

National Workshop: Pathway Towards Inclusive and Responsible Sanitation Services (FSSM) in Uttar Pradesh

Venue: Directorate of Urban Local Bodies, Lucknow

September 29, 2022

Overview

The Workshop was Chaired by Mr. Ranjan Kumar, Mission Director-AMRUT, Ms. Reebha John, Additional Mission Director-SBM and Mr P K Srivastava, Additional Mission Director-AMRUT,.

Officials from 25 ULBs, CSE Team, Representatives from CWAS-CEPT University, Athena Infonomics, ASCI, CDD Society, PSI, NIUA, WaterAid and RCUES Lucknow (Detailed list of participants attached) have also attended the workshop.



Purpose of the workshop:

- A. Declaration of "Super 59" ULBs. To affirm the commitment of the state of UP by declaring the intent to create a batch of town of UP as "Super 59" towns in addressing FSSM. To commit to completing all pending works leading to completion, commissioning and hand over to the ULBs at the earliest. Part-1 of this initiative is focused on 25 towns of UP.
- B. Review of Model FSSM Bye-laws and study findings. Proposed Model FSSM Bye-laws prepared by CSE.
- C. Economics of Desludging Operations.



A. Launch of "Super 59 (Part-I)" FSSM towns of UP by Sh. Ranjan Kumar, Mission Director AMRUT and MD, Jal Nigam

Mr Ranjan Kumar, Mission Director, AMRUT highlighted the need and importance of Faecal Sludge and Septage Management and its Bye-laws at the city level. The Bye-laws need to be supported by community engagement and IEC campaign for awareness generation among the citizens. He also underlined the impact of climate change specifically on urban poor and marginalised communities.

Mr Ranjan Kumar heard the experience of Faecal sludge and Septage management (FSSM) in other states of India—from participants working in Telangana, Andhra Pradesh, Uttarakhand, Maharashtra and Karnataka and also from UP towns.



The following experiences were shared by participants:

- Centralised sewerage systems are expensive to construct and to maintain. Even the CPHEEO Sewerage Manual 2013 identifies challenges of centralised sewerage systems for Indian cities context (as it has been developed in Europe and US).
- Roads are dug out for repairs disrupting normal life and usually it takes a road at least 3 years to settle down.
- Experience of states varies.
 - All Odisha towns will have Faecal Sludge Treatment Plant (FSTP) infrastructure. Making FSSM a State Sanitation priority.
 - Andhra Pradesh promotes Hybrid Annuity Model (HAM) model of financing for FSSM.
 - Maharashtra issued state-level guidelines with the design options of 3 type of FSTPs and these are being implemented in 400 plus towns of the state.
 - Uttarakhand has issued a Protocol for FSSM and various advisories.
 - Tamil Nadu has identified small and medium towns to be covered with FSSM.

Mr Ranjan Kumar suggested, ULBs to adopt the model FSSM bye-laws, as per their local context, as soon as the model bye-law and the associated guideline is finalised.

Subsequently, Mr Ranjan Kumar, Mission Director AMRUT and Ms. Reebha John AMD, SBM officially launched the "Super 59" ULBs of Uttar Pradesh.

List of priority "Super 59" towns is enclosed in **Annexure 1**.

Ms. Reebha John, Additional Mission Director-SBM mentioned the names of 25 ULBs which are currently the frontrunner ULBs in the state and having their FSSM plants in operation stage She also presented the priority milestones to be achieved by the ULBs:

- Facilitation for formation of City Sanitation Task Force (CSTF)
- Gazette notification of the ULB level FSSM Bye-laws
- Ensuring regular sludge to the plants
- Conducting regular IECs for citizen engagement
- Taking steps for mobilizing funds for O&M

Mr P K Srivastava, Additional Mission Director-AMRUT stressed on the need of FSSM which is less capital intensive compared to STPs. He explained the gazette notification process which needs to be followed by each ULB. Mr Srivastava interacted and took the update from different ULBs. Various ULBs, namely Baraut, Sitapur, Bakshi ka Talab and Bijnor shared their work progress and challenges related to service delivery, accessibility, desludging services etc.



Action Points:

- All ULBs should aim for a Gazette notification of the ULB level FSSM Bye-laws. So far only Bijnor town has done this.
- DoUD will setup a protocol for regular monitoring of FSSM progress in the state
 - Follow up with the 25 ULBs in the next round, to identify last minute bottlenecks in completing the unfinished works, timely payment to the contractors and completing the works.
 - Follow up with the other ULBs also to ensure Super 59 .
- All ULBs to ensure regular emptying and conveyance of sludge to the treatment plants or Co-Treatment is being done.
- Funds mobilization to address O&M of FSTPs DoUD may issue advisory for use of 15th Finance Commission grants for paying for O&M of the FSTPs. This is already happening in Jhansi town
- Review and prioritise Co-Treatment Plants to become operational and remove bottlenecks in receiving septage at existing STPs.
- ULB officials capacity development for,
 - O&M of plants
 - Formation of City Sanitation Task Force for FSSM.
- Conducting regular IECs for citizen engagement

B. Review of Model FSSM Bye-laws and study findings on Economics of Desludging

Mixing of nutrients (faecal matter) from sanitation systems, into the natural water cycle, is the biggest emerging challenge. Mr Depinder Kapur, Director Water Programme, Centre for Science and Environment, New Delhi, drew attention to the need for a paradigm shift towards non-sewered sanitation and septage management. The preamble of the CPHEEO Manual (2013) has identified the shortcomings of centralised sewage systems for India. He pointed out that septage management is low energy intensive solution as compared to STPs and practiced nationally and internationally. He also highlighted the CSE's effort towards city wide inclusive sanitation. Key points of the presentation are in **Annexure 2**.

Session 1: State level FSSM Bye-laws Framework:

The need for Model FSSM Bye-Laws for ULBs of UP is considered as a priority by the DoUD officials and all participants. Currently there are 40 FSTPs and 22 Co-Treatment Plants available at various level of completion. The priority is to ensure that the new FSTPs and Co-Treatment infrastructures become



functional and start operations. All focus therefore is on designing FSSM Bye-laws that enable this outcome. However in doing this the City Wide Inclusive Sanitation (CWIS) agenda should not be lost. Septage management is not self-targeted to the poorest and most needy households. Hence the Bye-laws need to keep this in mind, and not focus simply on sustainable operations.

Mr Harsh Yadava from CSE presented the draft model of FSSM bye-laws for enhanced service delivery in urban local bodies. The model Bye-laws was prepared using the FSSM Bye-laws structure followed in Bijnor town and Odisha model FSSM Bye-Laws, as a base document and suitably adapted for UP towns. He presented the various sections, roles and responsibilities of different stakeholders.

Key points of the presentation are in **Annexure 3**.

Discussion points

The session was moderated by Mr P K Srivastava, Additional Mission Director-AMRUT. Following are the key discussion/suggestions for this session:

- ULBs need to contextualise the model Bye-laws as per their local context
- Identification of desludging operators, this can be done by the issuing a public notice
- ULBs can opt for free registration of desludging operator, to promote FSSM service
- Instead of penalising, model should be designed to incentivise the desludging operator
- ULBs shared their challenge in getting the sludge at the treatment plant
- Scheduled desludging is crucial for sustainability and should be promoted
- Streamlining the financial transaction in case of clustering/shared treatment facilities
- Deciding desludging fees is very critical and various factors like distance, volume of septage, local conditions, emptying frequency, paying capacity etc needs to be considered
- State can provide some guidance on the desludging fees (maximum and minimum limit)
- Planning for reuse/disposal of end products
- Inclusion of SHGs and convergence with different missions and departments like viz NULM, SUDA, NSKFDC etc
- A different and simplified mechanism should be in-place for partnering with SHGs or CBOs
- Consultation with elected representatives is vital
- For the sustainability of plants, community engagement and mobilisation is the key
- All ULBs can setup toll-free number for the desludging service request
- Differential pricing and effective cross subsidies to charge less fees in slum settlements
- MoU at district level can be proposed serving urban and rural both. This will ensure the sustainability of the plant
- ULBs should also plan for the O&M cost of FSTPs



Recommendations

1. FSSM Bye laws framework, content and structure. FSSM Bye-laws are to be issued by ULBs. State government will issue advisories and model FSSM Byelaws. The following was discussed:

- Department of Urban Development (DoUD) UP can develop FSSM Model Bye-laws to support towns to develop their own bye-laws. However these can vary based on the class of towns and their septage management issues.
- The bye-laws should have the proper language and hence will be good to develop them based on similar bye laws of other states
- Involve all stakeholders including private desludging operators, while framing the FSSM bye-laws.
- Where feasible consider inclusion of SHGs as operators of FSTPs.
- Provide for sludge to come from rural areas and also nearby towns (under an MoU to define some tipping fee for host ULB).

Action points:

- Consider the bye-laws of Uttarakhand addition to the Bijnor and Odisha FSSM Byelaws.
- Share the hindi version of bye-laws with for review and suggestion
- Add clause in FSSM bye-laws that further amendments to the bye-laws can be made by an official or a committee constituted for this purpose by the ULB.
- Add a clause in the bye-laws, for providing recognition/awards to desludging operators for good performance so that separate approval is not required.

2. Bye-laws approval process

- Due process needs to be followed for notification of FSSM Bye laws. If this is not done then anyone can go to court and challenge its implementation.

Action points:

- ULBs should not spend a lot of money for full page advertisement. Advertise just as an announcement, publish the whole document on website for review and input in a given template if possible.

3. FSSM Bye-laws should enable sustainable and affordable septage services

- Affordability of desludging services needs to be studied for towns of UP. Variable charges can be fixed accordingly in the Bye laws for commercial, residential (related to FAR) and institutional buildings.
- Private operators should be seen as an extended arm of the municipal authority's sanitation work.
- However if all the desludging services are left to the private sector then a sudden strike or cartelisation by private operators may disrupt desludging service

Action points:

- Under AMRUT, ULBs can procure 3 desludging vehicles. These should be purchased by ULBs. This would be beneficial for small ULBs where desludging frequency is low.

4. Should the Model FSSM Bye Laws recommend the fee for septic tank desludging? Should a cost range say INR 500 to INR 1500 be mentioned, for per septic tank emptying or per trip emptying?

- One opinion was that a range should be mentioned. As well as a slab-wise tariff for commercial and residential septic tank cleaning. This can also be suggested for different class of towns, by a more detailed examination of what is the existing desludging fees in these large, medium and small towns of UP; based on distance travelled if the FSTP is very far; affordability issues of low income households that need desludging services the most, and the viability of private desludging operators (their reasonable wages and profit).
- The other opinion was that the model FSSM Bye Laws should not suggest any desludging fee and leave it to the ULBs to decide.
- Fee rate per trip emptying may be better for UP towns, so that those with large septic tanks pay for more than one trip.

Action points:

- A desludging fee, as a range, can be included in the model FSSM bye laws.

5. Scheduled desludging vs demand desludging

- Experience of Maharashtra and Andhra Pradesh was in favour of scheduled desludging.
- Others were in favour of demand desludging, given the context of UP towns vs. other states (property tax regimes being different, capacity of ULB and enforcement challenges in UP).

Action points:

- Recommend scheduled desludging as best practice, leave it to ULBs to decide what they want to implement.

Mr Srivastava concluded the discussion by highlighting the key themes like desludging fees, service delivery to the urban poor, community participation etc.

C. Economics of Desludging Operations

The study aimed to understand the economics of desludging. At what scale of operations does it become viable for a private operator to operate a desludging vehicle in UP towns.

Mr Manish Mishra and Sarim from CSE presented the findings of the field study. The methodology of the study on economics of desludging was based on the study of 6 towns, where the FSTPs or Co-Treatment Plants are currently functional in UP. The findings of the study were based on interviews with key stakeholders, desludging operators, municipal officials and selected households of the sampled towns. Key points of the presentation are in **Annexure 4**.

Findings: Viability of truck operations

- Number of trips per day, distance of FSTP or Co-Treatment plant — are the two critical factors determining the viability of a single truck operation in desludging from septic tanks.
- At the operating capacity of 750 or more trips a year, a single vehicle operation is seen most economical and viable for the consumer (desludging fee) and the operator (profit)
- Hence for viable operations — increasing the number of desludging trips per day per vehicle is important. It will ensure lower cost, higher acceptance by the people and hence the viability of desludging operations.





- The desludging fee varies from as low as INR 500 per trip to INR 3,000.
- Government tankers operating costs are higher as compared to private tanker operators where both types are available.

Discussion points:

The session was moderated by Mr Sanjay Singh, Director, PSI. Following are the key discussion/ suggestions for this session:

- State/ULB should finalise the branding guidelines (like Malasur campaign) and all operators can follow the same for their desludging vehicles
- ULB can charge bare minimum amount for registration fees
- Few cities like Lucknow and Kanpur are already following the standard branding guidelines provide by the ULB
- ULB can support for creating an association of desludging operators for easy communication and consultation
- ULB should also procure desludging vehicle to provide the service and to avoid cartelisation by private operators
- NSKFDC can be looped in for the subsidies and loan to desludging operators
- Setting up the 14420 toll-free number for the desludging service is convenient to track all the desludging request
- Establishment of IT enabled system would help in monitoring and data analysis of desludging service
- There is a adequate septage desludging rate in UP towns. The challenge therefore is not of sludge emptying. The challenge is to ensure safe discharge/conveyance of sludge into treatment facility.
- Currently owing to longer distance of the plant from the town — the septage conveyance vehicles (mostly tractors and re -furbished tankers in UP), prefer to dump the septage somewhere else at shorter distance
- Cost of desludging operations needs to consider the cost of vacuum pump-sets and pipes for long distance emptying. This can be very expensive to maintain. In addition to the diesel and repairs of trucks.

Recommendations:

1. Make desludging operations regular

- The first priority is to make the FSTPs functional. Hence getting sludge reaching the plants is important. Even if a tipping fee is required to receive sludge, it could be considered.



Action points:

- Start with lower desludging fees. Less fee for those who desludge regularly (who desludge once in three years)
- Monthly rewards and incentives for desludging operations, like in Bijnor.
- Bulk generators could be targeted during the initial phase and getting septage regularly at the plant

2. Registration/Licensing Fee for private desludging operators and their vehicles

- Registration of vehicles and operators is useful if done with the motive of curbing indiscriminate disposal of faecal sludge and for holding the licenses to account for performance. Not as a revenue source for ULBs.

Action points:

- Minimal registration/licencing fee for private operators
- Licence fee can be used by ULB to paint the vehicle with signage of the Municipality, some slogans and messages and to provide PPE to workers.
- Incentivise private operators for good performance as is done in Bijnor where the sludge vehicle operators are rewarded for maximum sludge supply to the FSM Co-Treatment plant.

3. Larger considerations

- Desludging plan and bye-laws should be relooked every 3 years to make the required updation
- Need to draw conclusions for different class of ULBs in UP — not based on single truck operations viability but for different scale of operations, population size, affordability parameters.
- Consider welfare of sanitation workers as a priority.

Mr Sanjay Singh concluded the discussion by highlighting the most critical point of desludging fees and streamlining the desludging service in ULBs.

Vote of Thanks

The workshop was concluded with the vote of thanks by Mr Subrata Chakraborty, Senior Programme Manager, CSE. Mr Subrata thanked all the state and ULB officials and alliance partners for their valuable suggestions. He mentioned that the workshop could be held at that scale because of support of Ms. Neha Sharma, Director, Urban Local Bodies and Director, SBM. He mentioned that the CSE will work on the recommendations provided during the workshop and support ULBs for drafting and finalising the FSSM by-laws.

Glimpse of the workshop





Participants

S. No.	Name	Designation	Organization/ULB
GOVERNMENT REPRESENTATION			
1.	Ranjan Kumar (IAS)	Mission Director & Secretary	AMRUT
2.	Dr. Rajendra Pensiya (IAS)	Special Secretary	Department of Urban Development
3.	Reebha John (IAS)	Additional Mission Director	SBM (Urban)
4.	Nitin Gaur (IAS)	Municipal Commissioner	Ghaziabad
5.	Vaibhav Tripathi	Executive Officer	Sitapur
6.	Shrish Mishr	Executive Officer	Bakshi ka Talab
7.	Rajpati Bais	Executive Officer	Chunar
8.	Anuj Kaushik	Executive Officer	Baraut
9.	Sanjay Singh	District Programme Manager	Mirzapur
10.	Harish Kumar	District Programme Manager	
11.	Deepak Kumar	District Programme Manager	Lalitpur
12.	Komal Sharma	District Programme Manager	Lucknow
13.	Arunesh Mishra	Divisional Coordinator	SBM (Urban)
14.	Ajeet Singh	Divisional Manager	SBM (Urban)
15.	Manka Singh	Divisional Manager	SBM (Urban)
16.	Anand Kumar	Divisional Manager	SBM (Urban)
17.	Vipin Patel	Divisional Coordinator	SBM (Urban)
18.	Richa Kalra	Divisional Coordinator	SBM (Urban)
19.	Vaibhav Pandey	State Data Analyst	SBM (Urban)
20.	Shefali Srivastava	Environmental Expert	SMCG
21.	Vikas Chauhan	Assistant Engineer	Rampur
22.	Umesh Kumar	Junior Engineer	Jal Kal, Shahjahanpur
23.	Dinesh Kumar	Sanitary & Food Inspector	Loni
24.	Govind Chaudhary	Sanitary & Food Inspector	Bijnor
25.	Lalmani	Sanitary & Food Inspector	Chunar
26.	Jai Kumar	Engineer	Jal Kal, Ayodhya
27.	Himanshu Chandra	Assistant Director	RCUES, Lucknow
28.	Pawnesh Tripathi	Assistant Director	RCUES, Lucknow
NATIONAL LEVEL REPRESENTATION			
1.	Nanhakoo Seroj	District Coordinator	WaterAid
2.	Manohar Reddy	State Mission Officer	ASCI
3.	Neelgiri Emmanuel	Program Manager	ASCI
4.	Gauri Srivastava	Programme Officer	NIUA
5.	Ajeet Kumar Sharma	City Implementation Lead	PSI
6.	Aditi Dwivedi	Program Lead	CWAS- CEPT
7.	Sandhya Hanibal	Senior Program Manager	CDD Society
8.	Bhitush Luthra	Principial Consultant	Athena Infonomics

9.	Farrukh R. Khan	State Program Director	WaterAid
10.	Shubham Saxena	State Project Coordinator	Geostat Informatics
11.	Depinder Singh Kapur	Director	CSE
12.	Subrata Chakraborty	Senior Programme Manager	CSE
13.	Pavan Kumar	Programme Manager	CSE
14.	Hari Prakash Hahyvanshi	Deputy Programme Manager	CSE
15.	Dhruv Pasricha	Deputy Programme Manager	CSE
16.	Umra Anees	Programme Officer	CSE
17.	Harsh Yadava	Senior Research Associate	CSE
18.	Shivani	Senior Research Associate	CSE
19.	Sarim	Senior Research Associate	CSE
20.	Manish	Senior Research Associate	CSE

Annexure 1

SUPER 59 TOWNS

Eligibility:

A group of frontrunner ULBs where FSSM infrastructure is 100 % and are ready to accept faecal load

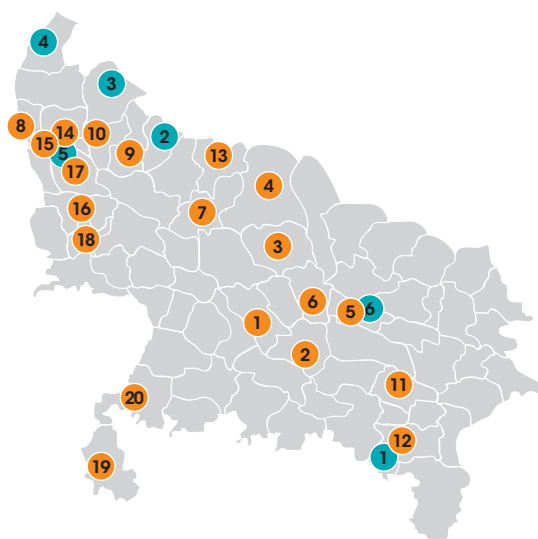
ULBs in Super 59 Part I

● FSTP

- | | |
|--------------------|---------------|
| 1. Unnao | 11. Jaunpur |
| 2. Raebareli | 12. Chunar |
| 3. Sitapur | 13. Pilbhit |
| 4. Lakhimpur | 14. Loni |
| 5. Ayodhya | 15. Modinagar |
| 6. Bakshi ka Talab | 16. Aligarh |
| 7. Shahjahanpur | 17. Khurja |
| 8. Baraut | 18. Hathras |
| 9. Moradabad | 19. Lalitpur |
| 10. Amroha | 20. Jhansi |

● Co-treatment

1. Mirzapur
2. Rampur
3. Bijnor
4. Saharanpur
5. Ghaziabad
6. Ayodhya



Proposed support to ULBs

- Facilitation for formation of City Sanitation Task Force (CSTF)
- Gazette notification of the ULB level FSSM Bye-laws
- Ensuring regular sludge to the plants
- Conducting regular IECs for citizen engagement
- Taking steps for mobilising funds for O&M

BYE-LAWS FOR FAECAL SLUDGE AND SEPTAGE MANAGEMENT IN TOWNS OF UTTAR PRADESH

Overview

- Objective of the study
- Methodology for the study
- UP state scenario with FSSM Bye-Laws
- Components of Bye-Laws
- Model FSSM Bye-Law Structure and features
- Procedure for Gazette Notification of FSSM Bye-Laws (Bijnor Case)
- Action for ULBs for FSSM Bye-Laws constitution
- Open discussion

Objective of the Study

- To create a guidelines cum framework for formulation of faecal sludge and septage management Bye-Laws.
- To develop a model bye-laws for Faecal Sludge and Septage Management Bye-Laws template that can be used by any city of Uttar Pradesh

Methodology

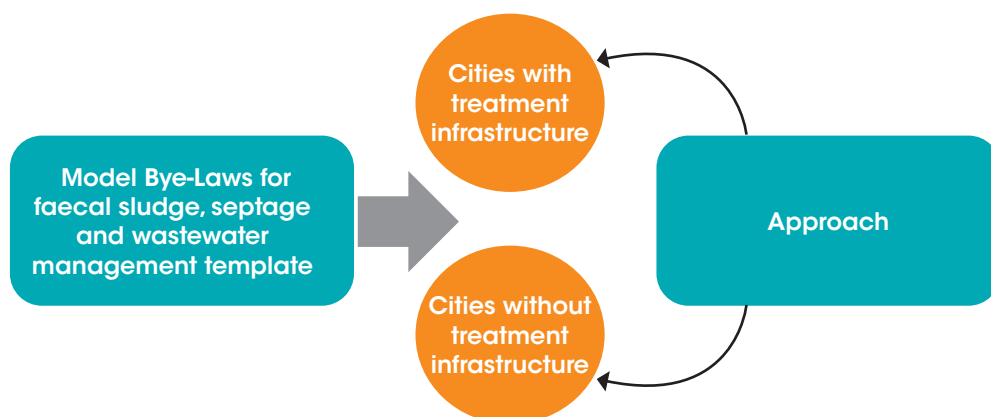


Reviewed Bye-Laws:

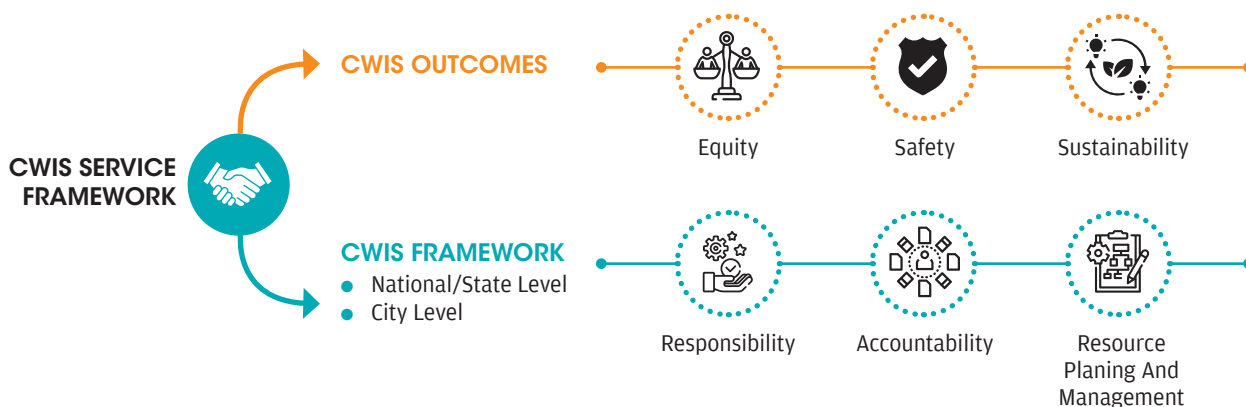
- Odisha FSSM Bye-Laws Gazette (adopted the structure)
- Tamil Nadu Government Gazette, 2022, Bye-laws on Faecal Sludge and Septage Management.
- Policy on Faecal Sludge and Septage Management, 2018, Government of Telangana.
- Bye-laws for Faecal Sludge and Septage Management (FSSM), 2020, as per, The Uttrakhand State Protocol for Septage Management.
- Bijnor Faecal Sludge, Septage and Wastewater Management Bye-Laws, 2022, Gazette Notification, Government of Uttar Pradesh.
- Draft Septage Management Bye-Laws, Manapparai Municipality 2020, Tamil Nadu
- Guidelines for Faecal Sludge and Septage Management in Uttar Pradesh, 2018, Centre for Science and Environment, New Delhi.
- FSSM Policies of Telangana, Maharashtra, Jharkhand, and Rajasthan.

Approach

To enable all the ULB s of Uttar Pradesh State to create skeleton for FSSM!

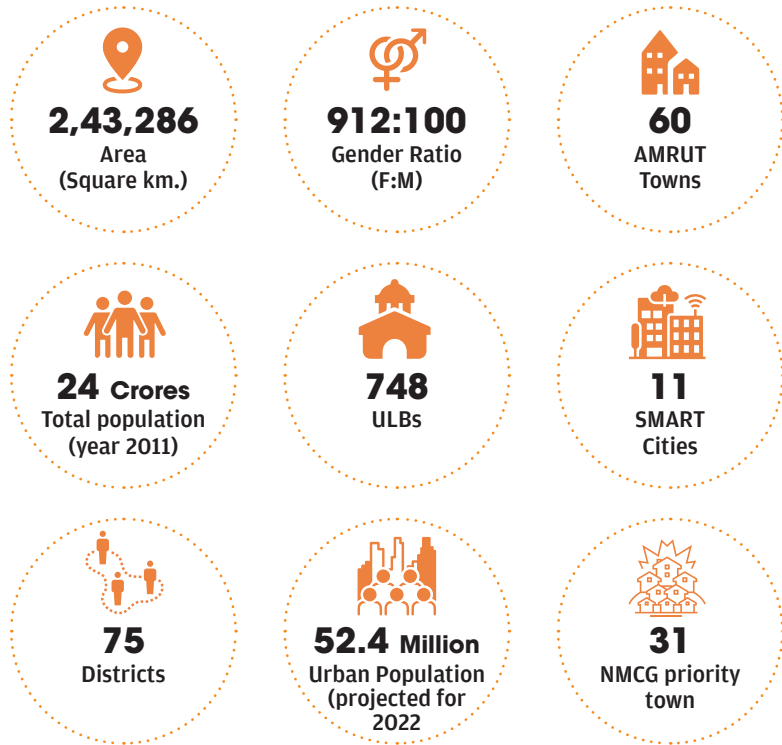


Why we are discussing these Bye-Laws as CWIS Vision

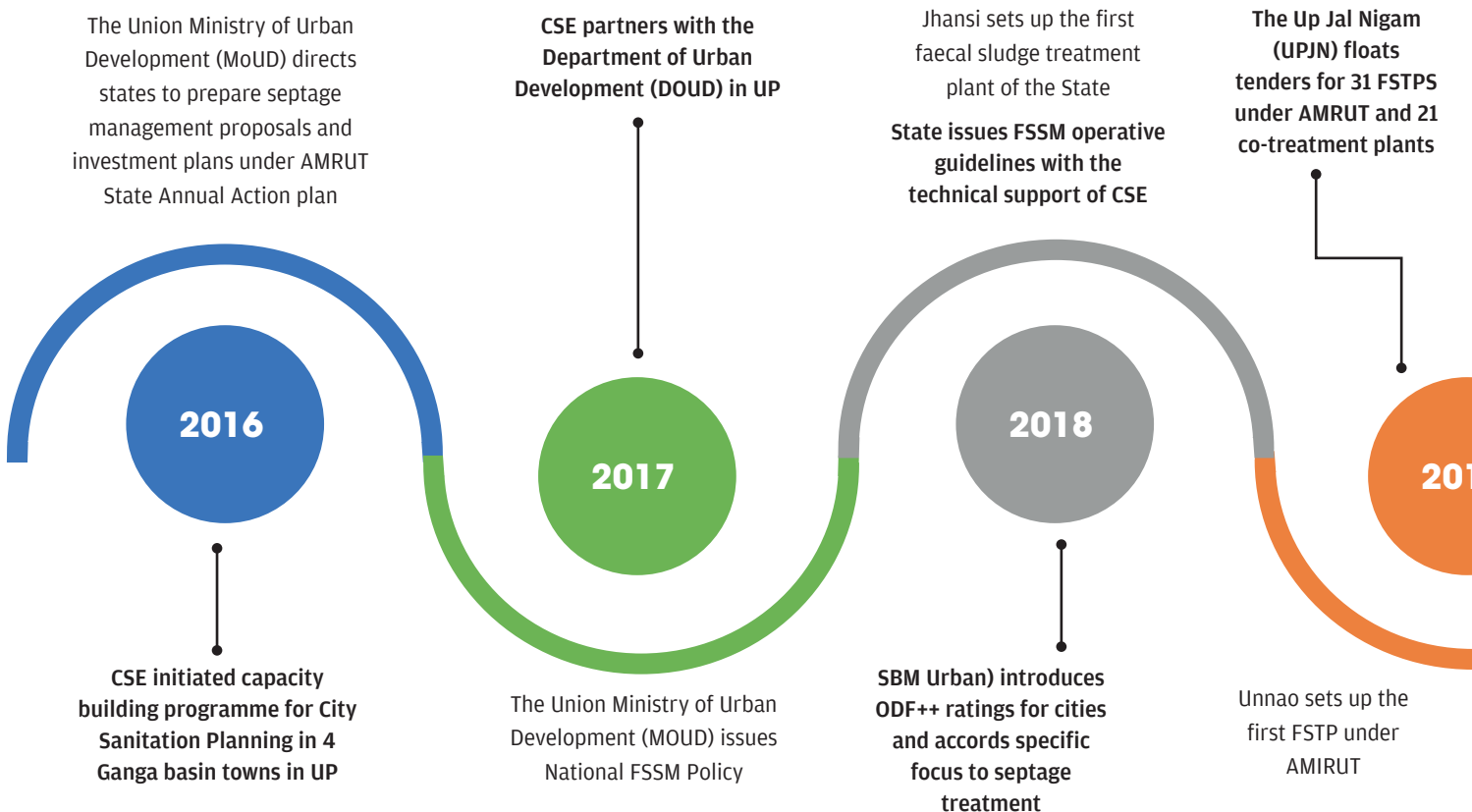


Citywide Inclusive Sanitation (CWIS) is a public service approach to advance Equitable, Safe, and Sustainable outcomes, by strengthening the design and implementation of core public system functions of Responsibility, Accountability, and Resource Planning and Management.

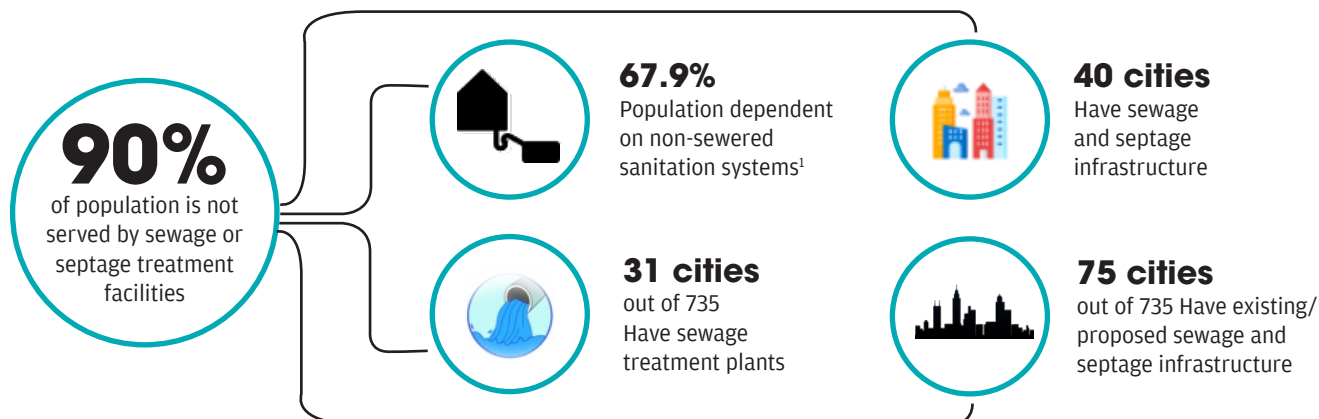
Uttar Pradesh State: Sanitation Profile



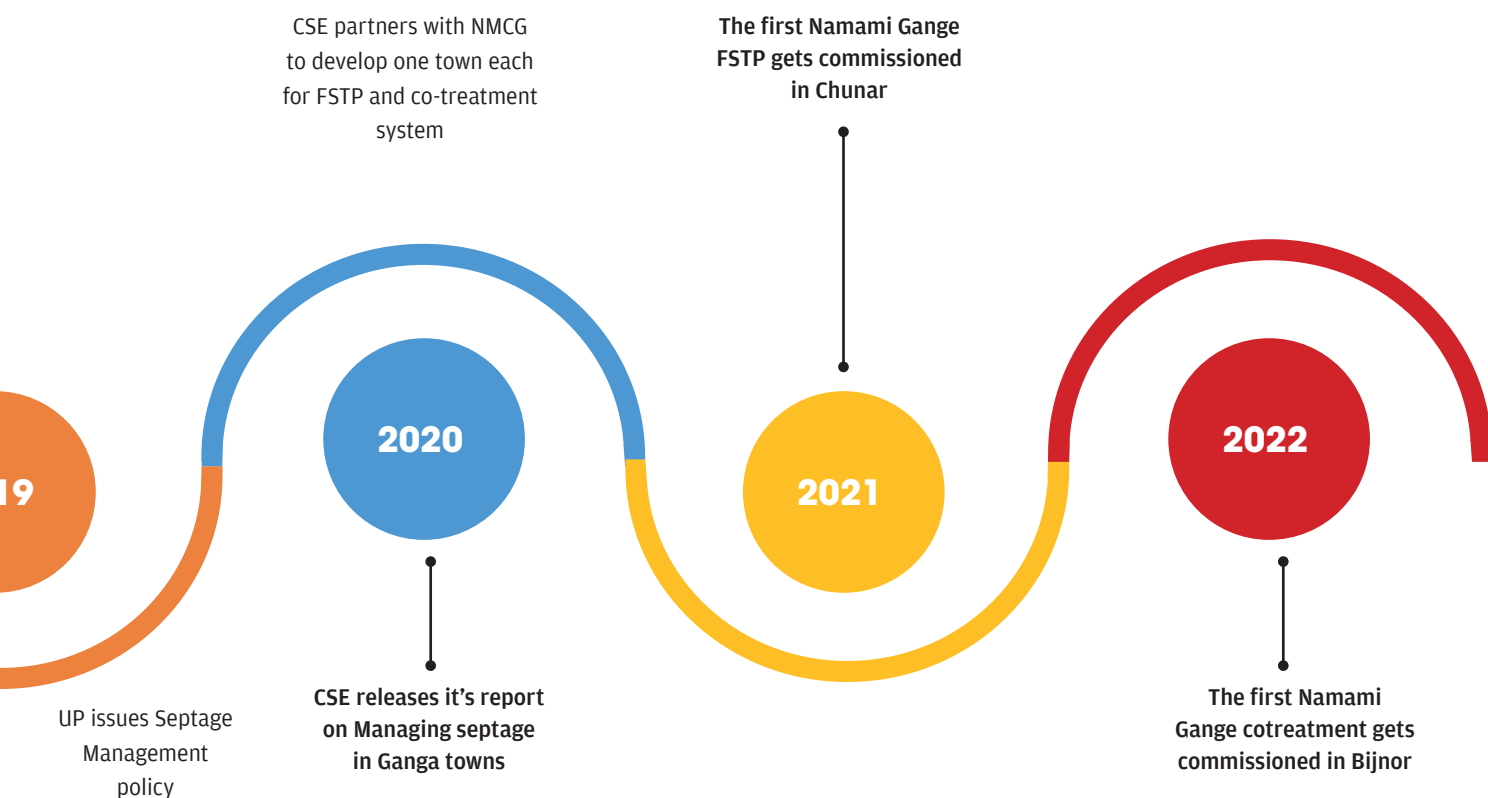
UP State: Faecal Sludge Management Journey



Urban Sanitation Status



1. Estimated using extrapolated population dependent on non-sewered sanitation systems, considering data provided in Census 2011



Annexure 2

WHY SEPTAGE MANAGEMENT: CHALLENGES AND OPPORTUNITIES FOR UTTAR PRADESH (Depinder Kapur)

Investment in septage treatment infrastructure

Total investment : **Rs 220 crore** | Std capacity of FSTP : **32 KLD**

Investment in FSTPs

Funding source	Total FSTPs (numbers)	Total capacity (KLD)	Total cost (Rs crore)
AMRUT	36	1152	181.55
ULB	3	43	6.09
NMCG	1	10	2.70

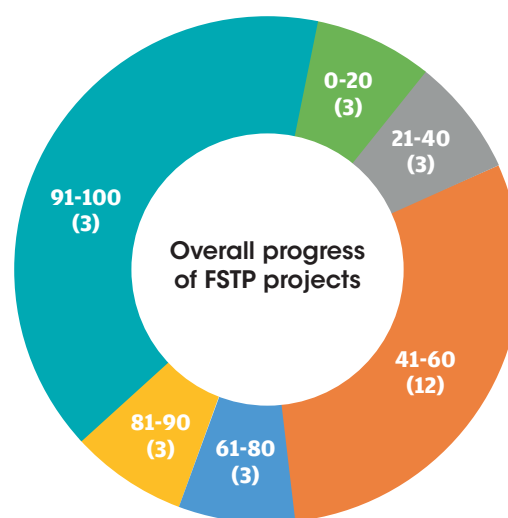
Investment in co-treatment plant

Funding source	Total plants (numbers)	Total capacity (KLD)	Total cost (Rs crore)
AMRUT	21	850	30
NMCG	1	20	0.4

Source: CSE analysis based on UPJN data

Construction Status of FSTPs : status June 2022

<p>0-20 AMRUT PDDU nagar, Maunath Bhanjan, Azamgarh</p>	<p>21-40 AMRUT Banda, Shikohabad, Akbarpur</p>
<p>41-60 AMRUT Jaunpur, Bahraich, Hardoi, Fatehpur, Khurja, Shamli, Jhansi, Lalitpur, Orai, Badaun, Chandausi, Deoria</p>	<p>61-80 AMRUT Gonda, Farrukhabad, Basti</p>
<p>81-90 AMRUT Pilibhit, Shahjahanpur, Baraut</p>	<p>91-100 ULB/15th FC: Jhansi (2), Bakshi ka Talab NMCG: Chunar AMRUT: Unnao, Aligarh, Ayodhya, Moradabad, Hathras, Hapur, Amroha, Sitapur, Loni, Modinagar, Lakhimpur, Raebareli</p>



Source: CSE assessment

Report Recommendations :

- Last mile physical connectivity:** Most of the plants are in the completion stage. Timely release of final payments, following quality control checks, is required. All-weather road connectivity to FSTPs will ensure access for desludging trucks and tankers.
- O&M cost recovery by private operators:** Financial viability of the FSTPs will be a challenge if the desludging fee charged from households is kept very high — as per the tender document, a desludging fee of Rs 2,500 is to be charged from a household. It discourages the households from regular desludging.

- **Adequate quantity and frequency of sludge at treatment facility:** These systems are based on biological processes, and hence an adequate quantity of sludge as per design and in a regular frequency is a must. An effective and affordable desludging plan is required for each town.
- **Dedicated septage management cell/nodal officer at state level:** Such a cell/ officer, preferably in the Uttar Pradesh Department of Urban Development (DoUD), can help coordinate all work related to overseeing construction, quality control and quality assurance, O&M, policy rollout, planning and monitoring. This will go a long way in sustainability of the work done and in effective upscaling of septage management all across the 734 towns of UP.
- **Enabling policy, capacity development and behaviour change communication:** Desludging bye-laws are needed at the state and ULB levels. These bye-laws should promote regular desludging of septic tanks at a minimal fee, and ban indiscriminate dumping of sludge in the open. A capacity building strategy should embed the current work priorities including designing and operation and maintenance (O&M) works, integrated wastewater and septage management (as per SBM 2.0), occupational health and safety, social and community behavior change.
- **Avoid indiscriminate combination of hybrid septage treatment chains in FSTPs**

Why Septage Management:

CPHEEO Manual 2013 says : in Preamble

It is also necessary to recognize that the practice of piped sewer collection is an inheritance from advanced countries with high water usages, which permit adequate flushing velocities. Due to their high per capita water supply rates, the night-soil does not settle in pipes and hence no choking and no sulphide gas generation.

Whereas, in the Indian scenario, the per capita water supply is low and inequitable in many cities and that too intermittent and this results in settling down of night-soil in the sewers, choking, gasification, etc., which necessitates very often the extreme remedies of cutting open the roads to access and break open the pipes for rectification and so on.

CPHEEO Manual 2013

- Almost all local bodies not being financially resourceful to self-generate the required capital funds
- Lack of institutional arrangements and capacity building to conceive planning, implementation, procurement of materials, operate and maintain the sewerage system and sewage treatment plants (STP) at the desired level of efficiency
- The fact that the collected sewage terminates far away beyond the boundaries of the ULB and is an "out of sight, out of mind" syndrome
- The high cost of infrastructure investment, continual replacement and on-going O&M costs of centralized sewerage system (CSS) facilities take these systems beyond the financial grasp of almost any ULB in the country

Why Faecal or Septage management is important

Benefits of Septage Management

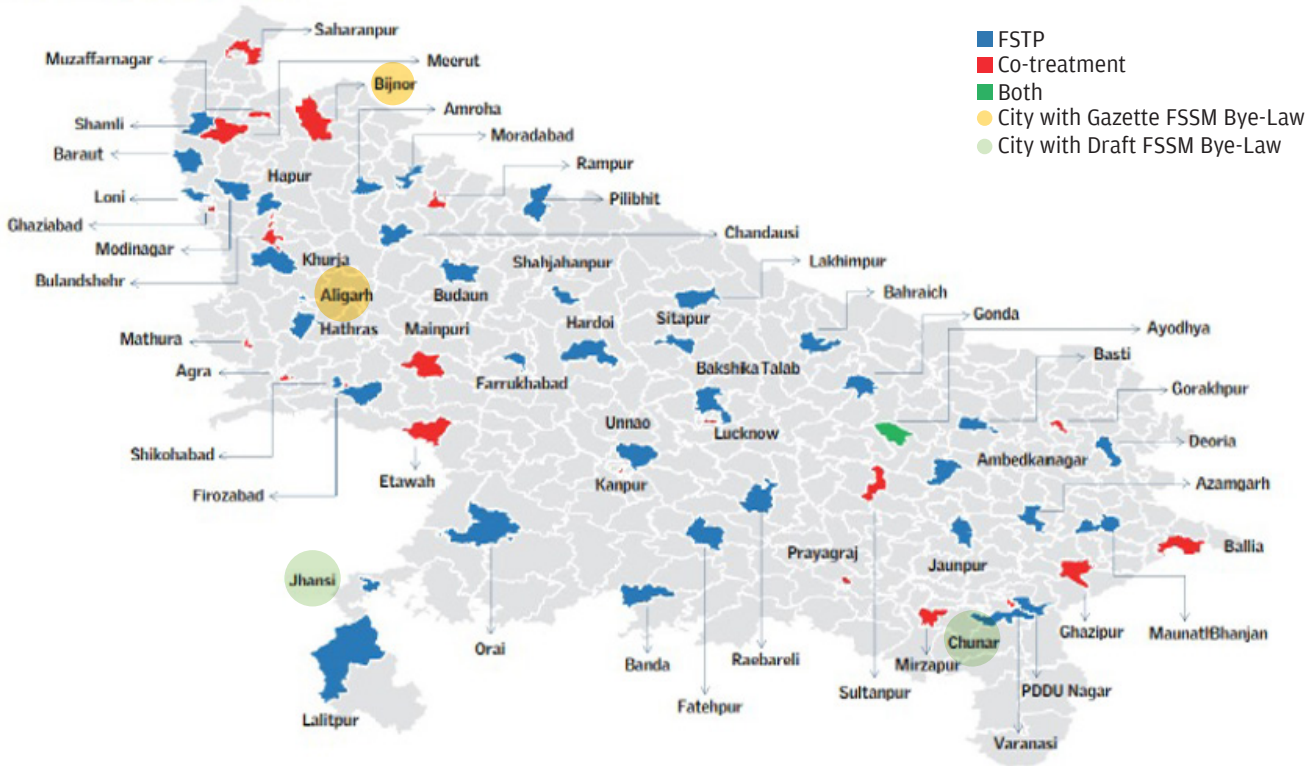
- Low O&M and Energy cost: as compared to STPs
- Low energy use-global warming impact
- Decentralised Systems : river pollution impact is minimal
- centralized systems releasing even 30 BOD treated waste water from 100 or 200 MLD
- Expanding Indian cities-expanding sewerage systems a challenge

National & International Experience

- Denmark has ASP treatment plants still working, with additional set ups
- New technology should not mean high cost infrastructure
- Malaysia and Indonesia : Septage systems
- Odisha : FSSM, Septage Management in all cities, even Bhubaneshwar.
- If Sewage Systems are subsidised—for O&M and for sewerage transport—why not FSTPs?

Annexure 3

FAECAL SLUDGE & SEPTAGE MANAGEMENT BYE-LAWS (Harsh Yadava)



Source: Uttar Pradesh Jal Nigam

Currently Uttar Pradesh state has an Uttar Pradesh Septage Management Policy, 2019 which articulates following three septage management (SM) visions:

"By end of 2023, all ULBs have implemented SM solutions in an inclusive manner empowering all stakeholders in the process."

State workshop on Septage Management to City Wide inclusive Sanitation (29th July, 2022)

Total Participants: 150+ | Total ULBs present: 50+



Launch of report

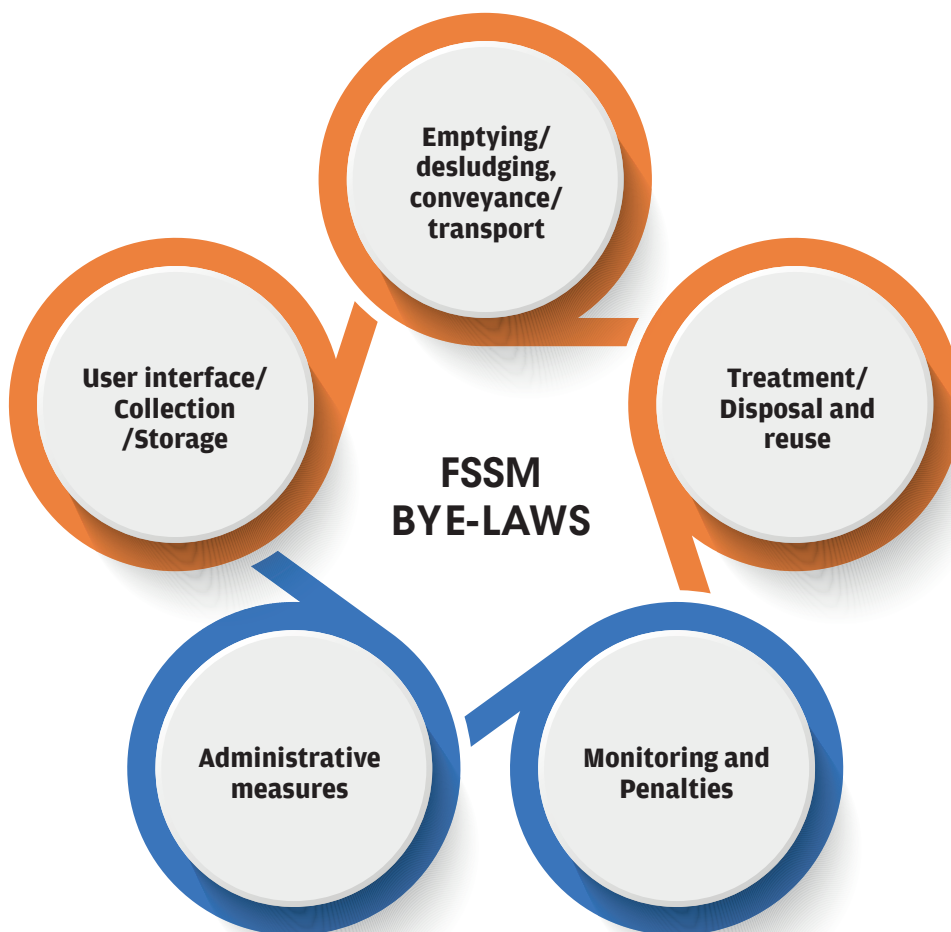


- The state is under the process of operationalizing 60+ FSSM projects.
- The study "Septage Management for Citywide Inclusive Sanitation in Uttar Pradesh" assess the sustainability of these 60+ FSSM projects (launched on 29 July)
- It sees formation of FSSM Bye-Laws as a priority capacity building and behavior change communication factor.
- Priority for ULBs in terms of Responsibility and Accountability

Structure of Bye-laws

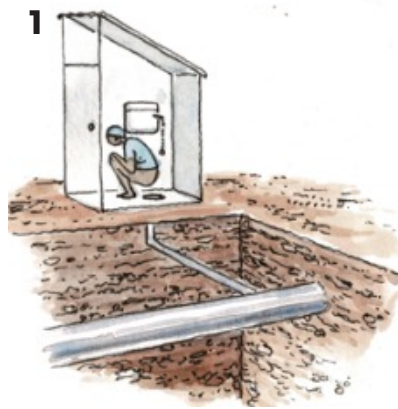
- Management and disposal of wastewater from the premises of a property.
- Onsite Sanitation Systems:
 - a) Duties and compliance by owner or occupier.
 - b) Designs, constructions and maintenance of OSS
- Licensing and registration for collection and transport of FSS:
- Desludging/ Collection and transportation of FSS:
- Disposal of Faecal Sludge Septage (FSS):
 - a) Duties of ULB with treatment facility;
 - b) Duties of ULB without treatment facility;
- Treatment & Reuse/Safe Disposal of Faecal Sludge and Septage (FSS):
 - a) Identification of treatment/disposal site.
 - b) Possible options in case of no treatment facility-
 - i) Cluster Approach
 - ii) propose for treatment with interim plan.
- Administrative Measures:
 - a) administration and enforcement of Bye-Laws;
 - b) Monitoring, Penalties for contravention, Authority and powers with ULB to ensure compliance.

Components of Bye-Laws

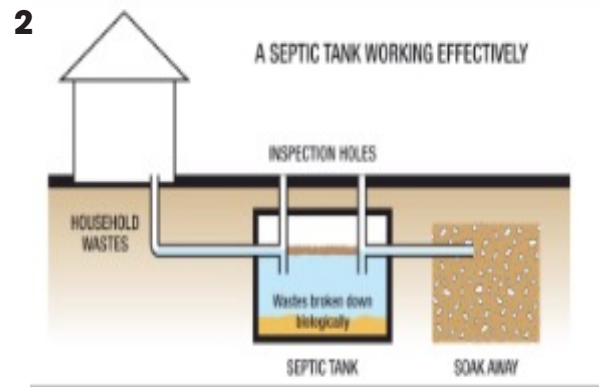


User-interface/collection/storage (constitution)

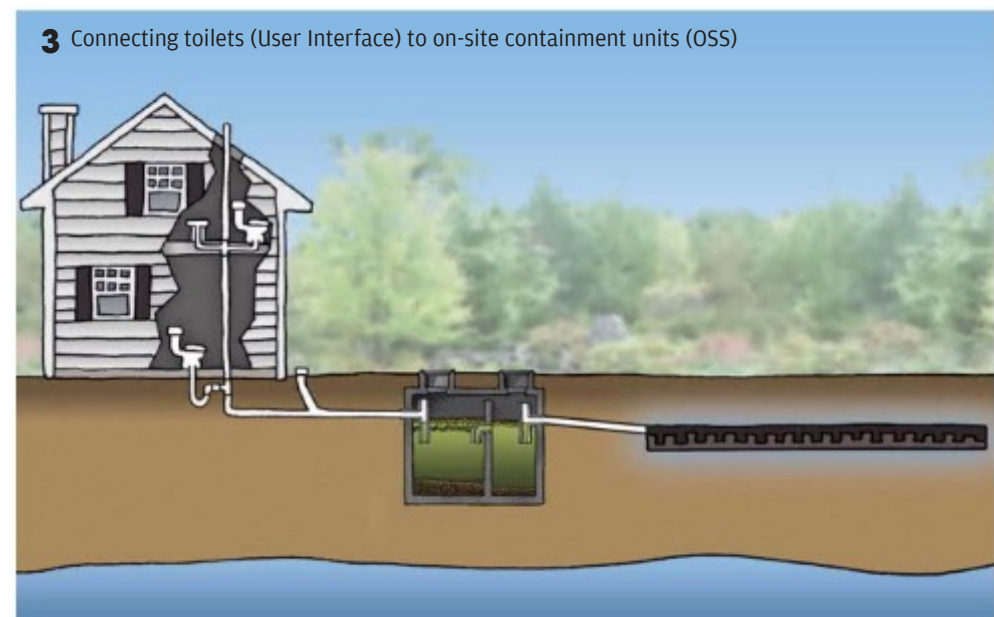
Management and disposal of wastewater from the premises of a property - following ways proposed



1. If the city has a sewerage system then connecting all the toilets of the property (user interface) to sewers



2. Connecting toilets (User Interface) to decentralized treatment units like soak-pits

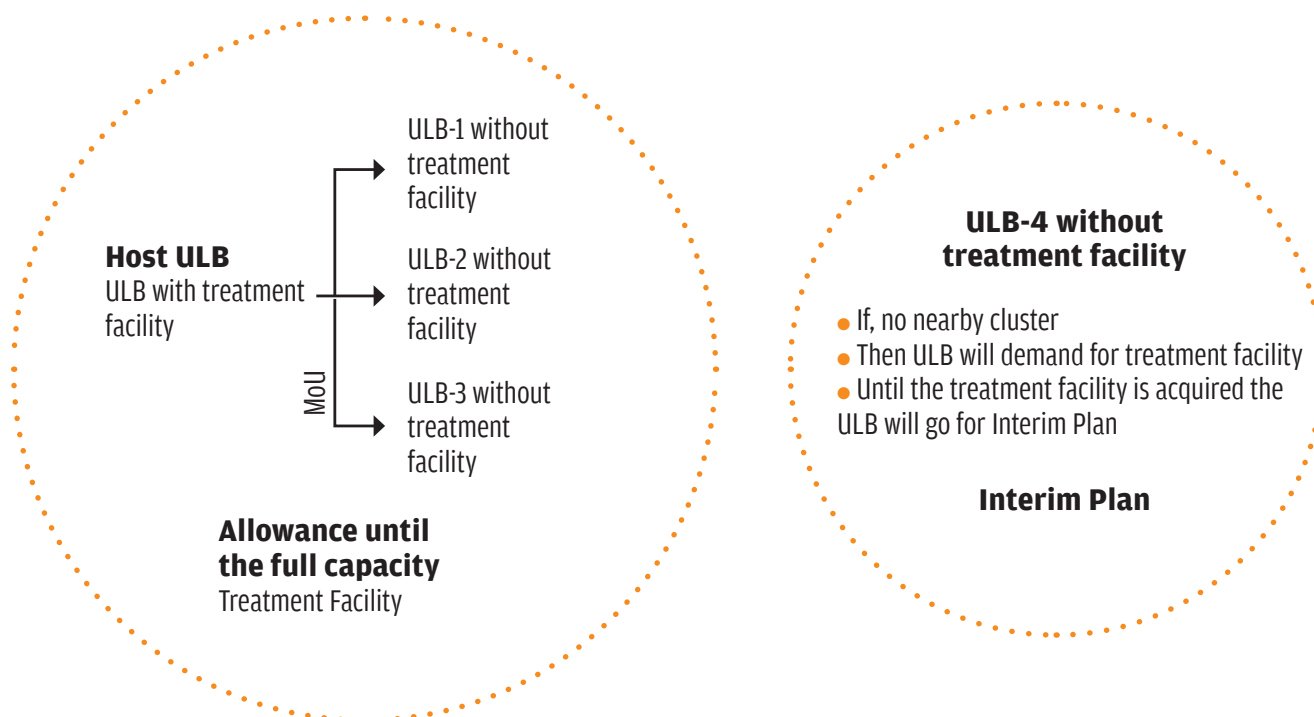


Emptying/desludging/conveyance and Transportation

Mechanism for mechanized desludging and transport of FSS: Only registered desludging vehicles to be utilized for desludging purpose



Treatment/Disposal and reuse



Duties of ULB with treatment

- Notify the operators about treatment facility and its operation timings
- Urge for cluster approach until low frequency of decanting
- Notify time to time to operators overall about routes exempted to transport FSS.
- Check FSS quality
- Record keeping
- Notify to cluster ULB about discontinuation
- Health check up for desludging operators and insurance
- Re-use to be enforced as per the SPCB, CPCB.

Duties of ULB without treatment

- Seek cluster approach and create a MoU
- Notify private desludgers about the cluster treatment facility and allowed timings for decanting FSS
- Regular check in advance with Host with about allowable quantity of FSS at the treatment facility.
- If no cluster in tangible limits of the ULB then approach center to provide treatment facility
- Until treatment facility is constructed create an interim facility for safe disposal of FSS
- Record keeping
- Health check ups & Insurance of operators
- Tipping fee to be paid to —Host ULB

Administrative Measures and Penalties

- Administration & enforcement powers of these regulations are vested in Municipal Commissioner/Executive Officer or designated official by ULB
- ULB may levy user fees for FSSM services.
- ULB to inspect OSS, Desludging vehicles & treatment facility time to time for effective implementation of FSSM
- Appeal: Person or User aggrieved from ULB official can appeal to MC/EO. For appeal against MC/EO are to be done in Taskforce



Penalties

- Direct discharge of excreta to drains
- Untreated FSS discharge from FSTPs, DRE, or co-treatment
- FSS disposal to unauthorized areas
- For unscientific construction or design of containment systems
- Un-registered desludging vehicle

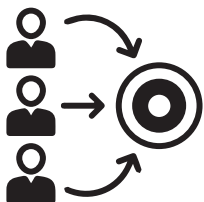
Gazette process taken in Bijnor City

Stakeholder's consultation workshop/हितधारक परामर्श कार्यशाला

- Formation of a City Sanitation Taskforce and sensitizing them on FSSM
- Consulting all sanitation workers, private emptiers, RWA's, Public leaders, ward members etc. Next draft the FSSM Bye-laws and keep it in the council meeting for any challenge or further clarities
- Making a final draft for newspaper notification

Newspaper notification for challenges on bye-laws/उप-नियमों पर किसी भी चुनौती के लिए समाचार पत्र अधिसूचना

- It is necessary put each and every aspect of every bye-laws in at least two famous local newspapers.
- Put the bye-laws on municipality noticeboard
- Wait for a 30 or 45 days for any challenges or questions from the citizens on the draft bye-laws
- In case of any query, please clarify it to the person. If there are challenges then put again the issue in council meeting and repeat the notification process in newspapers.



Final Gazette of FSSM Bye-laws at Prayagraj/राजपत्र कार्यालय प्रयागराज में FSSM उपनियमों का राजपत्रीकरण

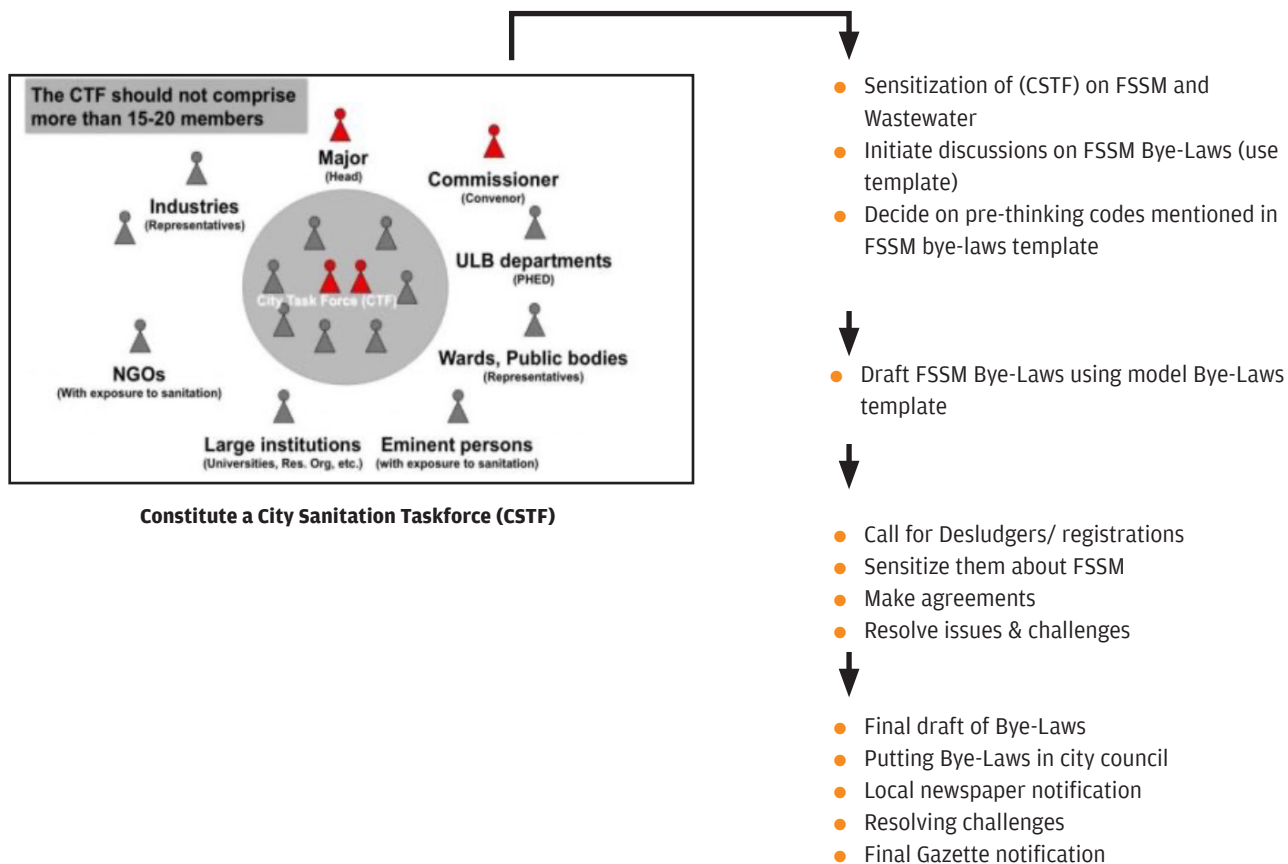
- Cover letter
- Finalized Bye-Laws
- Newspaper notification copies (at-least two newspaper copies)
- Clarification or query response record
- Challenge response and update notification (if any)

How to use Model-by-law template (Draft..)

The Model By-laws are developed for Faecal Sludge, and Septage Management (FSSM) in cities of Uttar Pradesh. The following points must be read carefully to understand the usage of Model Byelaws

- In the model bye-laws, three distinct colours have been used for the ease of understanding and taking necessary action by the ULBs developing the ULB-specific bye-laws
- The text highlighted with the following colors will denote the following.
 - Xxx xxx:** In this shade of color, the name and/or category of the respective ULB or the designation of the executive head of the ULB b.
 - Ddd ddd:** Texts in the model bye-laws if highlighted with this colour would mean that the ULBs have to take ULB specific decision and in some cases the same would require discussion at various levels of the ULB. The current values highlighted with this colour is only for example, not to be taken in ditto.
- The bye-laws appendix 5 and 9 of these by-laws are to be restructured completely according the local context of the administrative are of the ULB for which by-laws are being made.
- While drafting the provisions for penalties in Model By-laws the ULB must decide what strategy they want to take for implementation of FSSM in the area.
- The Model By-laws could be used any type of ULB based on the availability treatment facility with ULB, any adjacent ULB or seeking for treatment facility
- The interim treatment facility or temporary management of FSS for the ULBs seeking for ideal treatment infrastructure must adhere to standard state or national practices.

Action for ULBs for FSSM Bye-laws constitution



Drafting Bye-laws: what ULBs need to decide

Decide upon: (Fees)

1. Registration fees for private desludgers with ULB
2. License renewal fees
3. Tipping fee

Decide upon: Monitoring Pattern

- Whether go for GPS monitoring or not?
- Whether go for third party monitoring system
- Explore more...

Decide upon: Penalties

1. Direct discharge of excreta to drains
2. Untreated FSS discharge from FSTPs, DRE, or co-treatment

3. FSS disposal to unauthorized areas

5. For unscientific construction or design of containment systems

6. Un-registered desludging vehicles

7. Counts of breach ULB want to bear or penalize

Decide upon: Interim Treatment (If applicable)

Decide upon: Re-use of treated wastewater:

- Whether to use for horticulture;
- Or construction;
- Or agriculture
- Explore more...

Discussion

1. If all components are covered in the Model FSSM Bye-Laws?
2. If any component require changes?
3. How Bye-laws can be implemented effectively?

City Profile

City Name	Population	Households	%OSS
Ayodhya	1,51,993	44224	30
Bijnor	1,78,000	33000	100
Chunar	41,210	8242	100
Lakhimpur	1,91,316	30398	100
Raebareli	1,98,588	37849	80
Sitapur	2,21,118	29539	100
Unnao	1,77,234	33098	90

Data collection in the select ULBs: Major components

Expenditure- O&M of the vehicle:

- Vehicle Cost
- Repair and Maintenance
- Fuel cost
- Advertising
- Workforce
- Registration
- Miscellaneous

Revenue:

- Number of households covered
- Number of trips/day
- Desludging fee
- Any additional fees charged for removal of tank cover etc
- Earning from farmers for decanting to their agricultural field

Analysis- Highlights

Number of households:

- Chunar - 8,000
- Ayodhya, Bijnor, Raebareli, Lakhimpur, Sitapur and Unnao - 30,000-40,000

Time taken for desludging -1-3 hrs.

Current desludging frequency at the household level - once in 5-10 years

No. of desludging vehicles :

- Private - 32, Government - 10
- In Chunar and Sitapur, there are no private vehicles as the service is provided by ULB @ Rs. 500

Desludging fees:

- Govt: Barring Chunar and Sitapur, fees ranges between Rs.1000-Rs1500, highest in Ayodhya
- Private: Fees ranges between Rs.700-Rs.2000, highest in Ayodhya
- Only in Unnao, fees is higher in Govt. (Rs.1200) compared to private (Rs.700-Rs.1000)

● Sludge demand by the FSSM plants vis-à-vis Sludge collection

City Name	Septage Collection per month (KL)	Demand at FSSM Plants (KL)	Septage received per month at FSSM Plants (KL)
Ayodhya	85	768	25 (till date)
Bijnor	600	480	80
Chunar	240	240	240
Lakhimpur	320	768	Currently not receiving
Raebareli	900	768	Currently not receiving
Sitapur	400	768	Just started
Unnao	675	768	70

- Septage discharge location - Currently barring Bijnor and Chunar, discharge point is usually nearby open drains

Analysis Highlights – Private Operators

- Total Cost, revenue, no. of trips and distance covered in one year

City	Total Cost	Profit	Profit %	Distance	No of Trips
Ayodhya	2,63,241	96,751	37	2,880	180
Bijnor	2,63,369	96,631	37	2,880	240
Lakhimpur	4,15,809	1,78,191	43	5,400	540
Raebareli	8,45,809	4,50,191	53	21,600	1,080
Unnao	8,68,459	2,11,541	24	13,500	900

- In Ayodhya and Bijnor, the distance is same, no. of trips is lower in Ayodhya but profit is higher, desludging fee in Ayodhya is higher than Bijnor.
- In Raebareli, the profit margin is highest
- The survival of the desludging industry depends on the complex combination of opex, capex, no. of trips, distance travelled.
- Assumptions
 - Operation and capital expenditure considered
 - One vehicle consider
 - The cost per year also included interest which desludger pays as EMI of Vacuum Tanker.

Analysis Highlights- Government Owned Vehicles

- Total Cost, revenue, no. of trips and distance covered in one year

City	Total Cost	Profit	Profit %	Distance	No of Trips
Ayodhya	4,05,669	-45,669	-11	2400	240
Chunar	5,55,399	-30,21,244	-87	14,400	900
Lakhimpur	67,169	-40,769	-61	360	24
Raebareli	77,629	-59,629	-77	192	12
Sitapur	7,45,809	-1,45,809	-20	18,000	1,200
Unnao	4,65,809	-1,77,809	-38	3,600	240

- The revenue generated by the ULBs is not proportional to the number of trips made – free service
- HR cost is very high
- Except Chunar and Sitapur, in other ULBs – where services are also provided by the Pvt. Players, no. of trips is very less
- Assumptions
 - Operation and capital expenditure considered
 - One vehicle consider
 - Salaries of Govt desludgers are taken as per their engagement in the desludging activity
 - The cost per year also included investment on purchasing of Vacuum Tanker.

Analysis Highlights

- Cost per trip in relation to no. of trips per year and distance travelled per trip

Trip Per Year	Distance travelled per trip		
	<10 Kms	10 - 15 Kms	15 - 20 Kms
<150	7,750	7,900	8,000
150-300	3,200	3,350	3,500
300-450	2,450	2,550	2,700
450-600	1,800	1,900	2,000
600-750	1,400	1,550	1,700
Above 750	1,200	1,350	1,500

- Cost per trip has much stronger relationship with no. of trips
- Assumptions
 - Capex of Rs.10 Lakh considered
 - Operation and capital expenditure considered
 - This model includes Fuel, HR (1 Driver and 1 Skilled labour), Registration fee, Insurance of Vehicle, Office set up ,Admin & General , Maintenance of Vehicle, PPE per year.

- Cost per trip in relation to no. of trips per year and distance travelled per trip

Trip Per Year	Distance travelled per trip		
	<10 Kms	10 - 15 Kms	15 - 20 Kms
<150	7,750	7,900	8,000
150-300	3,200	3,350	3,500
300-450	2,450	2,550	2,700
450-600	1,800	1,900	2,000
600-700	1,400	1,550	1,700
Above 750	1,200	1,350	1,500

- Cost per trip has much stronger relationship with no. of trips
- Assumptions
 - Capex of Rs.10 Lakh considered
 - Operation and capital expenditure considered
 - This model includes Fuel, HR (1 Driver and 1 Skilled labour), Registration fee, Insurance of Vehicle, Office set up ,Admin & General , Maintenance of Vehicle, PPE per year.

- Cost per trip in relation to no. of trips per year and distance travelled per trip

Trip Per Year	Distance travelled per trip		
	<10 KMs	10 - 15 KMs	15 - 20 KMs
<150	4,200	4,300	4,400
150-300	2,600	2,700	2,800
300-450	2,050	2,100	2,300
450-600	1,600	1,700	1,800
600-750	1,300	1,400	1,550
Above 750	1,000	1,150	1,300

- Cost per trip has much stronger relationship with no. of trips
- Assumptions
 - Capex of Rs.5 Lakh considered
 - Operation and capital expenditure considered
 - This model includes Fuel, HR (1 Driver and 1 Skilled labour), Registration fee, Insurance of Vehicle, Office set up ,Admin & General , Maintenance of Vehicle, PPE per year

- Cost per trip in relation to no. of trips per year and distance travelled per trip

Trip Per Year	Distance travelled per trip		
	<10 KMs	10 - 15 KMs	15 - 20 KMs
<150	4,200	4,300	4,400
150-300	2,600	2,700	2,800
300-450	2,050	2,100	2,300
450-600	1,600	1,700	1,800
600-750	1,300	1,400	1,550
Above 750	1,000	1,150	1,300

- Cost per trip has much stronger relationship with no. of trips

- Assumptions

- Capex of Rs.5 Lakh considered
- Operation and capital expenditure considered
- This model includes Fuel, HR (1 Driver and 1 Skilled labour), Registration fee, Insurance of Vehicle, Office set up ,Admin & General , Maintenance of Vehicle, PPE per year

Understanding so far

- Defining desludging fees is a complex combination of trips, distance travelled, cost and profit.
- The market is volatile as more and more ULBs are going for sewer network.
- However, the role of desludgers would remain important as new geographical areas are being added to the core city area.

Recommendations

- Strengthening tie-up with the desludgers as they providing crucial services to the citizen
- To encourage citizens to have safe sanitation system, desludge OSS on regular basis and thus increase the number of trips
- To have a healthy price negotiation, ULB can invite the desludgers to a negotiation meeting for price fixation, strengthening services, proper disposal, taking care of health and safety issues of desludgers-workers
- To increase number of trips, ULBs should consider-
 - Registration of all Private operators who are working in the city.
 - It should transfer the additional desludging request to registered private operators.
 - ULB can form an association of Private desludgers for proper review and discussion.
 - Demarcation of zones in consultation with Private operators.

Points for discussion

- What model the ULBs can follow to strengthen the desludging mechanism
- What model the ULBs can follow to strengthen the tie-up with the desludgers
- What steps can the ULBs take to improve number of trips?
- What steps can the ULBs take to improve the government desludging services



Centre for Science and Environment