal Sludge and Septage Management!

Highlights:

- Ensuring not just construction of toilets but moving towards ODF+ by ensuring effective collection and treatment of collected faecal waste.
- faecal sludge and septage management to address the entire sanitation service chain.

ODF sustainability and ODF+

	No OD	Access to Toilets	Disposal
ODF	• Not a single person found defecating in the open. • No traces of faeces are visible in the city at any time of the day.	• Everyone in the city (residents and floating population) have access to either IHHL or functional CTs/PTs.	• All toilets are connected to a disposal system.
ODF+	• Not a single person found defecating in the open. • No traces of faeces are visible in the city at any time of the day.	• Everyone in the city (residents and floating population) have access to either IHHL or functional CTs/PTs.	• All toilets are connected to a disposal system. • Regular and safe collection, conveyance and treatment of the feacal matter

Need to address the entire sanitation service chain instead of just construction of toilets!

Highlights:

- Efforts for making the city ODF and ensure ODF sustainability yet dumping of collected faecal matter for containment systems in open leading to mass open defecation.
- Negative health implications of dumping of faecal sludge in open.

Dumping of septage

Even if faecal matter is contained by building toilets, it is carelessly dumped in open..

Mass open defecation!

Highlights:

- Focus not just on construction of toilets and increasing access but address entire sanitation chain to ensure safe and clean cities.

What is fecal sludge?

"Fecal sludge is the solid or settled contents of pit latrines and septic tanks.

Fecal sludge comes from onsite sanitation systems such as pit latrines, non-sewered public ablution blocks, septic tanks, aqua privies and dry toilets."

Source: http://amrut.gov.in/writerreaddata/FSSM_Policy_Report_23Feb.pdf

Highlights:

- Definition of faecal sludge:
  - The solid or settled contents of pit latrines and septic tanks.
  - Faecal sludge comes from onsite sanitation system such as pit latrines, septic tanks etc.

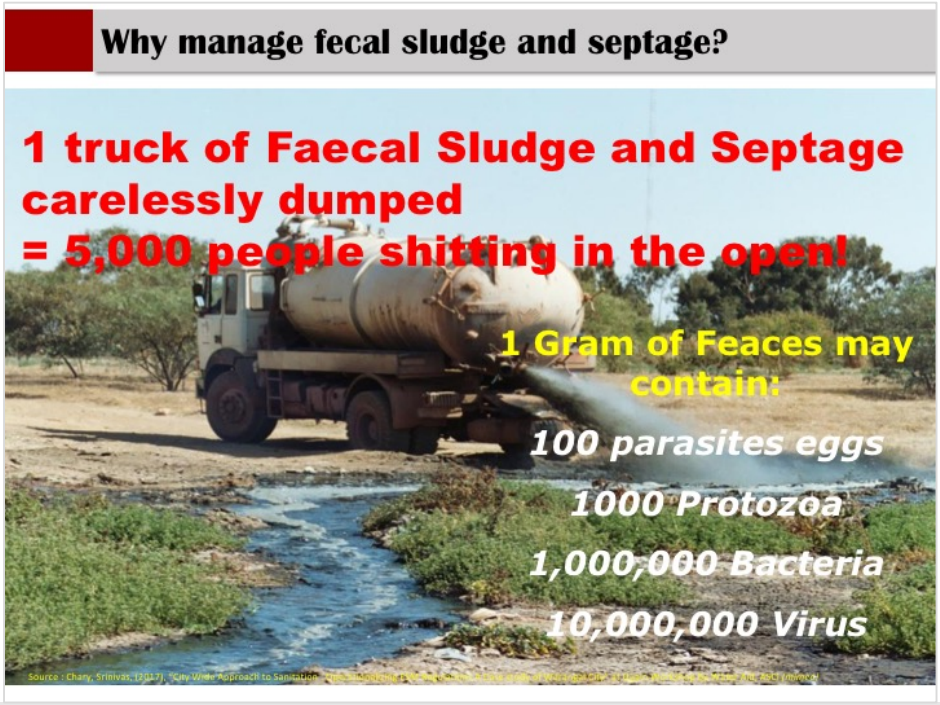
What is septage?

"It is the liquid and solid material that is pumped from a septic tank, cesspool or such onsite treatment facility after it has accumulated over a period of time.

Septage is the combination of scum, sludge, and liquid that accumulates in septic tanks."

Highlights:

- Definition of Septage:
  - The liquid & solid material that is pumped from a on-site sanitation system after it has accumulated over a period of time.
- It is the combination of scum, sludge and liquid that accumulates in septic tanks.



Highlights:

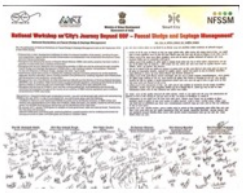
- Contamination of surface water as well as ground water due to disposal of untreated faecal sludge and septage.
- The contamination of water leads to water borne diseases like Diarrhea, Cholera, Typhoid etc.
-

Highlights:

- 38% HHs connected to septic tanks in India raising a question of safe disposal of sludge and effluent.
- Discussion on desludging frequency, what happens to the sludge and where does the effluent flow.

Emerging recognition of FSSM

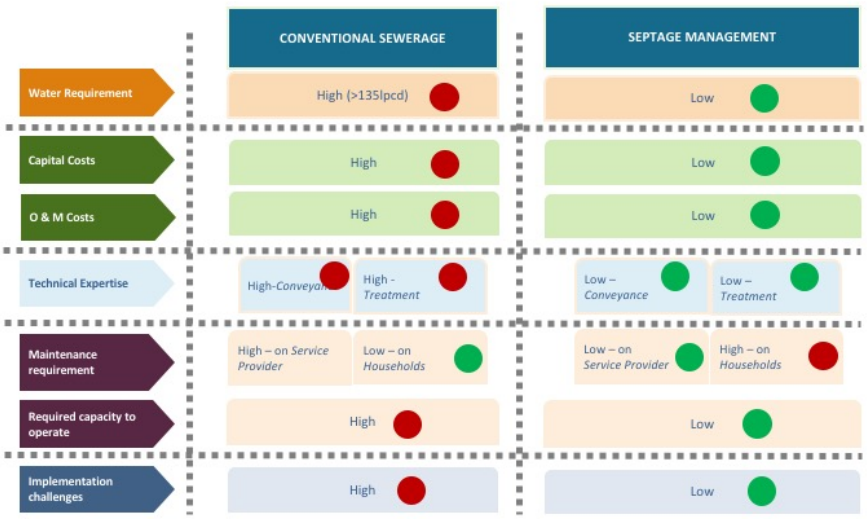
- **National declaration** on **Septage Management** by Ministry of Urban Development, GoI
- One of the major **thrust areas** of **AMRUT** is **Septage Management**
- **Primer** on **septage Management** and **Rapid Assessment tool** for estimating **budget requirements** for **FSM** has been rolled out by MoUD, GoI
- **Septage Management Advisory** of Government of India provides references to CPHEEO guidelines, BIS standards, and other resources for preparing SMP / FSM plan.



Highlights:

- Analyzing the need of FSSM, MoHUA, Government of India has released the National Policy on FSSM.
- Under AMRUT, GoI's flagship programme, special focus has been given to septage management.

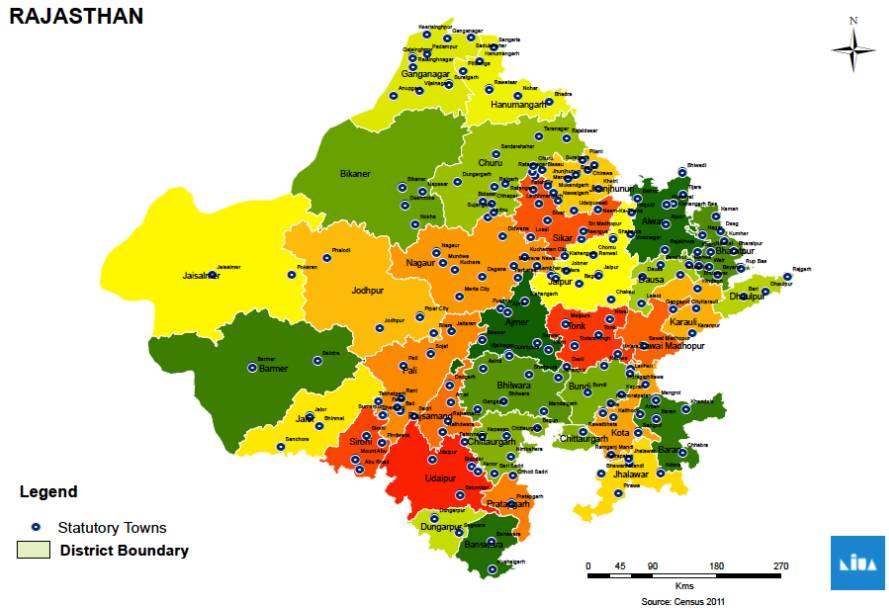
Septage management v/s sewerage systems



Highlights:

- In terms of capital cost and O&M cost, septage management is comparatively economical than conventional sewerage system.
- Septage management is feasible for cities where the water supply is less than 135lpcd, unlike the conventional sewerage system which requires min 135lpcd of water supply for proper functioning.

Overview of Rajasthan



Highlights:

- The state covers an area of 3,42,239 Sq. Km. or 10.41% of total geographical area of India.
- The state is divided into 33 districts spread across 7 administrative divisions.

Overview of Sanitation in Rajasthan

Urban population
1.70 crore
(24.78% of total population of state)

Urban settlements
222

Urban local bodies
191

Municipal Corporations	7
Municipal Councils	34
Municipal Boards	150

Households with individual latrine
82%

Households connected with piped sewerage network
25.63%

Urban population relying on onsite sanitation systems
53.48%

Septic tank
45.62%

Pit latrine
5.44%

Other systems
2.42%

Human waste generated daily from open defecation
3.3 lakh litres

Faecal sludge generated from piped sewer system and service latrines
9 lakh litres

Septage produced daily from septic tanks, public latrines and pit latrines
38.7 lakh litres

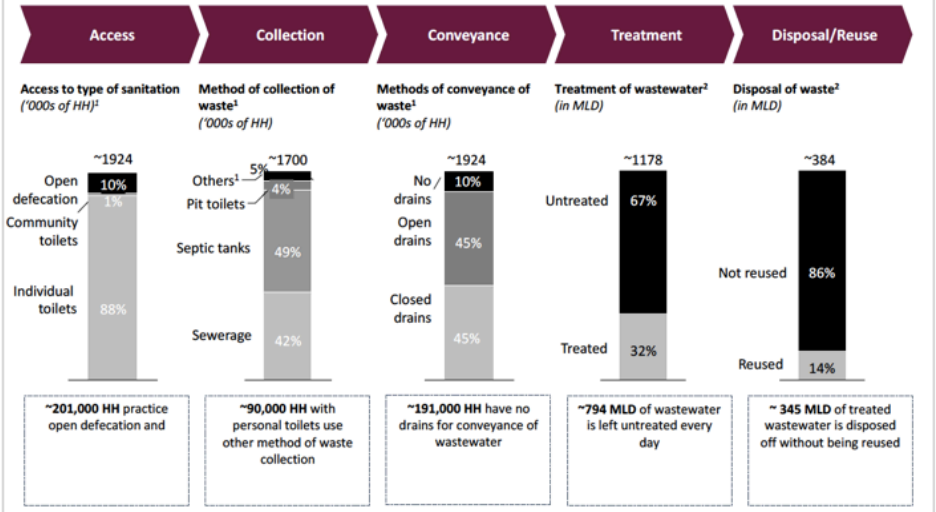
Sewage Treatment Plants (as of 2015)
43 out of 67 either under construction or proposed

Source: Draft Policy on Faecal Sludge and Septage Management(FSSM) 2017, Government of Rajasthan, available at https://rajasthan.gov.in,reteived on August 25,2017..

Highlights:

- Rajasthan is the largest state with an urban population of 1.7 crore with 191 ULBs.
- 82% of households have individual latrine systems.
- But only 25.63 % of the collection system are connected to piped sewerage network.

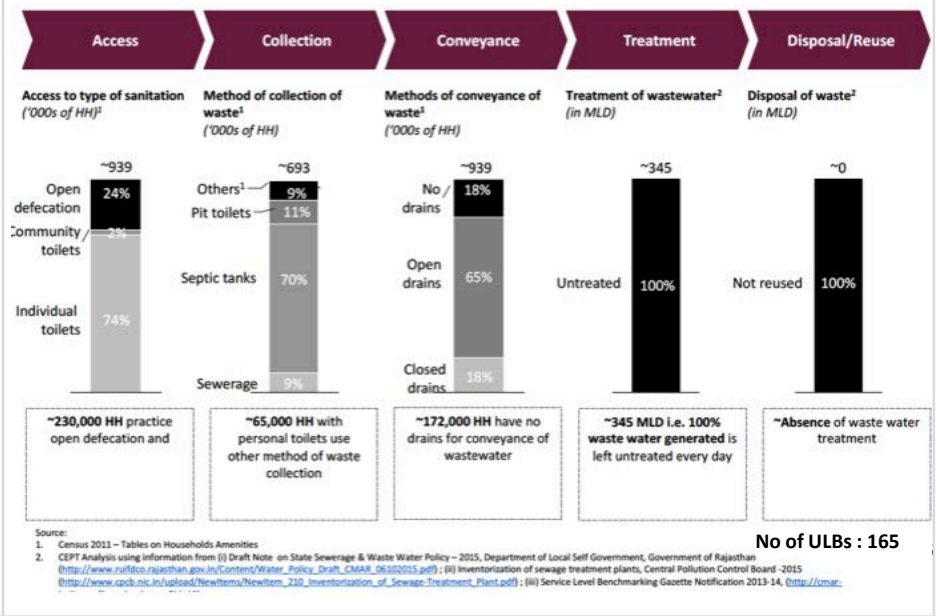
Urban Sanitation Situation in AMRUT Cities of Rajasthan



Highlights:

- Under 29 AMRUT cities of Rajasthan, 88% of HHs have access to IHHL fall whereas only 1% dependent on CT/PT.
- Also, only 42% of faecal waste collection is covered under sewerage resulting in disposal of 67% of untreated waste water.

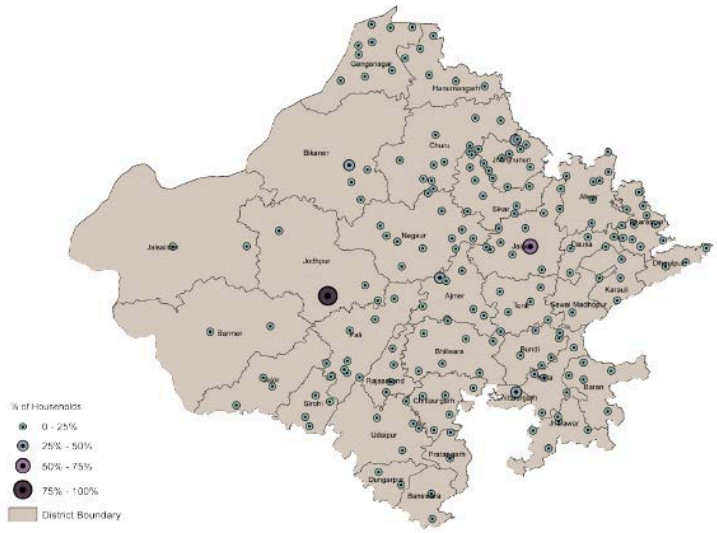
Urban Sanitation Situation in Non - AMRUT Cities



Highlights:

- In non-AMRUT cities, 74 % HHs have access to IHHL and only 2% have access to CT/PT.
- Sewerage coverage is as low as 9% resulting in total disposal of untreated wastewater in open. The collection from septic tanks is very high as 70%, encouraging a scope of FSSM in such areas.

Urban households in Rajasthan having piped sewer



Source: Census of India 2011, Office of the Registrar General & Census Commissioner, Ministry of Home Affairs, Government of India

Highlights:

- Majority of urban population in Rajasthan connected to piped sewerage lines falls under 25%.

Urban households in Rajasthan having septic tanks

Source: Census of India 2011, Office of the Registrar General & Census Commissioner, Ministry of Home Affairs, Government of India

Highlights:

- Around 65 % of total no. of towns in urban Rajasthan have coverage of more than 50% on-site sanitation facilities. The major towns/ cities include Ajmer, Udaipur, Bhilwara, Sri Ganganagar, Hanumangarh, Sikar Kota, Jaisalmer, Alwar, Bharatpur, Tonk, Sawai Madhopur and Jhalawar.

Sanitation status in Rajasthan

- 31 towns and cities have 63 Sewage treatment plants with a capacity of 866 MLD of sewage. The STPs treat 395 MLD of sewage which is **23% of the total sewage generated in urban Rajasthan.** Despite the above, 99% of the towns and cities in Rajasthan have less than 50% underground drainage system coverage.
- **71% of these towns have a population of less than 50,000** and **do not have any dedicated funding** apart from the SBM for sanitation improvement that would deal with post toilet infrastructure.
- In Rajasthan, **55%** septage is dumped in agriculture farms, **25%** in waterbodies, and **20 %** open lands.

Source: Rapid assessment of faecal sludge and septage situation in 100 towns of Rajasthan, CDD, NIUA, GoR, 2017.

Highlights:

- A scope for FSSM can be assessed and further developed by listing parameters like containment systems, collection systems, population to be covered, funding available, etc.

Gap Analysis in Sanitation Value Chain

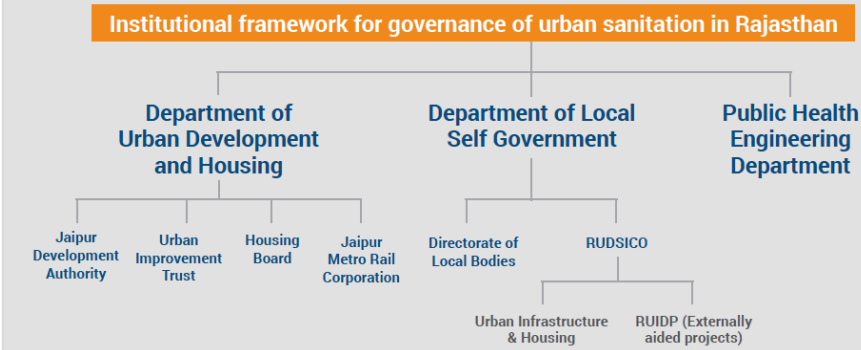
TYPOLOGIES	RISK
Towns that have more than 20 desludging events in a month	Direct exposure to soil and groundwater/surface water contamination
Towns having more than 80% unlined pits and high water table.	Potential pollution of groundwater which is found at 50 feet or above.
Towns that have more than 80% lined tanks but due to the absence of a soak pit, all the supernatant flows into the open drain.	Contamination of greywater flowing in storm drains. The tanks when not empties every three years as CPHEEO guidelines, reduces the effectiveness of tanks and increases the microbial load on the waste-water in the drains.

Source: Rapid assessment of faecal sludge and septage situation in 100 towns of Rajasthan, CDD, NIUA, GoR, 2017.

Highlights:

- Gap analysis by assessing risks on the basis of typology of towns categorized under containment systems, desludging frequency , safe/unsafe disposal of septage or other such parameters.

Institutional framework for governance



Highlights:

- DLB is the nodal agency for administration of ULBs which coordinate, monitors and evaluate the performance of ULBs .Water supply is covered in towns by PHED.
- The urban local body according to Rajasthan Municipalities Act 2009, is responsible for providing proper sanitation arrangements for the area under its jurisdiction.

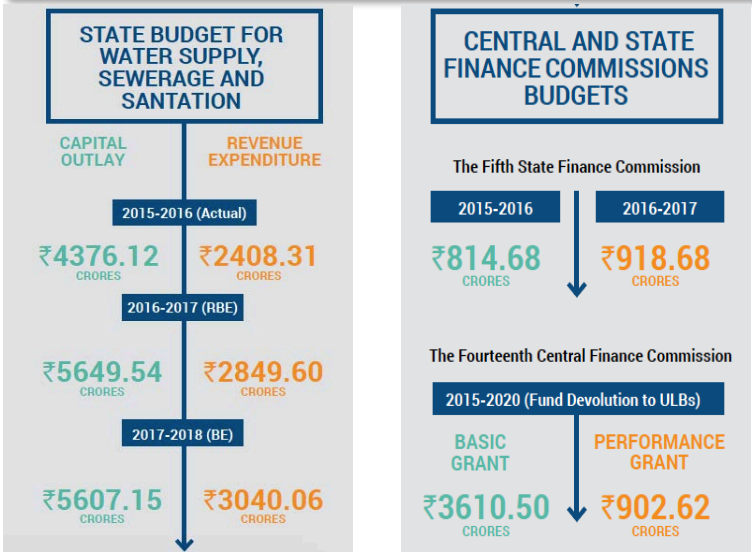
Policies, Missions & Guidelines

- National Urban Sanitation Policy 2008
- Rajasthan Urban Sanitation Policy 2009
- Rajasthan Environment Policy 2010
- National Mission on Sustainable Habitat 2010
- National Urban Livelihood Mission, 2011
- Swachh Bharat Mission 2014
- Heritage city Development and Augmentation Yojna, 2015
- Atal Mission for Rejuvenation and Urban Transformation 2015
- Rajasthan Urban Development Policy 2015 (Draft)
- Rajasthan State Sewerage and Waste Water Policy 2016
- National Policy on FSSM 2017
- Draft State Policy on FSSM 2017

Highlights:

- Following the National FSSM Policy, Rajasthan has also drafted a State FSSM policy in 2017.
- The State Sewerage and Waste Water policy 2016, aims to ensure 100 per cent sanitized cities and better management of waste water and sewerage with a pointed focus on reuse.

Central and State Budget



Source: Rajasthan State Budgets, Finance department ,Government of Rajasthan,2015-17,2016-17,2017-18 Interim Report, Fifth State Finance Commission, Government of Rajasthan, 2015-16,2016-17
Fourteenth Central Finance Commission Report, Ministry of Finance, Government of India,2015-20.

Highlights:

- As per the Assessment of 100 cities report, funds under 14th Central Finance Commission(CFC) are available, which can be utilized by ULBs for Faecal sludge treatment plant and allied activities.

Issues in septage management in Rajasthan

- **Lack of awareness** and capacities for FSSM in urban areas, especially among the residents, service providers and ULBs.
- Most stakeholders not up-to-date on **modern technologies**, standard construction techniques, operating procedures, safety & **hygiene safeguards**.
- Desludging operators and service providers **not properly trained** and do not use safety equipment during operations.
- Absence of dedicated **service level benchmarks** for FSSM.
- **Insufficient funds** for creating city-wide FSSM infrastructure.
- ULBs not empowered to collect **sanitation taxes**, service charges.

Highlights:

- The major challenges against the septage management in the state of Rajasthan includes lack of awareness, untrained operators, absence of SLB data dedicated for FSSM, insufficient funds, etc.

Key Recommendations

- With only **40-70 LPCD of water supply** in more than 59% of towns studied, Faecal Sludge treatment plant is more appropriate solution.
- The state should promote adoption of **safe sanitation norms** - lined properly designed septic tanks as per **CPHEEO standards** that are viable containment and primary treatment systems.
- Sewerage Treatment Plants are proposed for all AMRUT towns and towns above 50,000 population in Rajasthan. The left out areas of these towns/cities can be assessed **for co-treatment options**.

Source: Rapid assessment of faecal sludge and septage situation in 100 towns of Rajasthan, CDD, NIUA, GoR, 2017.

Highlights:

- An important parameter of choosing the appropriate septage management system is the water supply, which is quite low in more than 59% of towns studied.
- Co-treatment options in the left out areas of AMRUT cities can be a viable option.

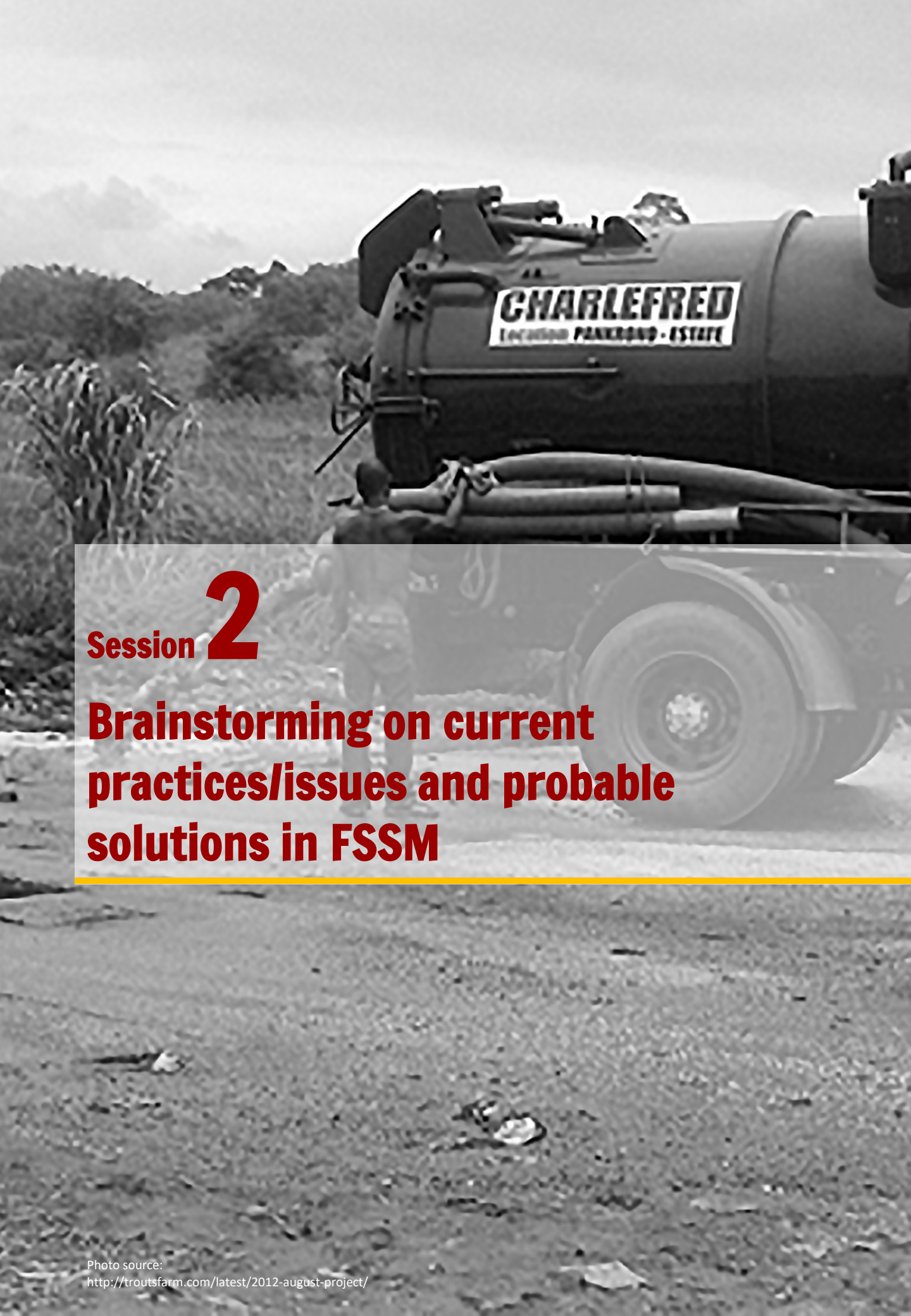
Key Recommendations

- Identify financing options and incentives - committing Central and State **Finance Commission grants** for FSM.
- Funding needs to be committed and **city-wide incentives** need to be developed for setting up FSTPs.
- **A state level FSSM monitoring** dashboard would be useful for monitoring the implementation, city level preparedness, incentives and use of FSSM grants.

Source: Rapid assessment of faecal sludge and septage situation in 100 towns of Rajasthan, CDD, NIUA, GoR, 2017.

Highlights:

- Recommendations pertaining to availability of funds, incentives and devising state level monitoring systems.



Session 2

Brainstorming on current practices/issues and probable solutions in FSSM

Photo source:
http://troutsfarm.com/latest/2012-august-project/

Objective:

To understand the challenges at the city level and identify probable solutions for the same.

Format:

Group discussion

Duration:

1 hour

Key points to be covered:

•Preparation of a list of current practices and challenges that the ULBs face in their cities for FSSM to move towards ODF/ODF++.
•Probable solution for each challenge listed.
•Group presentation

Summary:

This is a brainstorming session wherein the participants are divided in groups and asked to ponder over the topics discussed in the first session in the context of their respective cities. The participants are asked to discuss and list down the issues/challenges in FSSM and moving towards ODF+/++. After listing the challenges they are asked to think about the probable solutions that can be adopted to overcome these challenges in their respective cities.

This group work gives the participants a chance to interact with the other participating ULBs to understand their local and administrative issues, further discuss probable solutions for the same. At the end of the session, participants are asked to present their respective work.

Session 3

Overview and planning of FSSM

Objective:

To introduce the concept of septage management to the cities along with its components, to establish the need for septage management plan and to explain planning strategies

Format:

Presentation followed by hands-on exercise and discussions.

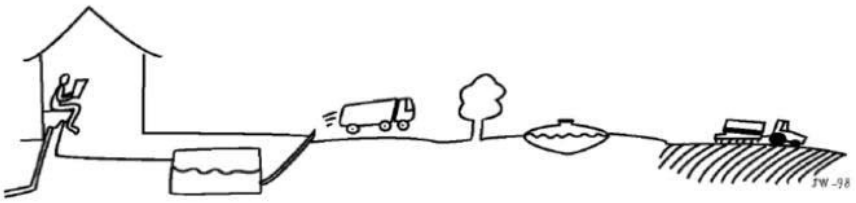
Duration:

45 mins

Key points to be covered:

- Data presentation showing different types of sanitation systems in urban India to establish the need for faecal sludge and septage management plan and planning strategies by explaining the emerging recognition of FSSM.
- Differentiating factors between the conventional sewerage and septage management.
- Key components of preparation of an FSSM plan.
- Institutional and governance aspects of an FSSM plan.
- Need of awareness generation and capacity building activities.

Sanitation service chain



Access → Collection → Conveyance → Treatment → Reuse/Disposal

Access	Collection	Conveyance	Treatment	Reuse/Disposal
Describes **type of toilet facilities** the user accesses.	Describes **ways of collecting** and sometimes treating the **faecal waste** generated by the users.	Describes **transport of waste** from collection to the treatment / disposal site	Describes way in which waste is **treated**	Describes the way in which waste **reused / disposed off**

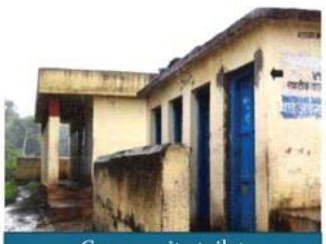
Highlights:

- Sanitation chain can be break down into following components viz. access, collection, conveyance, treatment and reuse/disposal.
- At present, in most of the cases, treatment and reuse/disposal components are not present & septage is being disposed without treatment.

Type of access

Individual toilet

- Toilets used by households at their home
- On premise toilet



Community toilet

- Toilets used by residents / community that do not have toilet at their home
- Located near a community / slum area

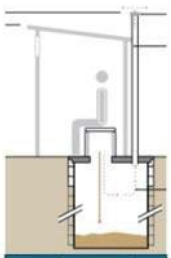
Public toilet

- Toilets used by floating population
- Located in market area, bus stop , commercial area

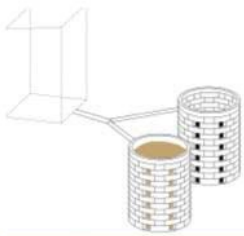
Highlights:

- Toilet facility can be classified in to three type; Individual toilet, Community toilet and Public toilet.
- Major thrust should be given to individual toilets.

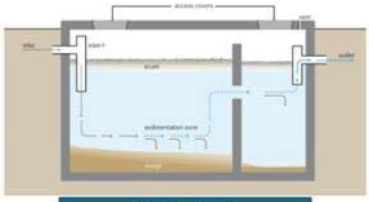
Type of collection systems



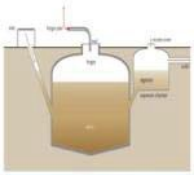
Single pit toilet



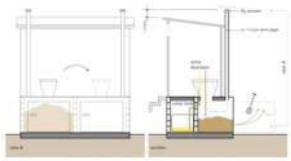
Twin pit toilet



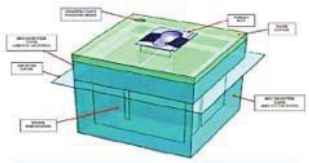
Septic tank



Biogas



Composting toilet



Bio-digestor

Highlights:

- Single pit, twin pit, septic tank, biogas, composting toilet, bio-digester are some of the options of containment system.
- Construction of single pit should be avoided as they are declared as insanitary, as it might pollute groundwater if they are not placed carefully.

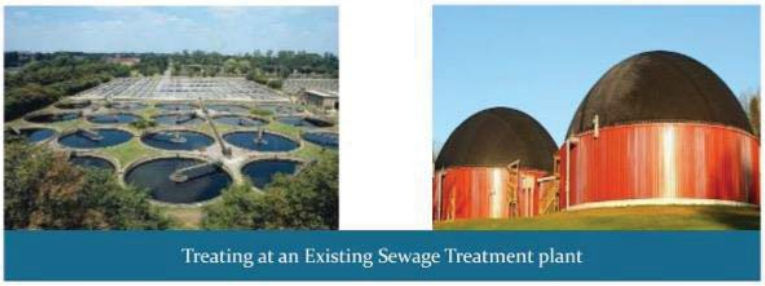
Type of conveyance systems

Conventional Vacuum Tanker	Mini-Vacuum Tanker (Vacutug)	Gulper
For septic tanks which have proper **access roads**, a **larger vehicle** maybe used	For septic tanks located in **narrow lanes** or those that do not have proper access roads, **smaller vehicles** maybe used	**Smaller mechanized tricycle/ motorcycle mounted collection** tanks of 20–40 litres capacity with gulper or smaller vacuum pumps at the primary level backed by a secondary transport system may work in the informal slum settlements.

Highlights:

- Conventional vacuum tanker and Vacutug are commonly used for desludging service.
- In densely populated areas with narrow lanes like informal slum settlements, Gulper/Auger can be used for desludging the containment system.

Type of treatment systems



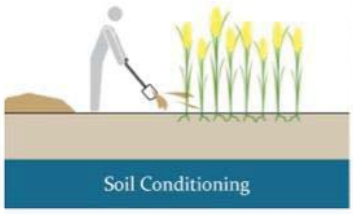
Treating at an Existing Sewage Treatment plant

Treating at an Independent Faecal Sludge and Septage treatment plant (FSSTP)

Highlights:

- Faecal sludge and septage can be co-treated at the nearest STP, but certain precautions need to be taken care before adding.
- In the case of unavailability of STP nearby, a Faecal Sludge Treatment plant can be setup for the treatment of sludge.

Type of reuses/disposal



Soil Conditioning

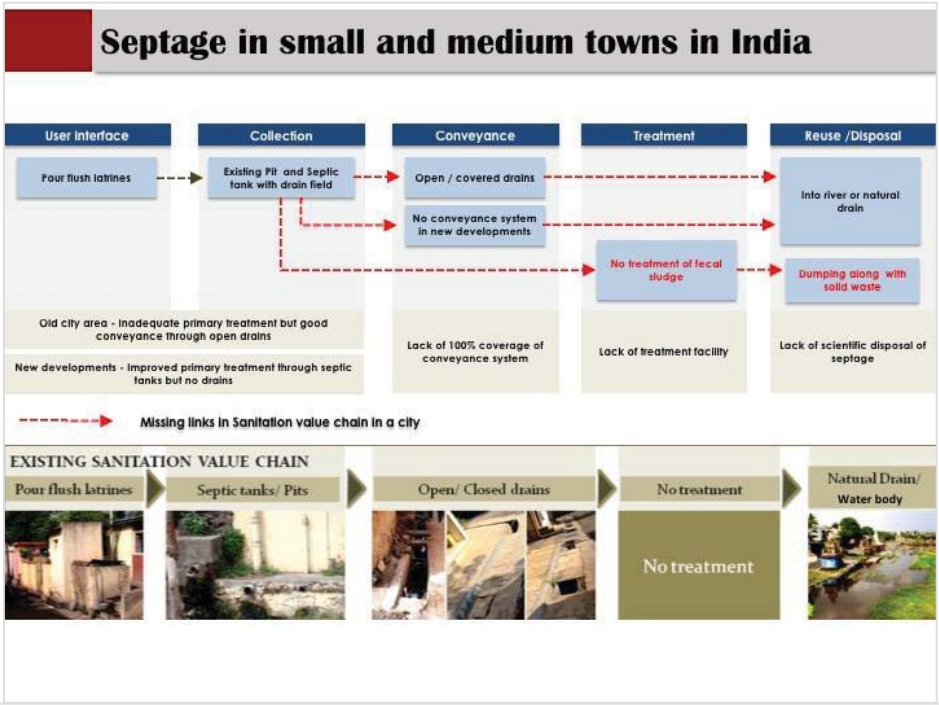
Surface disposal

Biogas

Backfilling Material

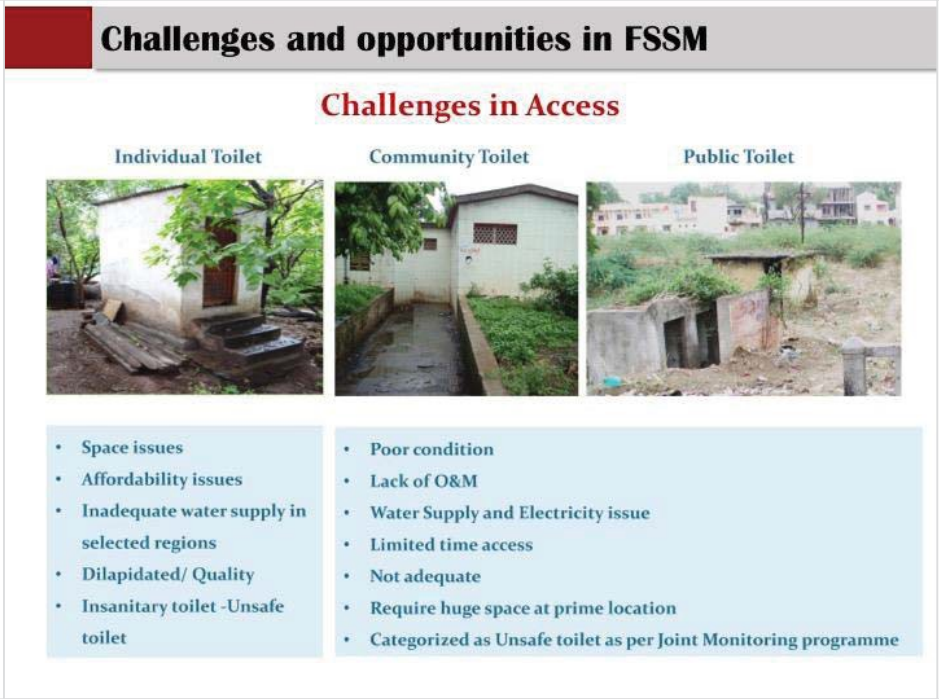
Highlights:

- The end product, after the treatment of septage can be used as soil conditioning and surface disposal.
- It can also be used as biogas generation and backfilling material.



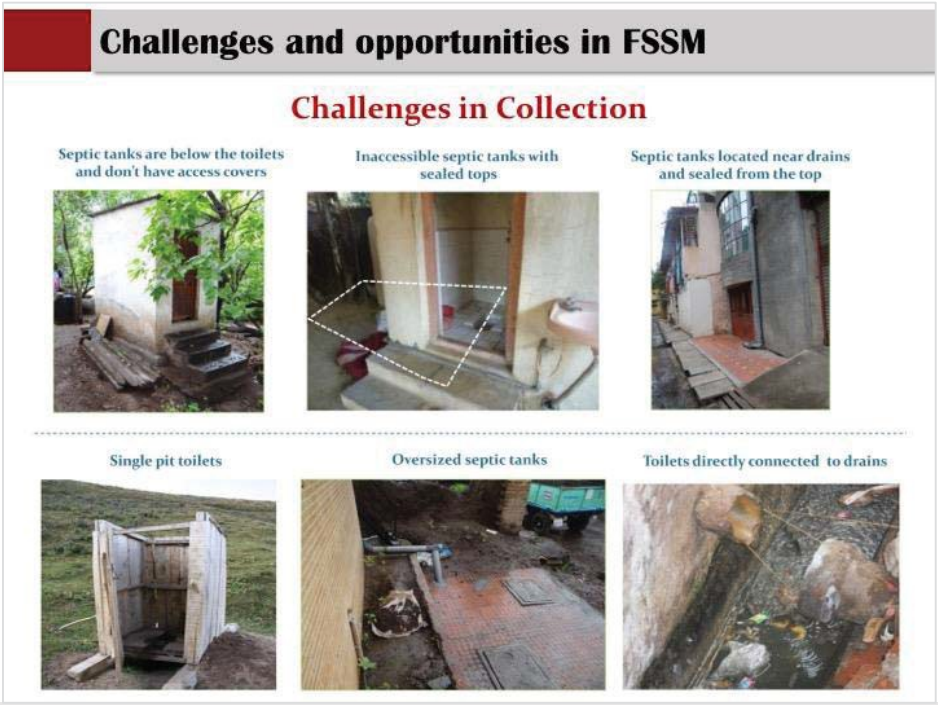
Highlights:

- In old city area, the primary treatment is inadequate but have good conveyance system. Due to absence of treatment facility, the septage is being dumped in to the open drains.
- In new developing areas, the primary treatment is good through septic tanks, but due the absence of treatment facility, the septage is being dumped in to the open drains.



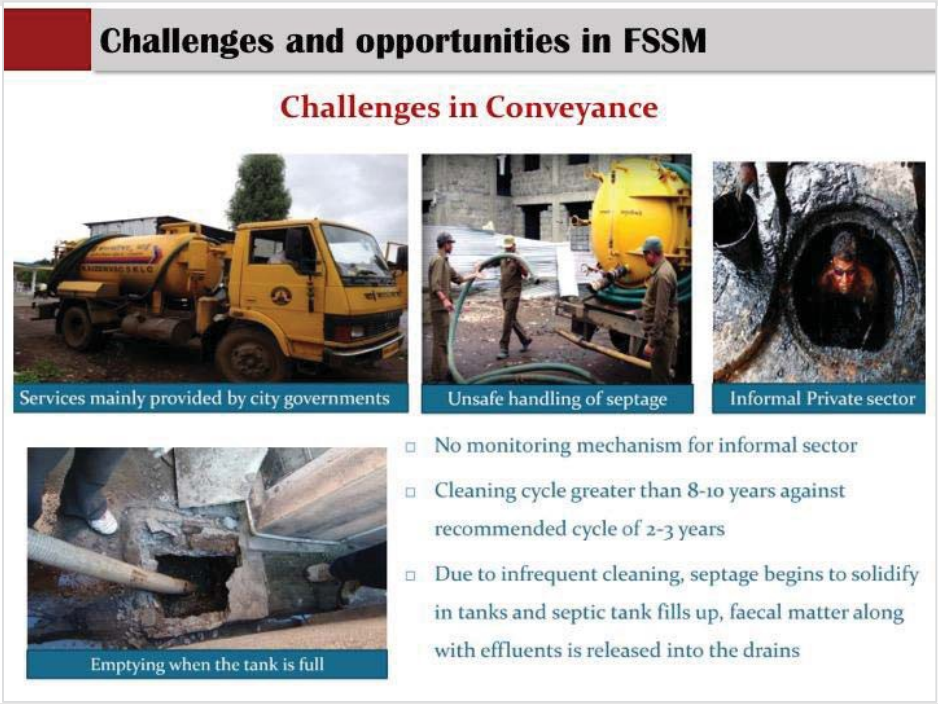
Highlights:

- Space constraints, affordability and inadequate water supply are some the challenges which are faced during individual toilet construction.
- In community/public toilets, poor maintenance is the major challenge.



Highlights:

- Inaccessible septic tanks, absence of manhole are some of the challenges in collection system.
- Direct connection of outflow of toilet to drain is a big challenge in collection system which pose a high risk to environment.



Highlights:

•Unsafe handling of septage, informal private sector are the major challenges in conveyance system.
•Very low desludging frequency and lack of monitoring mechanism for informal sector are another challenges in conveyance system.

Challenges and opportunities in FSSM

Challenges in disposal

Disposal of septage at dump site

NO TREATMENT OF FAECAL SLUDGE & SEPTAGE

Disposal of septage in open land

Disposal of septage in water bodies

Source : Chary, Srinivas, (2017), "City Wide Approach to Sanitation - Operationalizing FSM Regulations A Case study of Warangal City" at Ujjain Workshop by Water Aid, ASCI *(mimeo)*

Highlights:

- Disposal of untreated faecal sludge and septage in water body, solid waste dumping site and other open lands are the major challenges.
- Disposal of untreated septage could pose a risk to environment and public health.

End-to-end IFSM solution – From red to green

	Access	Collection	Conveyance	Treatment	Disposal / Reuse
Current Situation	Pour flush toilets	Septic tanks	Suction emptier truck	No treatment facility	Disposed off on dumping site
	• Lack of universal access to improved toilets • Lack of adequate **data base on** toilets for properties	• Septic tanks **lack manhole covers** • Septic tanks are **not of standard size** • **No database on** septic tanks for properties	• Only **2-4 % of septic tanks cleaned** annually	• **No facility** for fecal sludge treatment	• Septage **disposed** off on dumping site **without treatment**
Proposed Approach	Pour flush toilets	Septic tanks	Suction emptier trucks	Treatment facility	Revenue from compost
	• Converting unimproved toilets to **improved toilets** • Ensuring **100% access to improved toilets** • **Data base on toilets** for all properties	• Providing **access manhole covers** to allow regular cleaning • **Enforcing regulations** on septic tanks design • **Data base of** properties with septic tanks	• Preparing **a schedule for period cleaning of septic tanks**, to ensure that all septic tank are cleaned at least **once in 3 years** • **Enforcing regulations and penalties for** periodicity of septic tank cleaning and safe handling of sludge • **Payment using local taxes** using escrow mechanisms	• **Installing treatment facility** for the treatment of septage	• **Safe dumping** of treated fecal matter and/or the **sale of septage** at a fixed rate to nearby farms or agro-businesses

Highlights:

- For IFSM solution, there is a need to refurbish the access and collection system and to set-up the desludging system.
- Treatment facilities should be installed, so that treated faecal matter can be safely disposed or reused.

Step by Step approach to operationalize septage management plan

A. Preparation of plan for Septage management

- Assessment of existing toilets and septic tanks through surveys and creation of database
- Design and construction / refurbishment of septic tanks
- Desludging of septic tanks
- Scheduled septic tank emptying services
- Treatment of faecal sludge / septage

B. Institutional and governance aspects in Septage Management

- Regulations for septage management systems
- Awareness generation and capacity building activities
- Record-keeping , reporting (MIS), monitoring and feedback systems
- Sources of revenues for septage management

Highlights:

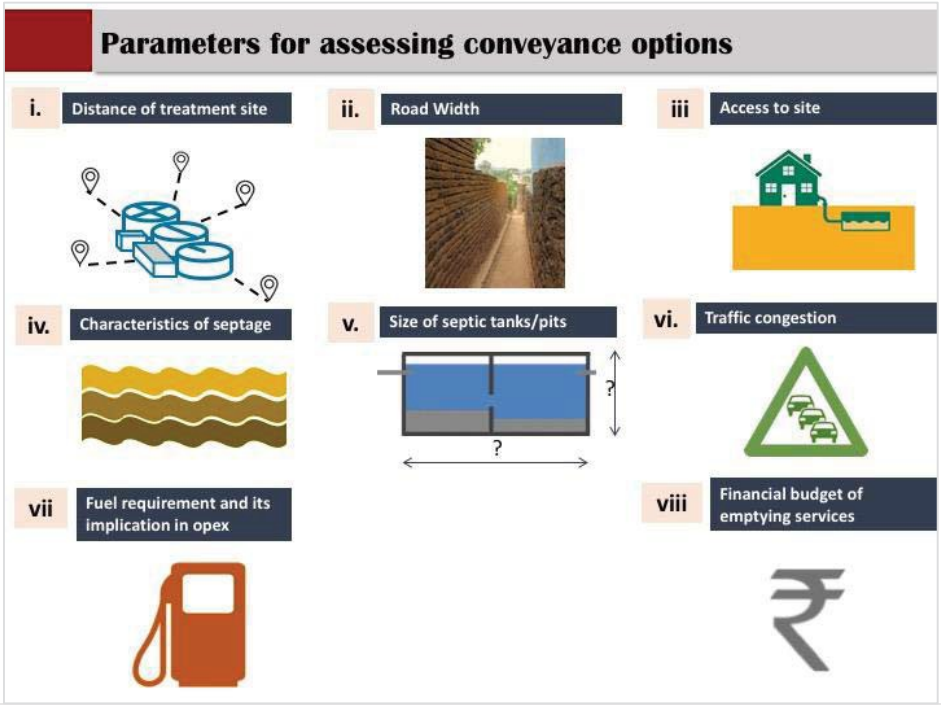
- Preparation of plan for septage management is the major factor to operationalize the septage management plan.
- Institutional and governance aspect are also important factors in septage management.

Key components of Septage Management Plan (1/5)

1. **Assessment of existing toilets and septic tanks** through surveys and **creation of database**
2. **Design** and **construction / refurbishment** of **septic tanks**
3. **Desludging of septic tanks**
4. **Scheduled** septic tank **emptying services**
5. **Treatment** of faecal sludge / **septage**

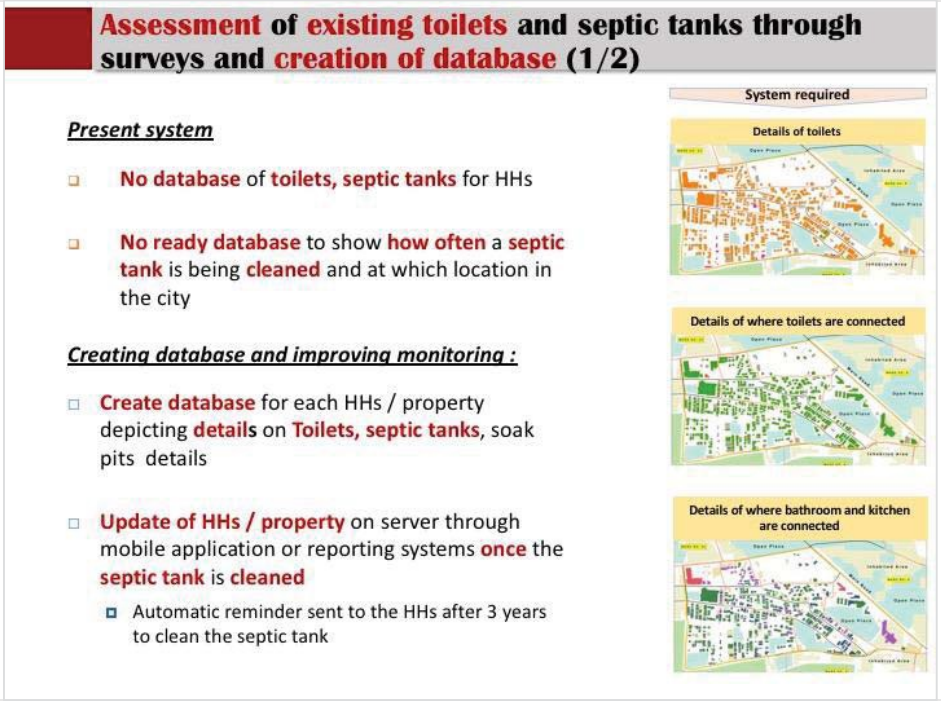
Highlights:

- Assessment of existing toilets and septic tanks through survey and creation of database.



Highlights:

•Distance of treatment site, road width and access to site are the major parameters which should be assessed before selecting the conveyance system.
•Other parameters which needs to be considered are characteristic of septage, size of septic tanks/pits, traffic congestion etc.



Highlights:

•At present, no data base is available regarding the location of septic tanks and their desludging frequency.
•Location of individual toilets, community/public toilets should be marked at city level plan, which can help in city level assessment and also to plan for collection route.

Assessment of existing toilets and septic tanks through surveys and creation of database (2/2)

Assessment should capture the following aspects:

- Toilet availability
- Size and shape of septic tank
- Number of chambers in a septic tank
- Access covers to septic tanks
- Accessibility of septic tanks
- When was the septic tank last cleaned
- Cleaning frequency of septic tanks
- Problems encountered while cleaning of septic tanks
- Reasons for emptying septic tanks

Highlights:

• To understand the sanitation chain at city level, HH assessment should be done, which must include toilet availability, type of containment system and it's accessibility, cleaning frequency etc.

Key components of Septage Management Plan (2/5)

1. **Assessment of existing toilets and septic tanks** through surveys and **creation of database**
2. **Design** and **construction / refurbishment** of **septic tanks**
3. **Desludging of septic tanks**
4. **Scheduled** septic tank **emptying services**
5. **Treatment** of faecal sludge / **septage**

Highlights:

- Design and construction/refurbishment of septic tanks.

Design and construction / refurbishment of septic tanks

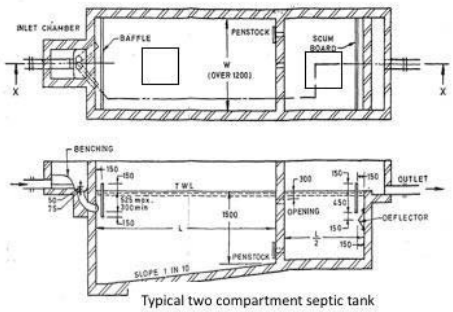
- The **septic tanks** need to **be designed and constructed** as per the **norms suggested** in:
  - ***Swachh Bharat Mission Guidelines, 2014***
  - *Manual on Sewerage and sewage treatment systems , **CPHEEO, 2013***
  - ***National Building Code of India, 2005***
  - ***IS: 2470 - Code of practice for installation of septic tanks** - Part 1: Design and Construction and*

  Part 2: Secondary treatment and disposal of septic tank effluent 1985 (Reaffirmed 1996).
- **Notices** should be issued to all **property owners** whose **septic tanks do not meet** the **standard septic tank design**.
- All **insanitary toilets** need to be **converted to sanitary toilets** with twin pits or septic tanks

Note : A provision of 300 mm should be made for free board.

No. of Users	Length(M)	Breadth(M)	Liquid Depth (Cleaning interval of)	
			2 Years	3 Years
Recommended size of septic tank up to 20 users				
5	1.50	0.75	1.00	1.05
10	2.00	0.90	1.00	1.40
15	2.00	0.90	1.30	2.00
20	2.30	1.10	1.30	1.80
Recommended size of septic tank for housing colony upto 300 users				
50	5.00	2.00	1.00	1.2
100	7.50	2.65	1.00	1.2
150	10.00	3.00	1.00	1.2
200	12.00	3.30	1.00	1.24
300	15.00	4.00	1.00	1.24

Typical sizes of septic tanks for various user sizes



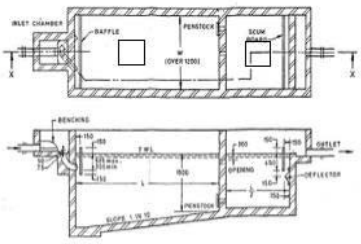
Typical two compartment septic tank

Highlights:

- Septic tanks should be constructed as per norms, which are given by CPHEEO, 2013, NBC, 2005.
- All insanitary toilets needs to be converted in to sanitary toilets with two pits or septic tanks.

Design considerations for septic tanks . . .

- **Septic tank** should be designed for **1 to 2 days of retention.**
- The **septic tanks** are **normally rectangular** in shape and **two chambered**, with **first chamber 2/3rd in length of 2nd Chamber**
- The **liquid depth is 1-2 m** and the **length to breadth ratio is 2-3 to 1**
- For **circular tanks the minimum diameter** shall **not be less than 1.35 m** and **operating depth shall not be less than 1·0 m.**



Typical two compartment septic tank

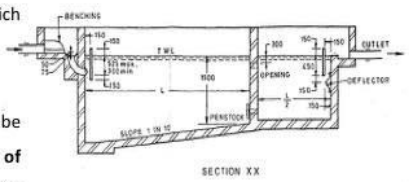
- **Each compartment** of a septic tank shall be **provided with a rectangular access opening** measuring not less **455 × 610 mm** or a **circular opening 500 mm diameter**
- Ventilating Pipe—Every **septic tank** shall be provided **with ventilating pipe of at least 50 mm diameter**. The **top of the pipe** shall be provided with a **suitable cage of mosquito proof mesh.**

Highlights:

- The septic tanks are usually rectangular in shape and two chambered.
- Each rectangular compartment of septic tank should be provided with a rectangular or circular access opening.

Construction considerations for septic tanks . . .

- **Baffles** are generally **provided at both inlet and outlet** which dip 25 cm to 30 cm into and project 15 cm above the liquid.
- For **two compartment septic tanks**, the tanks should be **interconnected above the sludge storage level** by **means of pipes or square openings of diameter or side length respectively of not less than 75 mm**



Typical two compartment septic tank

- Septic tanks may either be **constructed in brick work, stone masonry or concrete cast in situ or pre-cast materials**
- The **floor of the tank should be of cement concrete** and sloped towards the sludge outlet. Both the **floor and side wall shall be plastered with cement mortar** to render the surfaces smooth and to make them **water tight.**
- The height of the **ventilation pipe should extend at least 2 m above the top of the highest building within a radius of 20 m**

Highlights:

- Baffles should be provided at the inlet and outlet.
- The floor of the tank should be of cement concrete and sloped towards the sludge outlet.

Key components of Septage Management Plan (3-4 / 5)

1. **Assessment of existing toilets and septic tanks** through surveys and **creation of database**
2. **Design** and **construction / refurbishment** of **septic tanks**
3. **Desludging of septic tanks**
4. **Scheduled** septic tank **emptying services**
5. **Treatment** of faecal sludge / **septage**

Highlights:

- Next section will explain about the desludging frequency and scheduled emptying services of septic tanks.

Desludging of septic tanks

As per **Prohibition of Employment as Manual Scavengers and their Rehabilitation Act, 2013** , **desludging** / emptying of septic tanks will be **undertaken by mechanical devices** like suction emptier trucks / vacuum tankers

As per ***CPHEEO Manual*** on Sewerage and Sewage Treatment , 2013

IS : 2470 (Part I & II), 1985 on Code of Practice for Installation of Septic tank

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

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

*"**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

Highlights:

- As per Prohibition of Employment as Manual Scavenging and their Rehabilitation Act, 2003, manual scavenging is banned in India.
- Large vacuum tanker can be used to de-sludge septic tanks with proper access roads. In case of narrow lanes, smaller vehicles called Vacutug, may be used.

Recommendations for desludging as per MoUD Advisory

Desludging of Septic tanks

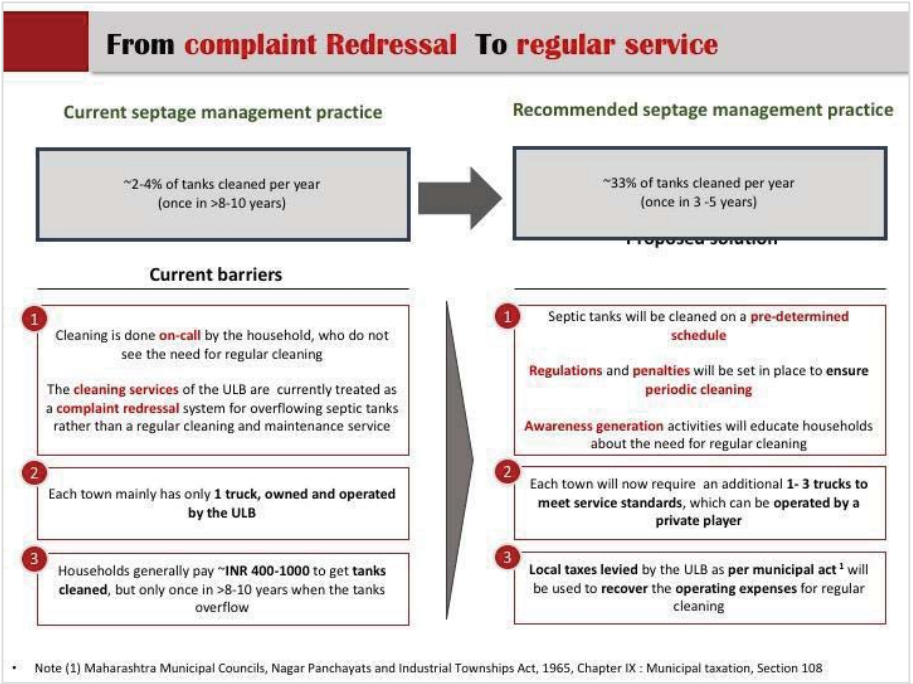
- **De-sludging** of septic tanks - using **mechanical devices**
- **De-sludging frequencies** of septic tanks once every **2 to 3 years**, or when the tank becomes one third full
- Periodical desludging will help **reduce the pollution levels in the effluent**
- **1-2 inch of sludge** should be **left 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 **for 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

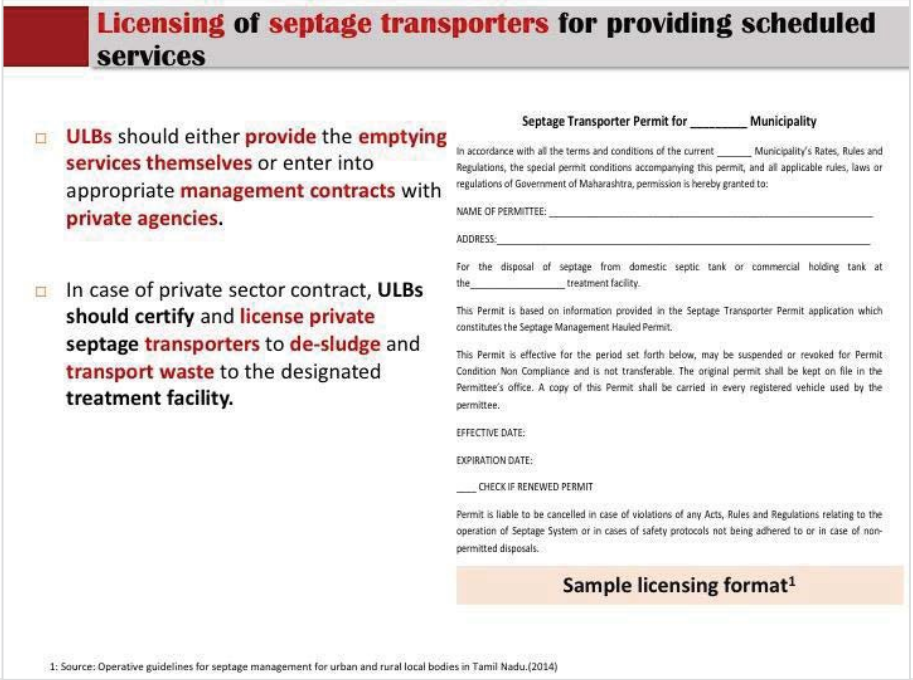
Highlights:

- Septic tanks should be de-sludge by mechanical devices, once every 2-3 years, which will help in reducing the pollution levels in the effluent.
- As per the requirement, various models of mechanical vehicles, of different size and capacities, are available.



Highlights:

- At present, septage is managed as a complaint redressal through demand based service under which, cleaning is done on-call by HH and HH usually pays a one time charge for the desludging service.
- It is recommended to shift towards scheduled emptying under which, septic tanks are cleaned on a pre-determined schedule and user pays a monthly charge in terms of taxes for desludging service.



Highlights:

- ULBs should either provide the emptying service or outsource the work to private agency through appropriate management contract.
- In case of outsourcing the work, ULB should certify and license private septage transporters to de- sludge and transport waste to designated treatment facility.

Group Exercise

Participants will plan for infrastructure that is required for implementing a FSSM plan for a city.

FSSM PLAN		
Sr.No	**Description**	**No.**
	Input details	
A	Population	65251
B	Total households (HHs)	13112
C	HHs having toilets with septic tanks	9901
D	No. of community/ public toilets having septic tanks	21
E	Average volume of household and community toilet septic tanks (cum)	5
F	Septic tank cleaning cycle for HHs (Years)	3
G	Septic tank cleaning cycle for CT/PT (Days)	7
H	No. of working days in an year	300
I	No. of trips possible per emptying vehicle per day (trip/day/vehicle)	4

Highlights:

- Various parameters which need to be considered during planning for infrastructure required for FSSM are given.

Key outputs

- **Number of tanks to be emptied daily = _____daily**
  - HHs toilets connected to septic tank / cleaning cycle for HHs = _____annually
    - HHs toilets to be cleaned daily = annual cleaning / number of working days = _____daily
  - CTs connected to septic tank / cleaning cycle for CTs = _____daily
- **Number of trucks required = _____ nos**
  - Number of tanks to be emptied daily / Number of trips per day = _____ nos
- **Volume of septage to be treated = _____ cum/day**
  - Average volume of HHs and CTs septic tanks x Number trips per day = ___ cum/day

Highlights:

- Number of septic tanks to be emptied daily, number of suction trucks required and volume of septage to be treated are the key output of this exercise.
- These outputs can be calculated for any city by changing the input details.

Session 4

Treatment options for FSSM

Objective:

To discuss the treatment options aspects of FSSM for all components of the service chain.

Format:

Presentation followed by discussions

Duration:

30 mins

Key points to be covered:

- Overview of various treatment options that can be adopted based on the local context in the cities to treat the collected faecal sludge.
- Outline of the ill effects of open dumping of faecal sludge on human and environmental health.
- Key highlights of standards of disposal of septage versus actual quality of septage that is being disposed.
- Factors to identify a new treatment site and subsequent selection of technology options for a city based on space availability.
- Case studies where FSSM is implemented.
- Market for treated septage.

Open disposal of septage

Disposal of septage at dump site

NO TREATMENT OF FAECAL SLUDGE & SEPTAGE

Disposal of septage in open land

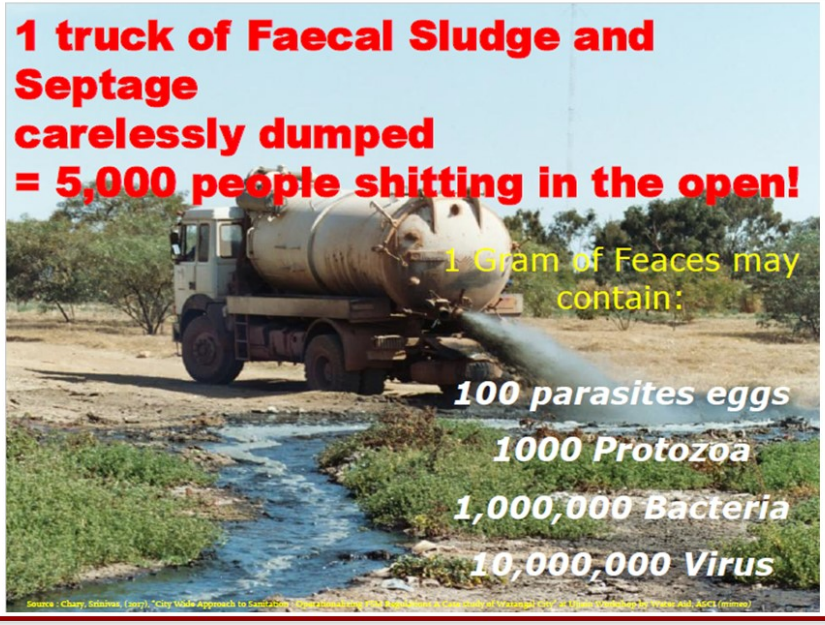
Disposal of septage in water bodies

Source : Chary, Srinivas, (2017). "City Wide Approach to Sanitation : Operationalizing FSM Regulations A Case study of Warangal City" at Ujjain Workshop by Water Aid, ASCI

Highlights:

- Disposal of untreated faecal sludge and septage in water body, solid waste dumping site and other open lands.

Consequences of indiscriminate dumping



Highlights:

- Disposal of untreated faecal sludge and septage can contaminate the surface water as well as ground water.
- Water borne diseases like Diarrhea, Cholera, Typhoid etc. due to contamination of water.

Standards for disposal

Effluent discharged standards for Sewage Treatment Plant are mentioned below:

Sl. No.	Industry	Parameters	Standards for New STPs (Design after notification date)*
	Sewage Treatment Plant	pH	6.5-9.0
		BOD	10
		COD	50
		TSS	20
		NH_4-N	5
		N-total	10
		Fecal Coliform (MPN/100ml)	<100

Note:
(i) All values in mg/l except for pH and Coliform.
(ii) These standards will be applicable for discharge in water resources as well as for land disposal. The standards for Fecal Coliform may not be applied for use

Standards of disposal of septage

Source : Gazzate notification by MoEF, 24th November 2015
http://www.moef.gov.in/sites/default/files/Draft%20notification%20of%20Sewage%20Treatment%20plan.PDF

Actual quality of septage that is being disposed off

Sr.No.	Parameter	Faecal Sludge & septage
	Test results	
1	pH	7.6-9
2	BOD	6000 - 16500
3	COD	11408 - 27776
4	TSS	9000- 90000
5	Total Nitrogen (as N)	300-800
6	Faecal Coliforms (MPN/100ml)	>1600

Highlights:

- The Ministry of Environment, Forest and Climate Change has set the standards for various parameters of effluent, discharged from treatment plant.
- But some of the authorities are discharging the effluent at unsafe level.

Septage quality results of cities

Sr.No.	Parameter	Unit	City A		City B	
			Household septage	Community - Public toilet septage	Household septage	Community - Public toilet septage
			Result	Result	Result	Result
	Test results					
2	BOD5 at 20°c	mg/l	6000 - 16500	228 - 5400	336 - 39000	346 - 2533
3	COD	mg/L	11408 - 27776	395.2 - 9523	1000 - 88000	920 - 7200
4	Total Solids by volume	%	0.992 - 8.07	0.071 - 1.36	0.42 - 7.74	0.43 - 1.06
5	Total Nitrogen (as N) , by volume	%	0.044 - 0.0719	0.016-0.067	0.02 - 0.16	0.06 - 0.11
6	Phosphorus (as P), by volume	%	0.004 - 0.009	0.001 - 0.007	0.0002	0.0002
7	Pottasium (as K) by volume	%	0.004 - 0.014	0.005 - 0.015	0.006 - 0.027	0.017 - 0.029
8	Gross Calorific Value, on dry basis	cal/g	4148	*	3226 - 4817	1281 - 2732
9	Faecal Coliforms	/100ml	>1600	>1600	22 - 920	32 - 170

Note : * - Not analyzed due to insufficient quantity of sample

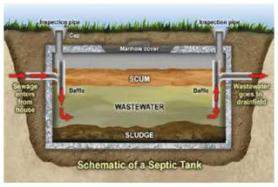
- BOD and Total Solids are affected by emptying frequency
  - The more frequently the septic tank is emptied : Less is the BOD and Total solids and vice a versa
- The emptying frequency is also dependent on type of housing .
  - Flats are emptied more frequently as compared to bunglows / row houses

Septage Quality differs City to City . . .

Highlights:

- Septage quality varies from city to city and type of toilet facility.
- Septage quality also depends on the containment system and desludging frequency.

Septage quantity calculation



Volume of Septic tank

- Requires detailed survey of each property (residential, community, commercial, institutional)
- Total volume of all types of collection system

Per capita generation Standard

- Based on Std norm of 230 litres/capita/year (GOI septage guidelines)
- Septage quantity (litres/year)= population*230

Highlights:

- Calculation of volume of septage at a city level by conducting a detailed survey of containment system.
- Septage volume can also be calculated by using a standard formula given by CPHEEO.

Septage treatment options

Treatment / Reuse / Disposal

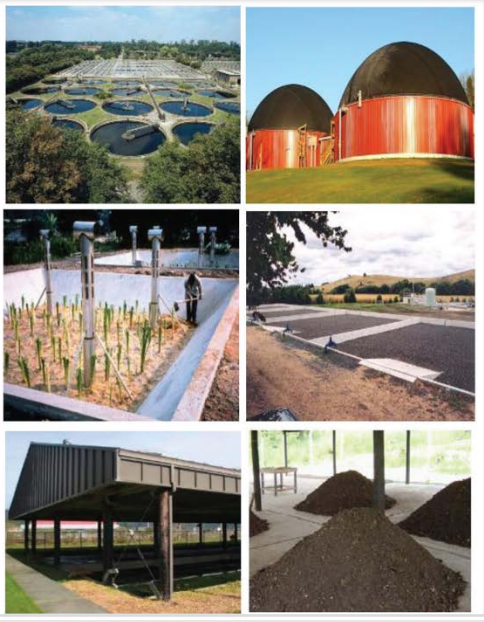
❑ Treatment at **existing sewage treatment plants**

- 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**



Highlights:

- co-treatment of faecal sludge and septage at the nearest STP, with certain precautions before mixing.
- In the case of unavailability of STP nearby, a faecal sludge treatment plant can be setup for treatment of sludge.

Selection of new treatment site

i. Distance of treatment site

- Long distance: costly
- A site that is too far away implies fewer trips per day, less revenue and more fuel costs to private operators.

ii. Land availability

- Government land availability
- ULB should also explore the possibility of developing septage treatment facility at solid waste dumping or treatment site.

iii. Reliability of electricity

- If treatment technology has mechanical operated parts.

iv. Neighborhood

- A treatment site may generate nuisance, especially bad odors.
- It should be located at an appropriate distance from the residential areas.

v. Geological Parameters

- Groundwater table
- Type of soil
- Prone to flooding

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

Highlights:

- Distance, land availability, electricity and neighborhood are some of key parameters to be considered during the selection of site for treatment plant.

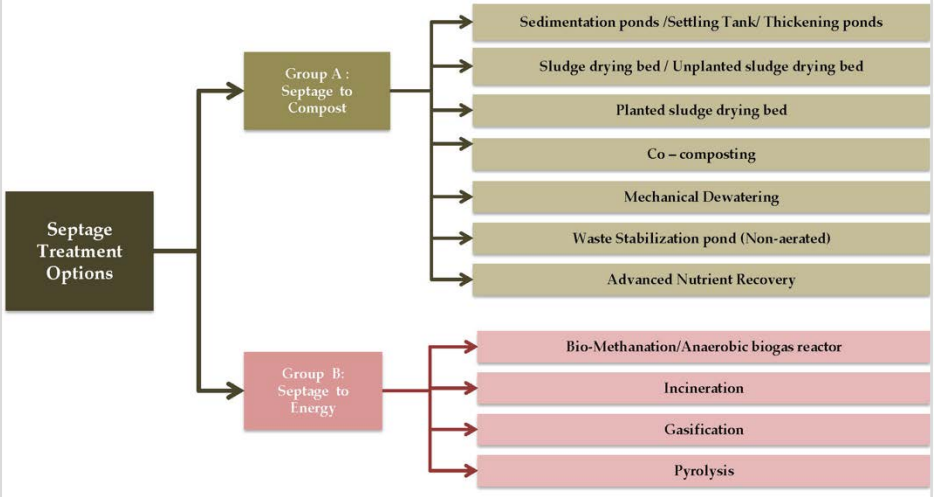
Identify treatment technology based on following factors

- **Technical performance of treatment option:**
  - Technology providing required quality output,
  - Popularity in local context, advantages and disadvantages,
  - requirement of pre-treatment or post treatment,
  - level of difficulty in handling or discharging endproduct generated, etc.
- **Site condition:** Permeability, groundwater table, soil type etc
- **Capital and operating cost**
- **Simplicity in Construction & Operation**
- **Level of mechanization** required for its operation
- Efficiency of **energy recovery**

Highlights:

- Technology providing the required output and the Capex & Opex are the critical factors while selecting the treatment technology.
- Site condition, simplicity in operation are the other factors which needs to be considered.

Various treatment options

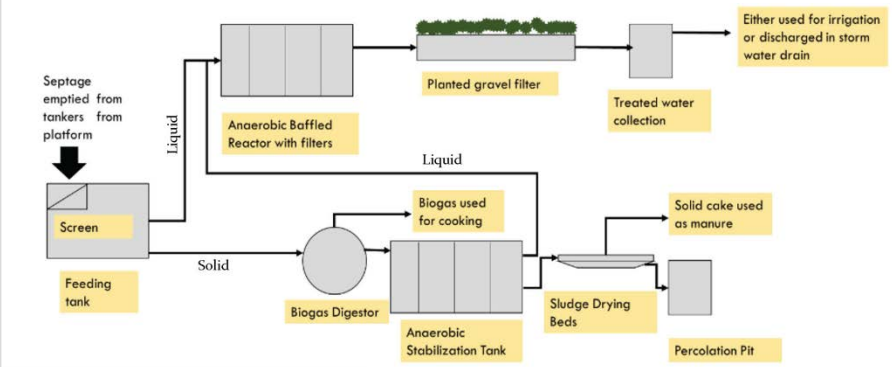


Based on literature reviews and international case studies . . .

Highlights:

- Septage treatment options divided into two sets depending upon their end product i.e. septage to compost or septage to energy.

Devenahalli, Karnataka



Population	28,051
Plant capacity	6 m3/day
Area	625 Sq mt
Construction cost	70 lakhs
O&M cost	3-4 lakhs/ annum
Commission year	Nov 2015
Operated by	Private sector

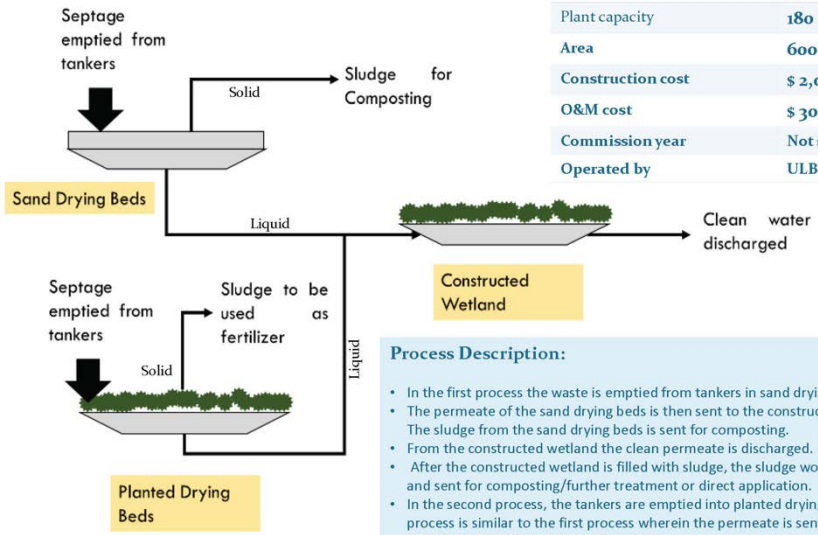
Stakeholder and Responsibilities

At present the FSTP is being maintained by the CDD society. They have a contract to design, construct and train the operator for an year. The faecal sludge is transported through trucks owned by the TMC Devanahalli.

Highlights:

- A non-mechanized septage treatment plant working on ABR technology at Devanahalli designed by CDD society.
- Manure produced as a end product, used by farmers for agricultural purpose.

Khulna, Bangladesh



Population	15 lakhs
Plant capacity	180 m3/day
Area	6000 Sq mt
Construction cost	$ 2,00,000
O&M cost	$ 3000/ annum
Commission year	Not started
Operated by	ULB

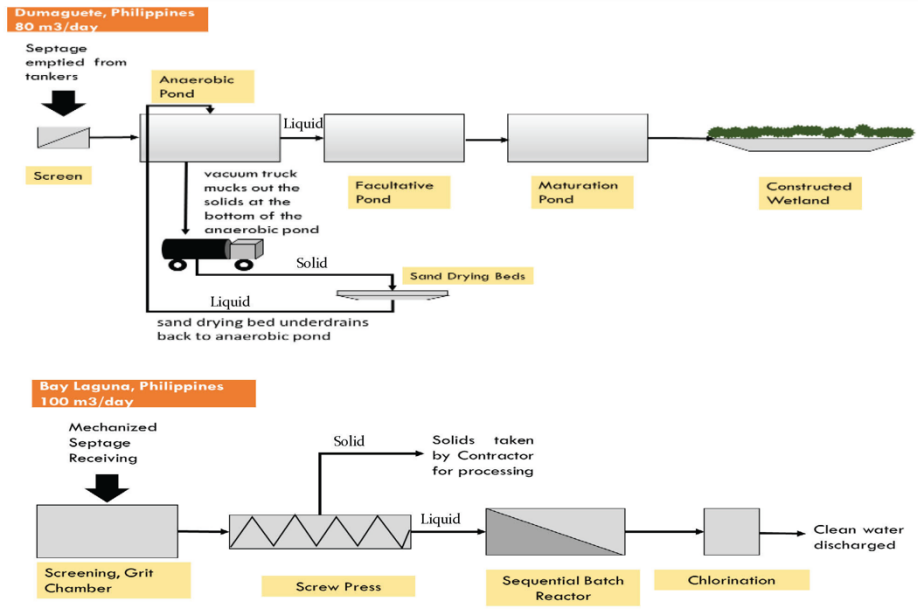
Process Description:

- In the first process the waste is emptied from tankers in sand drying beds.
- The permeate of the sand drying beds is then sent to the constructed wetland. The sludge from the sand drying beds is sent for composting.
- From the constructed wetland the clean permeate is discharged.
- After the constructed wetland is filled with sludge, the sludge would be removed and sent for composting/further treatment or direct application.
- In the second process, the tankers are emptied into planted drying beds. The process is similar to the first process wherein the permeate is sent to the same constructed wetlands as the first process.
- The sludge from the planted drying beds here is used directly as fertilizer.

Highlights:

- Septage treatment plant designed for Khulna city having population of 15 lakhs, the plant is yet to start and works on combination of two technology i.e. sludge drying beds and planted drying beds.
- The sludge from the planted drying bed proposed to be directly used as fertilizer.

Other septage treatment plants

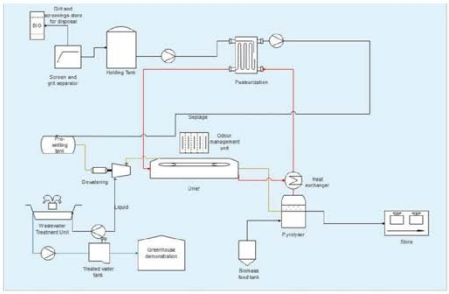


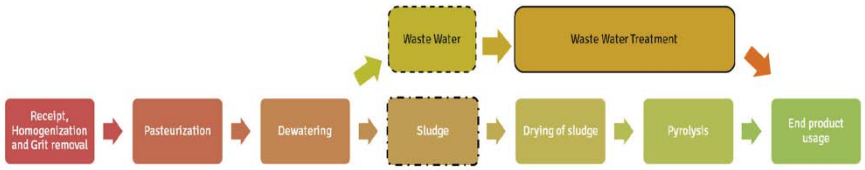
Highlights:

- The treatment plant at Bay Lagua, Philippines working on Sequential Batch Reactor technology. Clean water discharged for reuse purpose after chlorination.

Proposed Wai FSTP

Population	~40,000
Plant capacity	70 m3/day
Area	1000 Sqmt
Commission year	Under construction
Operated by	Private sector





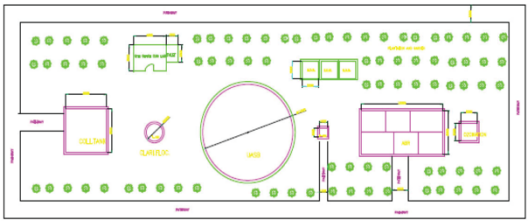
Process flow diagram

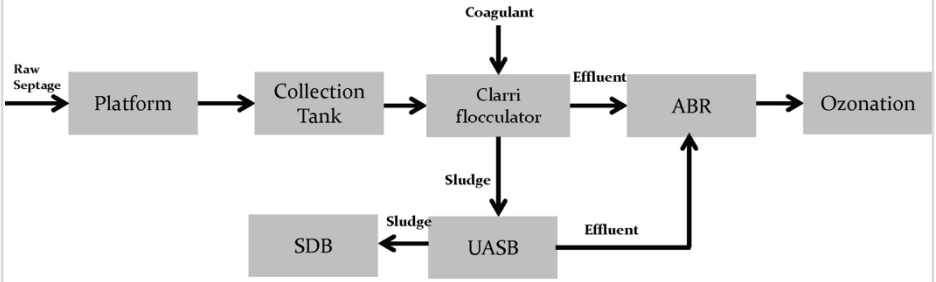
Highlights:

- faecal sludge treatment plant proposed at Wai, Maharashtra, with pyrolysis method of treatment of septage.

Proposed Sinnar FSTP

Population	~75,000
Plant capacity	70 m3/day
Area	650 Sq mt
Commission year	Under Construction
Operated by	Private sector





Process flow diagram

Highlights:

- The faecal sludge and septage treatment plant at Sinnar with a capacity of 70 cu.m. proposed to work on Anaerobic Baffle Reactor technology.

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 :*
  - Faecal 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**

Source : Advisory note on Septage management in Urban India, MoUD Jan 2013

Highlights:

- For the reuse of compost as a fertilizer, it should satisfy certain criteria of bio solids and the concentration of various parameters like arsenic, copper etc. should not exceed the prescribed limit MSW rules, 2000.
- Properly treated sludge can be reused to reclaim parched land by application as soil conditioner.

Discussion points

- **Is Co-treatment of sludge/septage in STP an option in your city ?**
- **Is there a market for treated sludge in your city?**

Highlights:

- Opportunity of co-treatment, market for the reuse of end product, are some of the points which needs to be explored before finalizing the treatment technology.

Session 5

Financing options for FSSM

Objective:

To discuss the financing aspects of FSSM for all components of the service chain

Format:

Presentation followed by discussions

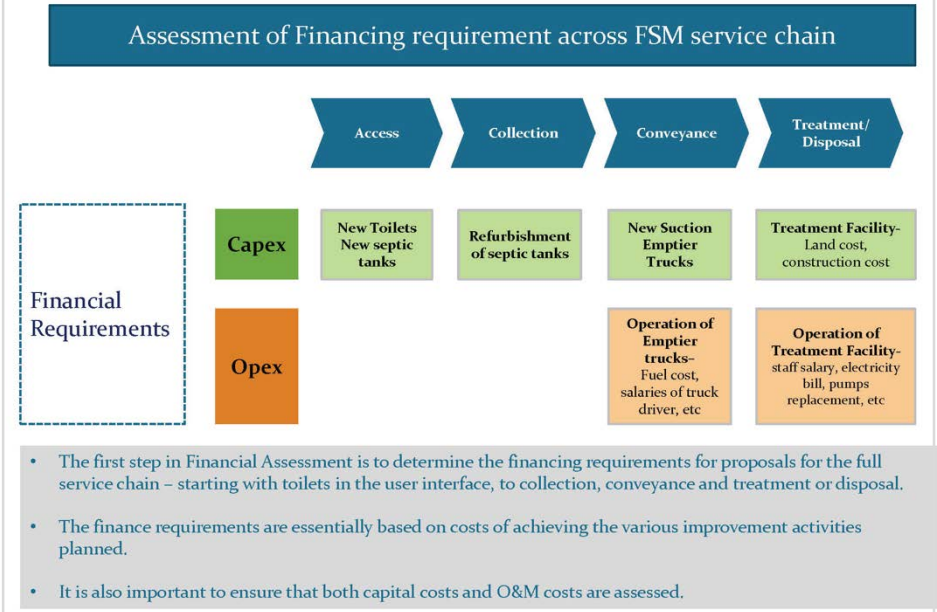
Duration:

30 mins

Key points to be covered:

- Financing aspects of FSSM for all components of the service chain.
- Identifying the potential financial sources like central or state grants or local government funds.
- Various components of CAPEX and OPEX.
- Identification of existing revenue sources.
- Types of funding options available for implementing FSSM plans in ULBs.

Financial requirements for FSSM



- The first step in Financial Assessment is to determine the financing requirements for proposals for the full service chain – starting with toilets in the user interface, to collection, conveyance and treatment or disposal.
- The finance requirements are essentially based on costs of achieving the various improvement activities planned.
- It is also important to ensure that both capital costs and O&M costs are assessed.

Highlights:

- Financial requirements categorized in two set, capital expenditure (one time) and operational expenditure (recurring).
- The financial requirements essentially based on cost of achieving the various improvements activities planned.

Financial requirements for FSSM

	Access	Conveyance	Treatment/ Disposal
CAPEX	**New toilets and Refurbishment of septic tanks**	**Suction Emptier Trucks**	**Treatment Facility-** Land and construction cost
	Households	Central/State Grants	Central/State Grants, VGF
	Government Subsidy	Local Govt. funds	Local Govt. funds
	CSR fund, Crowdfunding, Credit	Private Sector/PPP	Municipal Bonds/Public Finance
			CSR, Crowdfunding
			Private Sector/PPP
OPEX	**Repair of toilets and septic tanks**	**Operation of Emptier trucks–** Fuel cost, salaries of truck driver.etc	**Operation of Treatment Facility-** Salary, electricity , pumps replacement, etc
	Households, Housing society fees	Sanitation Tax/Other Taxes	Sanitation Tax/Other Taxes
		User Charges (Emptying fees)	Sale of Compost

Highlights:

- Sources of funding available for CAPEX and OPEX across the sanitation service chain.

Assess sources of Capex

Current Government Programmes and funds availability (eg: SBM, AMRUT, 14th FC)	Own funds of Urban Local Body for capital financing
Willingness of Private sector to invest	Innovative financing Eg: CSR, Crowdfunding, loans

Highlights:

- The funds under various government programme earmarked for sanitation sector and Urban Local Body's own funds are the major source for the capital expenditure.
- Apart from this, funding from private investors and financing through corporate social responsibilities should also be explored.

Capex: Emptying and Conveyance

A. Potential sources of finance for Capital Expenditure

	Suction Emptier Trucks	Demand based FSM Services	Scheduled FSM Services
Central/state Grants/ Local Government Funds	Several states have earmarked funds/ grants for procurement of vacuum trucks for urban local governments.		
Private sector	Private sector is already investing as per demand	Private sector is generally willing to bring investment for vacuum trucks	

Highlights:

- Purchase of suction emptier trucks requires investment at an earlier stage, which can be meet through funds earmarked by state government.

Capex: Treatment system

A. Potential sources of finance for Capital Expenditure

FSSTP	Demand based FSM Services	Scheduled FSM Services
Central/state Grants Local governments	Size of treatment units is relatively small. Large cities may mobilize from own funds. Small cities may mobilize from 14th FC funds/ AMRUT.	-Large cities may use ongoing national level programmes - Small cities may require small size of grant from state programme or mobilize from 14th FC funds.
Private /VGF	Private sector is willing with VGF	
Innovative Finance	CSR, Social Impact Investor, Donor funding etc	

Highlights:

- For the capital expenditure of treatment plant, central/state grants can be used. Large cities can use their own funds for the same.
- In case of scheduled service, large cities may use funds from national level programmes while smaller cities can mobilize funds from 14th Finance Commission.

14th FC funds for ULBs of Rajasthan (Rs in Cr)

Year	Basic Grant	Performance Grant	Total Grant
2015-16	433.1	-	433.1
2016-17	599.7	177.0	776.7
2017-18	692.9	200.3	893.2
2018-19	801.6	227.4	1029
2019-20	1083.1	297.8	1380.9
2015-20	3,610.5	902.6	4513.1

Source: 14th Finance Commission

Highlights:

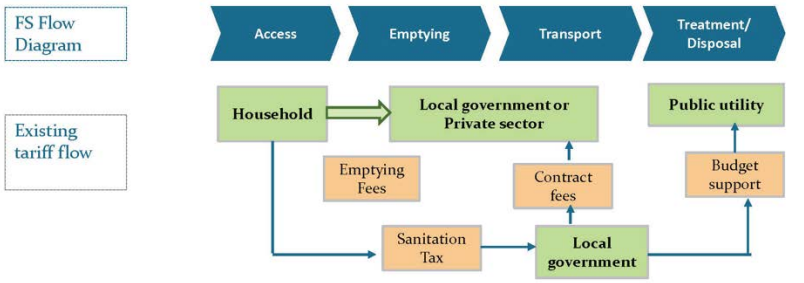
- The table shows the funds earmarked for the Urban Local Bodies of Rajasthan by 14th Finance Commission over the period of 2015 – 2020.

Existing revenue sources for Opex

To make FSM activities sustainable, assessing the revenue sources is very important

- 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



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

Highlights:

- Levying taxes or user fee is an important source of revenue to make treatment plant financially sustainable.
- It is important to explore various revenue sources to recover O&M cost.

Provision of sanitation tax/user charge/ fee

State	Sanitation Tax	User charge/ fees/ cess
Gujarat	General sanitation tax upon private latrines, premises or compounds cleansed by municipal agency	
Maharashtra	Special sanitary tax upon private latrines, premises or compounds cleansed by municipal agency	
West Bengal	-	a fee with regard to a scavenging
Uttar Pradesh/ Uttarakhand	a conservancy tax in areas in which the Corporation undertakes the collection, removal and disposal of excrementitious and polluted matter from privies, urinals and cesspools	-
Punjab	Scavenging tax as percentage of annual value	Sewerage Cess
Haryana	-	a fee with regard to a scavenging
Rajasthan	-	User charge for provision of drainage and sewerage

Highlights:

- Various states are already charging fees in terms of sanitation tax/user charge, which is a major source of revenue.

Per capita property tax

Source: Municipal finances and service delivery in India (2014), ASCI

Highlights:

- Tax collection efficiency of Urban Local Bodies of Rajasthan is very low.
- Per capita property tax in Rajasthan is comparatively very low.

Assess HHs willingness to pay & reuse market

HHs willingness to pay

- Assess how much the people are willing to pay for regular or demand based emptying service
- Assess willingness of the local government to levy sanitation charges/taxes

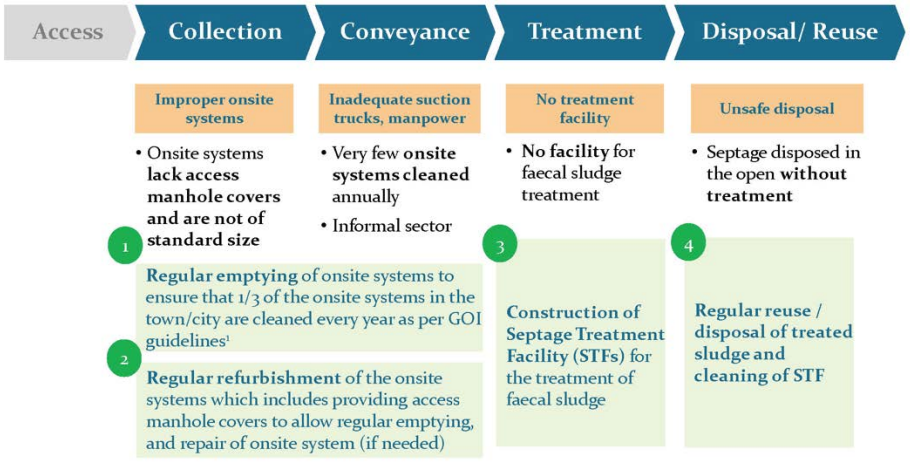
Landscape assessment of reuse market

- Identify nearby industries or agriculture land
- Assess their willingness to reuse the treated septage and water
- Assess how much they are willing to pay to buy treated septage and water

Highlights:

- Before setting up the plant, it is important to assess the willingness of users to pay for the service.
- Market for the reuse of the end product should be analyzed.

Challenges & Opportunities for PSP in sanitation chain



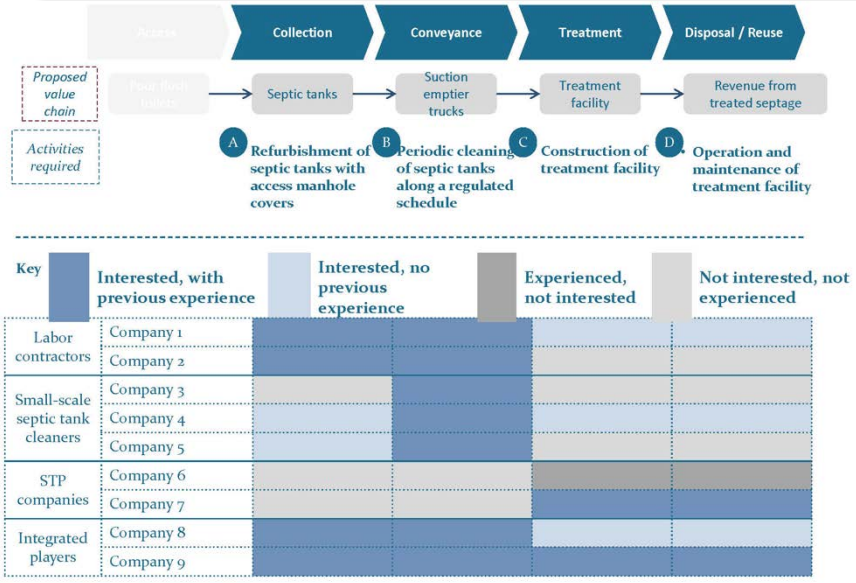
Note: (i) As per MoUD guidelines, a household onsite system/onsite system must be emptied every 3 years hence 33% of all onsite systems/ onsite systems should be emptied annually

Source: CEPT, Dalberg research

Highlights:

- Public sector participation is required in maintaining and regular desludging of onsite sanitation system.
- As per MoUD, a household onsite sanitation system must be emptied every three years.

Willingness of players to undertake various activities in sanitation value chain



Highlights:

- Activities under sanitation value chain can be supported by various players like labor contractors, septic tank cleaners, STP companies etc.

Identify revenue sources

Identify the different sources of revenues

ULB sources | Government sources | Miscellaneous sources

Can be used individually or in combination

Assess the different options on the basis of sustainability and reliability

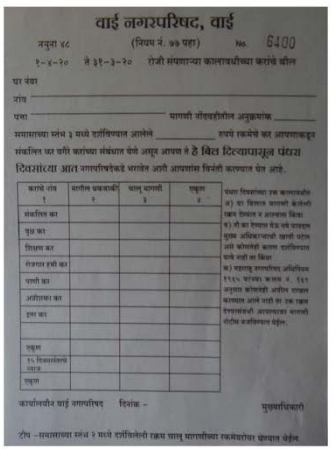
- Is fund available through the duration of the contract?
- Are the financing terms acceptable to ULB?
- Is revenue source reliable in terms of guarantee?
- Does the source of active political and community support?
- Does the cash flow timing match the requirement?

Highlights:

- Various sources of revenue like ULB sources, central/state government sources can be used variably according to their sustainability and reliability.

Sanitation tax as a revenue source: A case of Wai

Current taxes levied



वाई नगरपरिषद, वाई

(नियम नं. ७७ पहा) No. 6400

१-४-२० ते ३१-३-२० रोजी संपणाऱ्या कालावधीच्या कराचे बील

Appropriate awareness can ensure willingness to increase local taxes

- Currently, households clean their septic tanks once in 8-10 years and spend INR ~1000 in Wai and INR ~400 - 800 in Sinnar
- Property owners currently have to pay local taxes of about Rs 2200/annum in Wai and Rs.1600/annum in Sinnar
- To cover the costs of a cleaning cycle of ~3 years would require **an increase** in annual tax spend for a household of about **10% in Wai and 20% in Sinnar.**
- As these are reasonable increases for a regular service and related environmental as well as personal benefits , it is expected that with appropriate awareness there will be willingness to pay additional taxes.

The ULB can consider using its conservancy taxes to support the integrated faecal sludge management plan, and will need to compensate private players directly through a management fee

Highlights:

- In Wai, sanitation tax is imposed for a regular service and related environmental as well as personal benefits.
- It is expected that with appropriate awareness, there will be willingness to pay additional taxes.

Sale of treated septage for reuse: Source of revenue

"Larger farmers who export their crops are bound by restrictions on the use of animal and human waste. ***Sludge can be sold mainly to small and marginal farmers****, who lack access to synthetic fertilizers."*

- Person X

*"****Faecal sludge cannot be used in organic farming*** *due to concerns about e-coli and shigella infections. However, it is often used by small farmers as 'son-khad'."*

- Person Y, Farming association

"We make compost from solid waste. The market is extremely seasonal. Creating a continuous market for this waste is tough. People say that you are creating compost from waste so we don't want to use it. ***Source is very important."***

- Person Z, Entrepreneur

*"****I often have to pay farmers*** *to dump sludge in their farms, I do not think the sale of septage is a viable revenue source."*

- X Enterprises

"It (sale of septage) is possible, ***but will require investment in marketing and distribution****, which we do not do."*

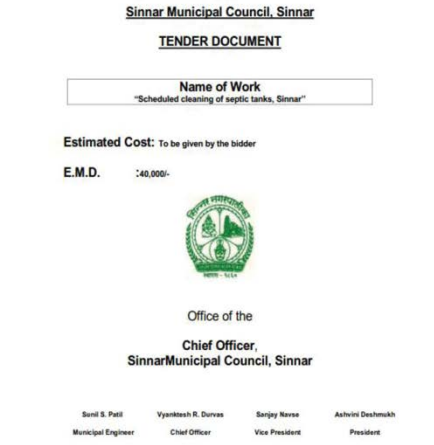
- Y Enterprises

There is demand for sludge among small and medium farmers, but willingness to pay is unclear

Highlights:

- Market at a city level and nearby area should be analyzed in terms of acceptance of treated sludge for farming and willingness to pay for the same.

Bid document rolled out in few cities of Maharashtra(1/2)



Sinnar Municipal Council, Sinnar

TENDER DOCUMENT

Name of Work
"Scheduled cleaning of septic tanks, Sinnar"

Estimated Cost: To be given by the bidder

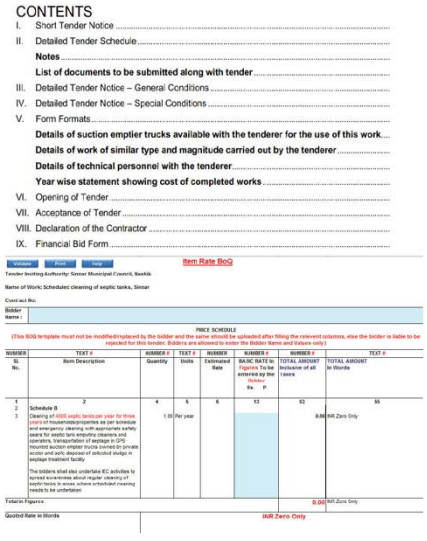
E.M.D. :40,000/-

Office of the

Chief Officer,
SinnarMunicipal Council, Sinnar

Sunil S. Patil	Vyankatesh R. Durvas	Sanjay Navse	Ashvini Deshmukh
Municipal Engineer	Chief Officer	Vice President	President

Septic tank emptying Tender document



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I. Short Tender Notice
II. Detailed Tender Schedule
Notes
List of documents to be submitted along with tender
III. Detailed Tender Notice – General Conditions
IV. Detailed Tender Notice – Special Conditions
V. Form Formats
Details of suction emptier trucks available with the tenderer for the use of this work
Details of work of similar type and magnitude carried out by the tenderer
Details of technical personnel with the tenderer
Year wise statement showing cost of completed works
VI. Opening of Tender
VII. Acceptance of Tender
VIII. Declaration of the Contractor
IX. Financial Bid Form

Item Rate BoQ

Tender Inviting Authority: Sinnar Municipal Council, Nashik

Name of Work: Schedulec cleaning of septic tanks, Sinnar

Cost incl Rs:

Bidder Name :

PRICE SCHEDULE

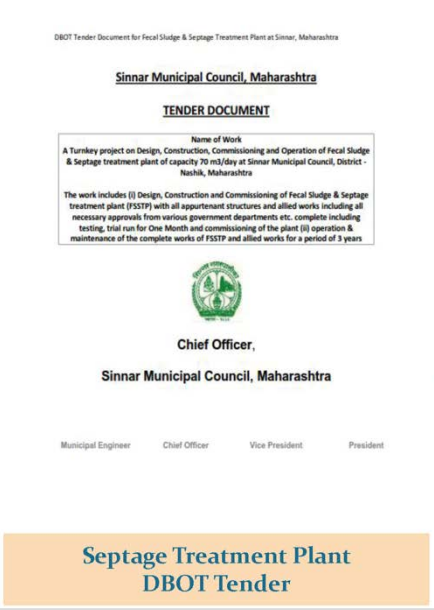
(This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevent columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only)

NUMBER	TEXT #	NUMBER #	TEXT #	NUMBER	NUMBER #	NUMBER #	TEXT #
Sl. No.	Item Description	Quantity	Units	Estimated Rate	BASIC RATE in Figures To be entered by the Bidder Rs. P	TOTAL AMOUNT Inclusive of all taxes	TOTAL AMOUNT In Words
1	2	4	5	6	13	63	66
2	Schedule B						
3	Cleaning of 4000 septic tanks per year for three years of households/properties as per schedule and emergency cleaning with appropriate safety gears for septic tank emptying cleaners and operators, transportation of septage in GPS mounted suction emptier trucks owned by private sector and safe disposal of collected sludge in septage treatment facility The bidders shall also undertake IEC activities to spread awareness about regular cleaning of septic tanks in areas where scheduled cleaning needs to be undertaken	1.00	Per year			0.00	INR Zero Only
Total in Figures						0.00	INR Zero Only
Quoted Rate in Words					INR Zero Only		

Highlights:

- Bid document floated by the Sinnar Municipal Council, Maharashtra.

Bid document rolled out in few cities of Maharashtra(2/2)



DBOT Tender Document for Fecal Sludge & Septage Treatment Plant at Sinnar, Maharashtra

Sinnar Municipal Council, Maharashtra

TENDER DOCUMENT

Name of Work
A Turnkey project on Design, Construction, Commissioning and Operation of Fecal Sludge & Septage treatment plant of capacity 70 m3/day at Sinnar Municipal Council, District - Nashik, Maharashtra

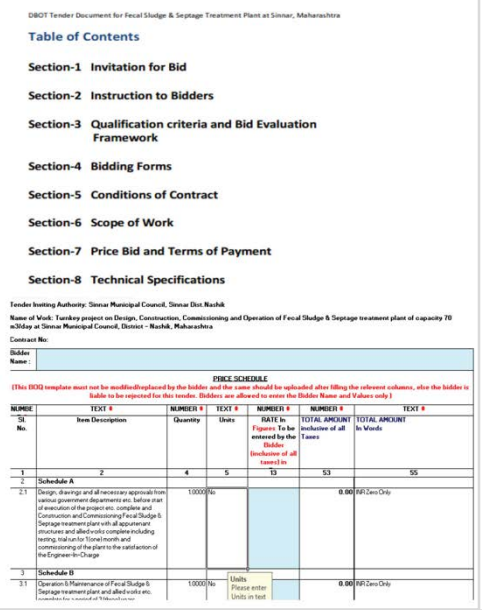
The work includes (i) Design, Construction and Commissioning of Fecal Sludge & Septage treatment plant (FSSTP) with all appurtenant structures and allied works including all necessary approvals from various government departments etc. complete including testing, trial run for One Month and commissioning of the plant (ii) operation & maintenance of the complete works of FSSTP and allied works for a period of 3 years

Chief Officer,

Sinnar Municipal Council, Maharashtra

Municipal Engineer | Chief Officer | Vice President | President

Septage Treatment Plant
DBOT Tender



DBOT Tender Document for Fecal Sludge & Septage Treatment Plant at Sinnar, Maharashtra

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Section-1 Invitation for Bid

Section-2 Instruction to Bidders

Section-3 Qualification criteria and Bid Evaluation Framework

Section-4 Bidding Forms

Section-5 Conditions of Contract

Section-6 Scope of Work

Section-7 Price Bid and Terms of Payment

Section-8 Technical Specifications

Tender Inviting Authority: Sinnar Municipal Council, Sinnar Dist.Nashik

Name of Work: Turnkey project on Design, Construction, Commissioning and Operation of Fecal Sludge & Septage treatment plant of capacity 70 m3/day at Sinnar Municipal Council, District - Nashik, Maharashtra

Contract No:

Bidder Name :

PRICE SCHEDULE

(This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevent columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only)

NUMBE	TEXT *	NUMBER *	TEXT *	NUMBER *	NUMBER *	TEXT *
Sl. No.	Item Description	Quantity	Units	RATE In Figures To be entered by the Bidder (inclusive of all taxes) in	TOTAL AMOUNT inclusive of all Taxes	TOTAL AMOUNT In Words
1	2	4	5	13	53	55
2	Schedule A					
2.1	Design, drawings and all necessary approvals from various government departments etc. before start of execution of the project etc. complete and Construction and Commissioning Fecal Sludge & Septage treatment plant with all appurtenant structures and allied works complete including testing, trial run for 1(one) month and commissioning of the plant to the satisfaction of the Engineer-In-Charge	1.0000	No		0.00	INR Zero Only
3	Schedule B					
3.1	Operation & Maintenance of Fecal Sludge & Septage treatment plant and allied works etc.	1.0000	No		0.00	INR Zero Only

Units
Please enter Units in text

Highlights:

- Bid document floated by the Sinnar Municipal Council, Maharashtra.

Discussion points

- What are key issues in financing FSSM?
- Emptying charge or Sanitation tax?
- Potential Sources for CAPEX and OPEX in your state?
  - Emptier trucks
  - Treatment plant

Highlights:

- Financing FSSM, emptying charge or Sanitation tax, and potential sources for CAPEX and OPEX are the key points which needs to be explored in depth.

Group exercise

Plan FSSM for your city- Calculate financial requirements

Highlights:

- To make a training interactive, a group exercise is suggested to calculate the financial requirements for FSSM at a city level.

Tariff requirement to cover O&M cost

Step 1: O& M cost for schedule septic tank emptying service

1	Fuel cost for schedule emptying service = (Number of septic tank to be emptied daily*300* Average distance * 2 * Fuel price/ Fuel efficiency) - *Assume Fuel efficiency for truck = 5 km per liter* - *Assume Fuel price = Rs 70 per liter* - *Assume Average distance= 12 km*	
2	Repair and maintenance cost = (Number of suction emptier truck requirement* 12 * 2,000) - *Assume average repair & maintenance cost = Rs 2,000 per month*	
3	Establishment expenses = ((Number of suction emptier truck requirement* 12 * No of manpower* Monthly Salary) - *Assume, 2 manpower requirement per truck* - *Assume, Salary = Rs 10,000 per month*	
4	**Sub-total = (1+2+3)**	
5	Overhead + Insurance + other Miscellaneous cost = Sub-total(4)*X% - *Assume, other cost as X% of sub-total (4)*	
6 –A	**Total O&M cost for schedule septic emptying service = (4+5)**	

Highlights:

- Various parameters which needs to be considered during the calculation of operation and maintenance of treatment plant are given.

Tariff requirement to cover O&M cost

Step 2: O& M cost for septage treatment facility

1	Energy cost for Septage treatment facilities = (Energy cost per month * 12) **Energy cost** - *< 25 cum/day = Rs 5,000 per month* - *25-50 cum/day = Rs 10,000 per month* - *50-75 cum/day = Rs 15,000 per month* - *> 75 cum/day = Rs 20,000 per month*	
2	Repair and maintenance cost = (Avg. Repair & maintenance cost * 12) - *Assume average repair & maintenance cost = Rs 10,000 per month*	
3	Establishment expenses = (No. of manpower*Monthly Salary *12) - *Assume, 4 manpower requirement (in 2 shifts)* - *Assume, Salary = Rs 10,000 per month*	
4	**Sub-total = (1+2+3)**	
5	Overhead + Insurance + other Miscellaneous cost = (4*X%) - *Assume, other cost as X% of sub-total (4)*	
6-B	**Total O&M cost for managing Septage treatment facility = (4+5)**	

Highlights:

- Various parameters which needs to be considered during the calculation of operation and maintenance of treatment plant are given.

Key outputs

A. **Annual O&M Cost= 6-A + 6-B =**

B. **Per property tariff requirement for septage management (annually) =**

=Annual O&M cost (A)/ (total properties* collection efficiency)

- *Considering tax collection efficiency= 70%*
- *Assume 1 households= 1 property*
- *Note: Users may calculate differential tariff structure across property uses; properties with toilet facility v/s properties dependent on community toilet etc.*

Highlights:

- Annual cost of O&M is the key output of this exercise.
- On the basis of annual O&M cost, per property tariff required for septage management can be calculated.

Orientation Training on faecal Sludge and Septage Management (FSSM)

Pre and post training quiz

Q.1 Open Defecation Free town is one where:

☐ All households have access to toilets	☐ All waste water is safely treated
☐ All waste water is safely contained	☐ None of the above

Q.2 How many ULBs are declared ODF by QCI in the state of Rajasthan?

☐ 11	☐ 9
☐ 20	☐ None of the above

Q.3 Sanitation systems in Urban India are:

☐ Predominantly underground sewerage and STPs	☐ Predominantly septic tanks and pit latrines
☐ Predominantly open defecation	☐ Predominantly small bore sewerage systems

Q.4 Urban Local Bodies have a role in ensuring that septic tanks are built as per standards. Is this statement true?

☐ No, it is upto the household	☐ Yes, as it is linked to building plan permission process
☐ No, it's a responsibility of the central government	☐ No, it's a responsibility of the state government

Q.5 What is the per capita cost of a centralized sewerage system for a city of 100,000 population

☐ Less than Rs.1000	☐ Less than Rs.5000
☐ Less than Rs.10,000	☐ Above Rs.10,000

Q.6 Do you think that the Manual Scavenging Act of 2013 applies to manually emptying of tanks?

☐ No. It is only applicable to emptying of dry latrines	☐ No. It is only applicable to cleaning of sewers and drains.
☐ The act is not related to waste treatment	☐ None of the above

Q.7 What is the % of OD in the state of Rajasthan as per census 2011?

☐ 20.5%	☐ 16.7%
☐ 15%	☐ 25.4%

Q.8 Is a single pit considered as a sanitary latrine?

⌋ Yes	⌋ No
⌋ May be	⌋ Do not know

Q.9 What is the per capita water requirement in LPCD for a sewerage system to function well?

⌋ 100 LPCD	⌋ 135 LPCD
⌋ 125 LPCD	⌋ Water requirement not a criteria

Q.10 A septic tank must be emptied

⌋ Regularly (2-3 years)	⌋ Only when it gets full and starts overflowing
⌋ Every month	⌋ Never

Q.11 Largest source of central government funding for septage and sewerage for a state government is?

⌋ SBM Urban	⌋ AMRUT
⌋ Central Finance Commission	⌋ PMAY

Q.12 Which of these is not a key component of a septage management plan?

⌋ Design of septic tanks	⌋ Construction of toilets
⌋ Treatment of septage	⌋ Regular cleaning of septic tanks

Q.13. What is the ratio of the length of the first chamber to the second chamber in a septic tank?

⌋ 2/3 rd	⌋ ½ th
⌋ Either of the above	⌋ None of the above

Q.14. The more frequently the septic tank is emptied, less is the BOD and Total solids and vice a versa.

⌋ TRUE	⌋ FALSE

Q.15. What is the ideal ratio of households per toilet seat in a community toilet?

⌋ 6	⌋ 12
⌋ 18	⌋ 20

Reference material:

•**Guidelines for Swachh Bharat Mission Urban,** Ministry of Housing and Urban affairs, Government of India, 5th October 2017

•**National Policy on Faecal Sludge and Septage Management (FSSM),** Ministry of Urban Development, Government of India, February 2017

•**Primer on Faecal Sludge and Septage Management,** National faecal Sludge and Septage Management (NFSSM) Alliance

•**Advisory note on septage management in urban India,** National Urban Sanitation Policy (NUSP), January 2013

•**Manual on Sewerage and Sewage treatment,** CPHEEO, 2013

•**Guidelines for Septage Management in Maharashtra**, Swachh Maharashtra Mission Urban, Urban Development Department, Government of Maharashtra, December 2016

•**Making cities open defecation free (ODF): systematic approach in Maharashtra**, Swachh Maharashtra Mission Urban, Urban Development Department, Government of Maharashtra, Handbook Vol.1, Feb 2016

•**Journey of ODF Maharashtra,** Swachh Maharashtra Mission Urban, Urban Development Department, Government of Maharashtra

•**Changemakers:** Documentation of good practices under Swachh Maharashtra Mission Urban, Urban Development Department, Government of Maharashtra, October 2016

•**Sustaining Cities to be Open Defecation Free (ODF), guidelines for urban local bodies,** Swachh Maharashtra Mission Urban, Urban Development Department, Government of Maharashtra

•**Guidelines for Sustainable ODF and ODF+ cities Maharashtra**, Action flyers prepared Under sanitation support to Government of Maharashtra, CEPT University Ahmedabad and RCUES, AIILSG Mumbai.

•**Achieving Open-Defecation Free Telangana**, UNICEF

•**State of Urban Water and Sanitation in India**, TERI University, October 2017

•**Training of Trainers on Faecal Sludge and Septage Management**, Prepared for Sanitation Capacity Building Platform (SCBP) of National Institute of Urban Affairs (NIUA)

•**FSM - Urban Wash: An Assessment of Faecal Sludge Management Policies and Programmes at the National and Select States Level**, WaterAid India, 2016.

•**Septage Management in Urban India**, Water and Sanitation Programme, 2012

•**Handbook on decentralized wastewater treatment module -** 2016, NIUA

•**Septage Management, A practitioner's guide**, Centre for Science and Environment, 2017

List of trainings and exposure visits

S. No.	Date	Training Programme Name	Organisation	No of Participants Trained	Place
1	29/08/2017	Orientation Training on FSSM	NIUA & AIILSG	23	Jaipur
2	19/09/2017	Orientation Training on FSSM	NIUA & AIILSG	33	Udaipur
3	31/10/2017	Building Capacities for ODF Cities for ULBs of Rajasthan	NIUA & AIILSG	41	Jaipur
4	02/11/2017	Building Capacities for ODF Cities for ULBs of Rajasthan	NIUA & AIILSG	37	Kota
5	16/11/2017	Building Capacities for ODF Cities for ULBs of Rajasthan	NIUA & AIILSG	45	Udaipur
6	07/12/2017-08/12/2017	Exposure visit to Indore for liquid and solid waste management for ULBs in Rajasthan	NIUA & AIILSG	23	Indore
7	18/12/2017	Mason's Training Programme	NIUA & AIILSG	48	Bijainagar
8	09/01/2018	Orientation Training on FSSM	NIUA & AIILSG	43	Jodhpur
9	09/02/2018	Orientation Training on FSSM	NIUA & AIILSG	46	Ajmer

S. No.	Date	Training Programme Name	Organisation	No of Participants Trained	Place
1	9-11/08/2017	Inaugural workshop for FSTP at Leh, Jammu & Kashmir	NIUA & CDD	2	Leh
2	21-22/08/2017	Workshop on ODF and ODF+ sustainability at Mumbai with exposure visit to Sinnar	NIUA & C-WAS, CEPT university	16	Mumbai, Sinnar
3	25-27/10/2017	Exposure visit cum training on ODF and ODF+ with focus on Integrated Waste Water and Septage Management at Pune	NIUA & ESF	29	Pune
4	13-14/11/2017	Workshop on ODF and ODF+ sustainability at Mumbai with exposure visit to Sinnar	NIUA & C-WAS, CEPT university	17	Mumbai, Sinnar
5	27-28/11/2017	Workshop on ODF and ODF+ sustainability at Mumbai with exposure visit to Sinnar	NIUA & C-WAS, CEPT university	16	Mumbai, Sinnar

List of Resource Persons

- **Mr. Pawan Arora,** Director cum Joint Secretary, LSGD, GoR
- **Mr. Mukesh Kumar Meena**, Additional Director, LSGD, GoR
- **Mr. Bhupendra Mathur**, Chief Engineer, LSGD, GoR
- **Dr. Himani Tiwari**, Co-Ordinator, CMAR, DLB, Jaipur
- **Ms. Utkarsha Kavadi**, Director, All India Institute of Local Self Government, Mumbai
- **Mr. Dhruv Bhavsar**, Senior Research Associate, C-WAS, CEPT University, Ahmedabad
- **Mr. Dhawal Patil**, General Manager, ECOSAN services, Pune
- **Mr Suraj Kumar**, Program Manager, IPE Global, New Delhi
- **Mr Nogesh Bhardwaj**, Regional In-Charge Rajasthan, CDD Society, Bengaluru
- **Mr. Ritesh Kumar Suman**, Project Engineer, CDD society, Bengaluru
- **Ms. Aditi Dwivedi,** Research Associate, C-WAS, CEPT University, Ahmedabad
- **Ms. Upasana Yadav**, Research Associate, C-WAS, CEPT University, Ahmedabad

List of participants

S No	Name of Participant	Designation	City	District	Division
1	Narayan Lal Meena	Commissioner	Kishangarh	Ajmer	Ajmer
2	Hansram Meena	Superintending Engineer	Kishangarh	Ajmer	Ajmer
3	Dilip Kumar Sharma	Commissioner	Dausa	Dausa	Jaipur
4	Kishanlal Meena	Executive Engineer	Dausa	Dausa	Jaipur
5	Dharam Pal Jaat	Commissioner	Tonk	Tonk	Ajmer
6	Dinesh Goyal	Executive Engineer	Tonk	Tonk	Ajmer
7	Jitendra Kumar Sharma	Commissioner	Gangapurcity	SawaiMadhopur	Bharatpur
8	Narendra Kumar Gupta	Assistant Engineer	Gangapurcity	SawaiMadhopur	Bharatpur
9	Bhanwarlal Soni	Commissioner	Churu	Churu	Bikaner
10	Shivpal Singh	Commissioner	Balotara	Barmer	Jodhpur
11	Karamchand Arora	Assistant Engineer	Balotara	Barmer	Jodhpur
12	Gurdip Singh	Executive Officer	Ravatsar	Hanumangarh	Bikaner
13	Rakesh Sharma	Junior Engineer	Ravatsar	Hanumangarh	Bikaner
14	Pooja Meena	Executive Officer	Niwai	Tonk	Ajmer
15	Girajesh Kumar Meena	Junior Engineer	Niwai	Tonk	Ajmer
16	Noor Mohd Khan	Executive Officer	Ratangarh	Churu	Bikaner
17	Poornima Yadav	Assistant Engineer	Ratangarh	Churu	Bikaner
18	Prabhu Dayal Bhanor	Commissioner	Banswara	Banswara	Udaipur
19	Om Prakash Sahu	Assistant Engineer	Chittorgarh	Chittorgarh	Udaipur
20	Sanjay Philip	Assistant Engineer	Rajasmand	Rajasmand	Udaipur
21	Deepak Gupta	Executive Engineer	Barmer	Barmer	Jodhpur
22	Surya Orakash Sancheti	Assistant Engineer	Bhilwara	Bhilwara	Ajmer
23	Dharmedra Yadav	Assistant Engineer	Pokhran	Barmer	Jodhpur
24	Sumit Kumar	Junior Engineer	Kanore	Udaipur	Udaipur
25	Kundan Detha	Executive Engineer	Kanore	Udaipur	Udaipur
26	Hemraj Gurjar	Clerk	Kanore	Udaipur	Udaipur
27	Anil Sharma	Chairman	Kanore	Udaipur	Udaipur
28	Prabhulal Bhabhor	Assistant Engineer	Banswara	Banswara	Udaipur
29	Dalaji Patidar	Clerk	Banswara	Banswara	Udaipur
30	Suresh Paliwal	Chairman	Rajasmand	Rajasmand	Udaipur
31	Shankarlal	Assistant Engineer	Rajasmand	Rajasmand	Udaipur
32	Vikky Sharma	Asst Revenue Inspector	Deogarh	Rajasmand	Udaipur
33	Jagmohan Tanwar	Junior Engineer	Deogarh	Rajasmand	Udaipur
34	Lokesh Patidar	Junior Engineer	Dungarpur	Dungarpur	Udaipur
35	Ganesh lal Kharadi	Commisioner	Dungarpur	Dungarpur	Udaipur

List of participants

S No	Name of Participant	Designation	City	District	Division
36	BabuLal Choudhary	Fire Officer	Dungarpur	Dungarpur	Udaipur
37	Amrish Pahal	IEC supervisor	Dungarpur	Dungarpur	Udaipur
38	Bhaktesh Patidar	Junior Engineer	Salumber	Udaipur	Udaipur
39	Govind Mali	Executive Officer	Salumber	Udaipur	Udaipur
40	Gaurav Dhing	Assistant Engineer	Udaipur	Udaipur	Udaipur
41	Nandlal Suthar	Junior Engineer	Udaipur	Udaipur	Udaipur
42	Sunil Prajapat	N/A	Udaipur	Udaipur	Udaipur
43	Pavin Patidar	Clerk	Sagwara	Dungarpur	Udaipur
44	Nirmala Ahari	Chairman	Sagwara	Dungarpur	Udaipur
45	Lalit Singh Detha	Executive Officer	Fatehnagar	Udaipur	Udaipur
46	Lalit Sharma	Sanitation Inspector	Fatehnagar	Udaipur	Udaipur
47	Ravindra Gurjar	Junior Accountant	Kapasan	Chittorgarh	Udaipur
48	Durgesh Singh	Executive Officer	Pratapgarh	Pratapgarh	Udaipur
49	Hitesh Roat	Revenue inspector	Pratapgarh	Pratapgarh	Udaipur
50	Harish Kumar	Junior Engineer	Bhinder	Udaipur	Udaipur
51	Duleechand Solankey	Junior Engineer	Chhoti Sadri	Pratapgarh	Udaipur
52	Sharwan lal Sharma	Clerk	Chhoti Sadri	Pratapgarh	Udaipur
53	Lalji Meena	Chairman	Nathdwara	Rajasmand	Udaipur
54	Saurabh Mishra	Junior Engineer	Nathdwara	Rajasmand	Udaipur
55	Jagdish Sharma	Sanitation Inspector	Nathdwara	Rajasmand	Udaipur
56	Hari Singh	Clerk	Amet	Rajasmand	Udaipur
57	Om Prakash Goyal	AAO	DDR Jodhpur	Jodhpur	Jodhpur
58	Jitendra kumar joshi	N/A	DDR Jodhpur	Jodhpur	Jodhpur
59	Rakesh Khumiyada	LDC	DDR Jodhpur	Jodhpur	Jodhpur
60	Ashutosh Acharya	Revenue Officer	DDR Jodhpur	Jodhpur	Jodhpur
61	Pooja	LDC	DDR Jodhpur	Jodhpur	Jodhpur
62	Dungar ram	Operator	DDR Jodhpur	Jodhpur	Jodhpur
63	Sandeep Mathur	Ex Engineer	Jodhour NN	Jodhpur	Jodhpur
64	Arun Vyas	Junior Engineer	Pokaran	Barmer	Jodhpur
65	Lekhmaram Choudhari	Chairman	Bali	Pali	Jodhpur
66	N/A	Executive Officer	Bali	Pali	Jodhpur
67	Suresh Thinger	Chairman	Mt Abu	Sirohi	Jodhpur
68	Kunal Dabi	Operator	Mt Abu	Sirohi	Jodhpur
69	Smt Neeraj Kumari	Executive Officer	Takhatgarh	Pali	Jodhpur
70	Paranita Samariya	Assistant Engineer	Jalore	Jalore	Jodhpur

List of participants

S No	Name of Participant	Designation	City	District	Division
71	Narendra Chouhan	Junior Engineer	Jalore	Jalore	Jodhpur
72	Jagdish Khichad	Executive Officer	Pali	Pali	Jodhpur
73	Suresh Agarwal	Councillor	Pali	Pali	Jodhpur
74	Navodit Singh Rajpurohit	Assistant Engineer	Sirohi	Sirohi	Jodhpur
75	Vikas Meena	Assistant Engineer	Abu Road	Sirohi	Jodhpur
76	Kishor Suthar	LDC	Abu Road	Sirohi	Jodhpur
77	Mahendra Rajpurohit	Revenue Inspector	Pindwara	Sirohi	Jodhpur
78	Manohar Singh	Chairman	Bilada	Jodhpur	Jodhpur
79	Harish Chandra Gehlot	Executive Officer	Jaitaran	Pali	Jodhpur
80	Smt Manju Bhati	CHairman	Jaitaran	Pali	Jodhpur
81	Shabir Khan	Councillor	Jaitaran	Pali	Jodhpur
82	Dinesh Mali	N/A	Jaitaran	Pali	Jodhpur
83	Ashok Bhati	N/A	Jaitaran	Pali	Jodhpur
84	Som Mishra	Executive Officer	Sumerpur	Pali	Jodhpur
85	Ashwani Kumnar	Junior Engineer	Sumerpur	Pali	Jodhpur
86	vinod kumar	N/A	Sumerpur	Pali	Jodhpur
87	BR Joshi	Executive Officer	Bhinmal	Jalore	Jodhpur
88	PR Choudhary	Junior Engineer	Bhinmal	Jalore	Jodhpur
89	Vikram Singh	Revenue Inspector	Phalodi	Jodhpur	Jodhpur
90	Kanchan Solanki	Chairman	Sheoganj	Sirohi	Jodhpur
91	Bhim Singh Dewal	Executive Officer	Sheoganj	Sirohi	Jodhpur
92	Reshal Singh	Junior Engineer	Sheoganj	Sirohi	Jodhpur
93	Neelkamal Singh	N/A	Sheoganj	Sirohi	Jodhpur
94	Ramesh Sundesha	Junior Engineer	Sheoganj	Sirohi	Jodhpur
95	Achal S Gurjar	RO	Sojat	Pali	Jodhpur
96	Dinesh Bhati	Junior Engineer	Sojat	Pali	Jodhpur
97	Sivpalsingh Rajput	N/A	Balotara	Barmer	Jodhpur
98	Parasmal Chouhan	N/A	Balotara	Barmer	Jodhpur
99	purushottam	N/A	Balotara	Barmer	Jodhpur
100	Ram Prasad Meena	Assistant Engineer	Merta city	Nagaur	Ajmer
101	Ramsukh Munshi	Vice Chairman	Merta city	Nagaur	Ajmer
102	Ram niwas	LDC	Merta city	Nagaur	Ajmer
103	Pintu Lal Jat	Executive Officer	Jahazpur	Bhilwara	Ajmer
104	Dharamveer	Junior Engineer	Jahazpur	Bhilwara	Ajmer
105	Hari Singh	Junior Engineer	Sarwar	Ajmer	Ajmer

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S No	Name of Participant	Designation	City	District	Division
106	Rishi Mathur	Junior Engineer	Sarwar	Ajmer	Ajmer
107	Ramkaran Sharma	Junior Engineer	Uniara	Tonk	Ajmer
108	Bharat Lal Meena	Executive Officer	Kekri	Ajmer	Ajmer
109	Devi Lal Verma	AAO II	Kekri	Ajmer	Ajmer
110	Mohit Khanna	Junior Engineer	Niwai	Tonk	Ajmer
111	Vikas	Executive Officer	Pushkar	Ajmer	Ajmer
112	Kamal Sharma	Revenue Inspector	Pushkar	Ajmer	Ajmer
113	Arvind Kumawat	UDC	Ladnu	Nagaur	Ajmer
114	Sita Verma	CO	Kishangarh	Ajmer	Ajmer
115	Dharmendra K Meena	Assistant Engineer	Kishangarh	Ajmer	Ajmer
116	Sanju Kumari	Assistant Engineer	Kishangarh	Ajmer	Ajmer
117	Ram Lal Choudhary	CO	Kuchera	Nagaur	Ajmer
118	Anil Kumar Saini	LDC II	Kuchera	Nagaur	Ajmer
119	Kamlesh	Junior Engineer	Kuchera	Nagaur	Ajmer
120	N/A	Chairman	Mundwa	Nagaur	Ajmer
121	Rupesh	CO	Mundwa	Nagaur	Ajmer
122	Kuldeep Jorwal	Junior Engineer	Tonk	Tonk	Ajmer
123	Rinku Dangi	Junior Engineer	Tonk	Tonk	Ajmer
124	Soumya Jingar	Assistant Engineer	Asind	Bhilwara	Ajmer
125	Mahendra Singh Charan	Executive Officer	Parbatsar	Nagaur	Ajmer
126	Jayprakash Paliwal	Junior Engineer	Parbatsar	Nagaur	Ajmer
127	Sabbir Husain	Executive Officer	Mandalgarh	Bhilwara	Ajmer
128	Tej Bhan Singh	Assistant Revenue Inspector	Mandalgarh	Bhilwara	Ajmer
129	Ashok Kumar Bhatt	UDC	Mandalgarh	Bhilwara	Ajmer
130	Anil Jatav	Assistant Engineer	Makrana	Nagaur	Ajmer
131	Sahadev Charan	Executive Officer	Didwana	Nagaur	Ajmer
132	Jitendra Kumar Meena	Assistant Engineer	Didwana	Nagaur	Ajmer
133	Mahendra Yadav	Junior Engineer	Nasirabad	Ajmer	Ajmer
134	Ganpat Lal Khatik	Executive Officer	Nasirabad	Ajmer	Ajmer
135	Shivnarayan Pal	Assistant Engineer	Gulabpura	Ajmer	Ajmer
136	Deependra Singh	Junior Engineer	Bijainagar	Ajmer	Ajmer
137	Narendra Singh Choudhary	Sanitation Inspector	Nagaur	Nagaur	Ajmer
138	Islam Khan	Vice-Chairman	Nagaur	Nagaur	Ajmer
139	Rakesh Kumar Sharma	Executive Officer	Kuchaman City	Nagaur	Ajmer
140	Anil Saini	Junior Engineer	Kuchaman City	Nagaur	Ajmer
141	Kishanlal Kumawat	Executive Officer	Nawa	Nagaur	Ajmer
142	Makbool Ahmed	Junior Engineer	Nawa	Nagaur	Ajmer
143	Rakesh Kumar	N/A	Gangapur	Bhilwara	Ajmer
144	Jeetram Jat	Assistant Engineer	Bhilwara	Bhilwara	Ajmer
145	Devi Lal	LDC	Bhilwara	Bhilwara	Ajmer

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S No	Name of Participant	Designation	City	District	Division
146	Pramod Jangid	Executive Officer	Sardarshahar	Churu	Bikaner
147	Pramod Kumar Mali	LDC	Sardarshahar	Churu	Bikaner
148	Suresh Chauhan	Executive Officer	Chhapar	Alwar	Jaipur
149	Sandeep Kumar	Executive Officer	Sangaria	Hanumangarh	Bikaner
150	Ankur Goswami	Assistant Engineer	Sangaria	Hanumangarh	Bikaner
151	Surendra Pratap Singh	Junior Engineer	Sangaria	Hanumangarh	Bikaner
152	Nathu Soni	Chairman	Sangaria	Hanumangarh	Bikaner
153	Nisha Singhal	Assistant Engineer	Hindaun city	Karauli	Bharatpur
154	Naresh Kumar	Executive Officer	Kesrisinghpur	Ganganagar	Bikaner
155	Kaloo Ram	Chairman	Kesrisinghpur	Ganganagar	Bikaner
156	Deepak Kumar	AAO	Kesrisinghpur	Ganganagar	Bikaner
157	Anil Jatav	Commissioner	Makrana	Nagaur	Ajmer
158	Rajendrapal Singh Rathore	Junior Engineer	Sagwara	Dungarpur	Udaipur
159	Mileen Meena	LDC	Sagwara	Dungarpur	Udaipur
160	Shakti Singh	Commissioner	Rajgarh	Alwar	Jaipur
161	Sumer Singh	Executive Officer	Rajgarh	Alwar	Jaipur
162	Dinesh Kumar	Assistant Engineer	Churu	Churu	Bikaner
163	Ramkishore Maheshwari	Executive Officer	Bhusawar	Bharatpur	Bharatpur
164	Yogesh Kumar Pipal	Executive Officer	Bayana	Bharatpur	Bharatpur
165	Karan Singh	Junior Engineer	Bayana	Bharatpur	Bharatpur
166	Reshu	Assistant Engineer	Alwar	Alwar	Alwar
167	Menka Yadav	Junior Engineer	Alwar	Alwar	Alwar
168	Dharmveer	Junior Engineer	Jahazpur	Bhilwara	Ajmer
169	Dr. Banwarilala Meena	Executive Officer	Rajkhera	Dholpur	Bharatpur
170	Akash Kumar Sharma	LDC	Rajkhera	Dholpur	Bharatpur
171	Sarita Badsara	Executive Officer	Chirawa	Jhunjhunun	Jaipur
172	Khalid Balkhi	Councillor	Bidasar	Jhunjhunun	Jaipur
173	Sunil Soni	Junior Engineer	Bidasar	Jhunjhunun	Jaipur
174	Laxman Singh	LDC	Bidasar	Jhunjhunun	Jaipur
175	Narsi Lal Meena	Executive Officer	Nagar	Bharatpur	Bharatpur
176	Laxmi Jaiyaswal	Chairperson	Bandikui	Dausa	Jaipur
177	Girraj Saini	N/A	Bandikui	Dausa	Jaipur
178	Pankaj K Mangal	Executive Officer	Bandikui	Dausa	Jaipur
179	Lakhan Singh Gurjar	Junior Engineer	Bandikui	Dausa	Jaipur
180	Rajesh Upadhayaya	Executive Officer	Rupbas	Bharatpur	Bharatpur

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S No	Name of Participant	Designation	City	District	Division
181	Prashant Kumar Katara	Commissioner	Rupbas	Bharatpur	Bharatpur
182	Girish Kumar Kushwaha	BRS	Rupbas	Bharatpur	Bharatpur
183	Vinod Kumar Rana	LDC	Rupbas	Bharatpur	Bharatpur
184	Sandeep Mathur	Ex Engineer	Jodhpur	Jodhpur	Jodhpur
185	Praveen Kumar Sharma	Executive Officer	Rajaldesar	Churu	Bikaner
186	NK Agarwal	Ex Engineer	Jaipur	Jaipur	Jaipur
187	Ashwani Kumar	Junior Engineer	Sumerpur	Pali	Jodhpur
188	Vinod Savriya	LDC	Sumerpur	Pali	Jodhpur
189	Satish K Meena	Junior Engineer	Thakhatgarh	Pali	Jodhpur
190	Shambhu Lal Meena	Executive Officer	Pirawa	Jhalawar	Kota
191	Dharamraj Gurjar	Junior Engineer	Bhawani Mandi	Jhalawar	Kota
192	Manish Meena	Executive Officer	Bhawani Mandi	Jhalawar	Kota
193	Pinki Gurjar	Chairman	Bhawani Mandi	Jhalawar	Kota
194	Rinku Dangi	Junior Engineer	Tonk	Tonk	Tonk
195	Chand Prakash	Health Inspector	Tonk	Tonk	Tonk
196	Suresh Harit	LDC	Kaithun	Kota	Kota
197	Aaina Mahak	Chairman	Kaithun	Kota	Kota
198	Farida Begum	Councillor	Kaithun	Kota	Kota
199	Rambabu	N/A	Kaithun	Kota	Kota
200	Amit Singh	LDC	Rawatbhata	Chittorgarh	Udaipur
201	Rajesh Jaipal	Fire man	Rawatbhata	Chittorgarh	Udaipur
202	Manoj Malav	Executive Officer	Chhabra	Baran	Kota
203	Tarun Kumar	Junior Engineer	Chhabra	Baran	Kota
204	Vijesh Mantri	Executive Officer	Shahpura	Bhilwara	Ajmer
205	Jitendra Kumar	Revenue Inspector	Shahpura	Bhilwara	Ajmer
206	Som Mishra	Executive Officer	Sojat City	Pali	Jodhpur
207	Achal Singh Gurjar	Revenue Inspector	Sojat City	Pali	Jodhpur
208	Jagdish Lal	JAC	Sojat City	Pali	Jodhpur
209	Saddam Husain	Computer operator	Sojat City	Pali	Jodhpur
210	Ramesh Chand	N/A	Sojat City	Pali	Jodhpur
211	Suresh Kumar Meena	Executive Officer	Gangapur	Bhilwara	Ajmer
212	Manish Kumar	Junior Engineer	Gangapur	Bhilwara	Ajmer
213	Harish Chandra Gehlot	Executive Officer	Jaitaran	Pali	Jodhpur
214	Vikram Singh Chauhan	Junior Engineer	Jaitaran	Pali	Jodhpur
215	Narpat Singh	Executive Officer	Itawa	Kota	Kota

List of participants

S No	Name of Participant	Designation	City	District	Division
216	Ritesh Kumar Malav	LDC	Itawa	Kota	Kota
217	Ashif Ali	Computer operator	Itawa	Kota	Kota
218	Mahavir Gochar	Junior Clerk	Itawa	Kota	Kota
219	BM Singhal	Commissioner	Baran	Baran	Kota
220	Saurabh Gupta	Assistant Engineer	Baran	Baran	Kota
221	Kamal Rathore	Chairman	Baran	Baran	Kota
222	N/A	Revenue Officer	Baran	Baran	Kota
223	Shambhu	N/A	Baran	Baran	Kota
224	Deepak Meena	Junior Engineer	Bhiwadi	Alwar	Jaipur
225	Vikas Knnojia	Junior Engineer	Phalodi	Jodhpur	Jodhpur
226	Iqbal Lohar	Junior Engineer	Phalodi	Jodhpur	Jodhpur
227	Mahesh Bhati	Commissioner	Pokharan	Barmer	Jodhpur
228	Jhabbar singh	Commissioner	Jaiselmer	Jaisalmer	Jodhpur
229	Kavita Khatri	Chairman	Jaiselmer	Jaisalmer	Jodhpur
230	Kailash Khatri	Chairman	Jaiselmer	Jaisalmer	Jodhpur
231	Achyut	Assistant Engineer	Jaiselmer	Jaisalmer	Jodhpur
232	Ashok	Sanitation Inspector	Jaiselmer	Jaisalmer	Jodhpur
233	Vijay Charan	LDC	Kanore	Udaipur	Udaipur
234	Sumit Kumar	Junior Engineer	Kanore	Udaipur	Udaipur
235	Kundan detha	Executive Officer	Kanore	Udaipur	Udaipur
236	Suresh Jingar	Revenue Officer	Sirohi	Sirohi	Jodhpur
237	Sushil Purohit	ARI	Sirohi	Sirohi	Jodhpur
238	Suresh Sindal	Chairman	Abu Road	Sirohi	Jodhpur
239	Mahendra Singh	Executive Officer	Abu Road	Sirohi	Jodhpur
240	Suresh Dhingar	Chairman	Mount Abu	Sirohi	Jodhpur
241	Kunal Dabi	N/A	Mount Abu	Sirohi	Jodhpur
242	BR Joshi	Executive Officer	Bhinmal	Jalore	Jodhpur
243	Prema RamCHaudhary	Junior Engineer	Bhinmal	Jalore	Jodhpur
244	Saurabh Jindal	Commissioner	Jalore	Jalore	Jodhpur
245	Avinash Saxena	N/A	Jalore	Jalore	Jodhpur
246	Paranita Samariya	Assistant Engineer	Jalore	Jalore	Jodhpur
247	Mahesh Purohit	Executive Officer	Sanchore	Jalore	Jodhpur
248	Pawan Kumar	Revenue Officer	Barmer	Barmer	Jodhpur
249	Gaurav Singh	Assistant Engineer	Barmer	Barmer	Jodhpur
250	Ramesh Gurjar	Parshad	Barmer	Barmer	Jodhpur

List of participants

S No	Name of Participant	Designation	City	District	Division
251	Bhagwandas Gharu	Sanitation Inspector	Barmer	Barmer	Jodhpur
252	Seema Bhatiya	Chairman	Pindwara	Sirohi	Jodhpur
253	Nemi Chand	Executive Officer	Pindwara	Sirohi	Jodhpur
254	Rannchod Rawal	Councillor	Pindwara	Sirohi	Jodhpur
255	Kailash Rawal	Councillor	Pindwara	Sirohi	Jodhpur
256	Amarat Megwal	Councillor	Pindwara	Sirohi	Jodhpur
257	Surendra Mewara	Vice Chairman	Pindwara	Sirohi	Jodhpur
258	Juharmal Tak	Counillor	Pindwara	Sirohi	Jodhpur
259	Bharat Kumar	Counciilor	Pindwara	Sirohi	Jodhpur
260	Jaspal Singh	Junior Engineer	Pindwara	Sirohi	Jodhpur
261	Sanjay Garg	Councillor	Pindwara	Sirohi	Jodhpur
262	Mahendra Rajpurohit	Revenue Inspector	Pindwara	Sirohi	Jodhpur
263	Lajpal Singh	Commissioner	Nathdwara	Rajsamand	Udaipur
264	Lalji Meena	N/A	Nathdwara	Rajsamand	Udaipur
265	Nikesh Chauhan	Junior Engineer	Nathdwara	Rajsamand	Udaipur
266	Prabhulal Bhabor	Assistant Engineer	Banswara	Banswara	Udaipur
267	Kamal Acharya	N/A	Banswara	Banswara	Udaipur
268	Hari Singh	Clerk	Amet	Rajsamand	Udaipur

Goal

To build the capacity of cities and other stakeholders working in urban sanitation to ensure improved delivery of sanitation services through decentralized approaches

Thematic Areas

- Awareness and Advocacy
- Policy Advise
- Technical Support
- Developing Training Content and Modules
- Delivering Trainings
- Knowledge Building through Research and Learning events

What is SCBP

Sanitation Capacity Building Platform (SCBP) is an initiative of the National Institute of Urban Affairs(NIUA) for addressing urban sanitation challenges in India. The 3 year programme(starting 2016) is supported by a Gates Foundation grant. It is aimed at promoting decentralised urban sanitation solutions for septage and waste water management.

The Platform is an organic and growing collaboration of universities, training centres, resource centres, non-governmental organizations, consultants and experts. The Platform currently has on board CEPT University, CDD Society and BORDA, ASCI, AIILSG, UMC, ESF, CSE, WaterAid, CPR, iDECK, CSTEP and WASHi. The Platform works in close collaboration with the National Faecal Sludge and Septage Management Alliance(NFSSMA).

What we do

The Platform lends support to the Ministry of Housing and Urban Affairs (MoHUA), Government of India, by focussing on urban sanitation and supporting states and cities to move beyond the open defecation free (ODF) status by addressing safe disposal and treatment of faecal sludge and septage.

The Platform supports National Urban Sanitation Missions, States and Towns, by developing and sourcing the best Capacity Building, Policy Guidance, Technological, Institutional, Financial and Behaviour Change advise in favour of decentralised sanitation solutions.

How does the Platform work

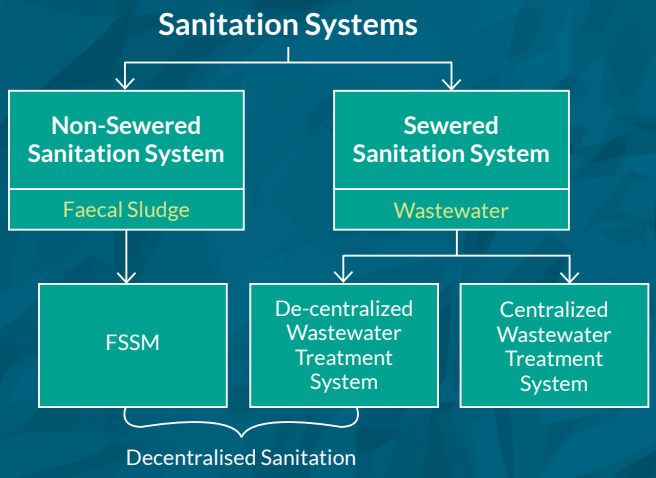
NIUA initiates and facilitates engagement of the SCBP Platform Partners at the State government level, for advocating and awareness generation for Faecal Sludge and Septage Management(FSSM). Followed by on demand support for capacity building and implementation of decentralised sanitation solutions at state and city level. SCBP promotes a four-module based Capacity Building support.

Publications and Reports

Why Decentralised Sanitation Solutions

Given that 49% of the urban population in India relies on on-site sanitation, such as septic tanks and pits, decentralized sanitation options, such as Faecal Sludge and Septage Management (FSSM) and Decentralized Wastewater Treatment Systems (DEWATS) are critical for achieving the goals for urban sanitation under various national missions. Decentralized sanitation options are scientifically proven solutions to complement centralized systems, serving the underserved, particularly in peri-urban areas and informal settlements.

FSSM is the collection and transportation of faecal sludge from the containment system, treatment of the sludge at a designated site, followed by safe disposal or reuse of the treated sludge. DEWATS uses sewers to convey domestic wastewater from a neighbourhood or local catchment to a small, local treatment plant where it is treated through natural processes without any requirement for external energy to operate the system.



Target Audience

All stakeholders ranging from National Missions, State and Town Officials(Public Health, Engineering and Administration), Elected Representatives, Private Sector Consultants and Vendors, NGOs, Academia, Masons and the Citizens at large.

The Platform provides a sharing and cross learning opportunity for SCBP Partners. To pool in their knowledge resources on all aspects of urban sanitation capacity building. Facilitates joint development of training modules, learning and advocacy material including developing Key Messages and Content. And a platform for sharing and dissemination of FSSM Research, Advocacy and outreach to State governments and Urban Local Bodies.

FSSM Capacity Building Focus

1. **State Level Capacity Building for FSSM**
2. **Institutional Capacity Building for FSSM at National Level**
3. **Evidence Based Advocacy for FSSM**

Training Modules Development under SCBP

- FSSM Training of Trainer Module
- Integrated waste Water and Septage Management Module
- FSSM Orientation Module and Handbook
- Orientation Module for ULB Elected Representatives
- Specialized Module(3 day Advanced Technical Training Module for FSSM)
- Specialized Module(3 day Advanced Technical Training Module on Integrated Waste Water and Septage Management)
- ODF and FSSM Training Module
- Consultants Training Module on FSSM DPR preparation
- FSSM Training Module for Masons
- Learning Material on International FSSM experience

All Modules and learning materials translated in Hindi

Technical Support

Assessments
- Capacity need assessments
- Sanitation situation assessment – IWWSMP, CSP, Rapid assessment of FSSM situation

DPR for FSSM
- DPR for FSSM
- Transation advisory support
- Support for incremental changes

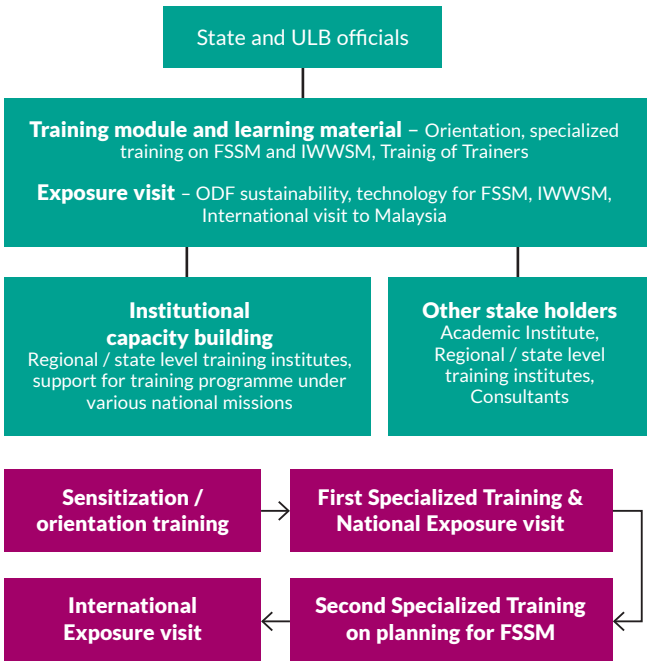
Policy Framework
- Review of legal and institutional framework
- Formulation of Policy / operational guideline / regulations for FSSM

1. State Level Capacity Building for FSSM

Supporting select State governments, their Para state Agencies, Towns and Urban Local Bodies

- Orientation and exposure visits for understanding septage and faecal sludge risks and challenges
- Institutional capacity strengthening through Training of Trainers programmes
- Four Modules Based FSSM Capacity Building Strategy

Capacity building activities are planned to cover all stakeholders involved in the FSSM value chain – government officials, elected representatives, masons, private sector and community



Capacity Building for FSSM : Uttar Pradesh (UP)

- **Developing the State FSSM Operations Policy Guideline (Draft)**
- **Exposure visits and Orientation on FSSM for SBM Director and ULBs**
- **Planning support.** Submission of Faecal Sludge Treatment Budget for 61 AMRUT towns for the State Annual Action Plan(SAAP)
- **Technical Support.** Development of the first DPR for an FSTP in the state(Unnao town), and adopted for other towns
- **State Nodal Agency Capacity Building.** Supporting RCUES Lucknow in conducting FSSM Training for ULBs and conducting independent research in new towns

Capacity Building for ODF and FSSM : Rajasthan

- **Division level ODF and ODF++ City Trainings.** Followed by Exposure visits to Maharashtra and Madhya Pradesh(conducted for 90 officials)
- **Four Module based FSSM capacity building strategy**
  - Sensitization/ orientation training for 191 ULBs (till date 250 officials trained)
  - First Specialized Training
    - *Integrated waste water management and exposure visit to Pune (conducted for 30 officials)*
    - *Technology option for FSM and exposure visit to Devanhalli (cities where DPR is planned)*
  - Second Specialized Training
    - *Planning and Financing of FSSM projects (planned for officials from 10-15 towns – for incremental improvements in managing septage and sludge, Assessments)*
  - International Exposure visit for State officials and ULB officials (planned)

2. Institutional Capacity Building for FSSM at National Level

Nodal AMRUT Agencies Capacity Building Support for FSSM Trainings

- Training of Trainers on FSSM Planning : Eight AMRUT Institutes faculty
- Training of Trainers on Integrated Waste Water & Septage Management : Ten AMRUT Institutes
- Four AMRUT training agencies supported for integrating Training on FSSM into AMRUT training frame work – covering 200 officials from 12 states
- Exposure visits on Feacal Sludge Treatment Plant(FSTP) visit : 80 officials from 7 states to Devanahalli
- Exposure visit and integrated Waste Water and Septage Management (IWWSM) Training in Pune
- Advanced FSSM Technology Training

Private Sector Capacity Building

- National Consultation on private sector engagement in FSSM held in 2017
- Study initiated for developing a strategy for supporting manufacturers, vendors and project management consulting companies capacity building strategy
- Training Module developed for Consultants capacity building

Supporting Academia

- National consultation held in 2017 for 20 Faculty members from 15 academic institutes, to orient them on FSSM and explore demand for support by the academia
- Specific University level support plans being developed
- Workshops for Training of Trainers (ToT) support for universities and institutes. For integrating FSSM content in existing course work
- Developing dedicated Modules and related support for research and internships for students
- Promoting a platform for learning and exchange, research and advocacy

3. Evidence Based Advocacy for FSSM

Collation of existing knowledge, promoting new research, documentation and dissemination and learning

- Developing Training Modules, appropriate for different contexts (States, FSSM Thematic priorities and Stakeholders)
- Collating and creating Advocacy and Knowledge resources for all stakeholders on different aspects of FSSM service chain
- Urban Sanitation Research on urban sanitation status, pro poor implications of existing and proposed plans : for the states of Madhya Pradesh, Odisha, Karnataka, Telangana, Jharkhand, UP, Rajasthan and Uttarakhand
- FSSM Workshops, Advocacy and Learning events : Financing, Technology and Life Cycle costs of FSSM projects, Monitoring, Behaviour Change, etc
- Landscaping Study of Septage Treatment initiatives. Documentation and dissemination experiences and lessons of setting up and operations of Faecal Sludge Treatment Plants
- Research and advocacy on thematic FSSM challenges : Legal and Institutional, Operations, Financing, etc

SCBP Publications and Reports

- Capacity Need Assessment for FSSM Report
- Assessment of FSSM for 100 small towns of Rajasthan
- City sanitation Plans for four AMRUT cities in Odisha
- Detailed Project Reports(DPRs) for FSSM for UP, Rajasthan and Bihar
- Draft FSSM Operations Policy for UP and Rajasthan
- Assessment of legal and Institutional Frame work for FSSM in Uttar Pradesh
- FSSM Training Modules(7)
- Workshop Reports :
  - Practitioners Meet on Capacity Building for FSSM
  - Private Sector in FSSM
  - Academia engagement for FSSM
  - ToT Workshops for Institutes
  - Exposure Visits to Maharashtra
  - Rajasthan State Workshop
  - Achieving ODF : Recommendations for Rajasthan

Key Results SCBP FSSM Capacity Building

State Level Capacity Building	• State FSSM Perspective (Rajasthan) • City Sanitation Plans(4 towns of Odisha) with FSSM perspective • 191 ULBs of Rajasthan supported for ODF and FSSM • 61 AMRUT towns of Uttar Pradesh supported for FSSM • First Detailed Project Reports (DPRs) for setting up Faecal Sludge Treatment Plants in 3 towns (Uttar Pradesh, Bihar & Rajasthan)
Institutional Capacity Building at National Level	• Capacity Building of Nodal AMRUT Institutes(5) • State para state agencies supported for Planning and Technology • Private sector engagement in FSSM • Academia engagement and curriculum advise • 200 officials from 12 states provided with FSSM trainings • 80 ULB officials from 7 states taken for exposure visits to the Devanhalli FSTP plant.
Evidence Based Advocacy	• Capacity Needs Assessment for FSSM undertaken for 3 states (Uttar Pradesh, Bihar and Andhra Pradesh) • Thematic and Spatial Research on Urban Sanitation • State FSSM Policy Drafts (Uttar Pradesh and Rajasthan) • Training Modules Developed (8) • National and State level Advocacy with NFSSM Alliance • Advocacy Factsheets • Workshops & Learning Events

About NIUA

NIUA is a premier national institute for research, capacity building and dissemination of knowledge in the urban sector, including sanitation. Established in 1976, it is the apex research body for the Ministry of Housing and Urban Affairs (MoHUA), Government of India.

NIUA is also the strategic partner of the MoHUA in capacity building for providing single window services to the MoHUA/states/ULBs.

The Institute includes amongst its present and former clients Housing and Urban Development Corporation, Niti Ayog, City and Industrial Development Corporation of Maharashtra, USAID, World Bank, Asian Development Bank, GIZ, UNICEF, UNEP, UNOPS, Cities Alliance, Bill & Melinda Gates Foundation, Rockefeller Foundation, Global Green Growth Institute, and Bernard van Leer Foundation.

Some of the major areas of work include:

- Provide research support to MoHUA
- Conduct research studies on contemporary urban issues
- Coordinate capacity building and training activities
- Disseminate information through networks and knowledge hubs
- Analyze and promote policy change agenda
- Monitor and evaluate Government of India's urban programmes/schemes

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