



Sanitation Capacity
Building Platform

Market Assessment and Strategy for Capacity Building of Private Sector in FSSM Service Delivery in India



National Institute of Urban Affairs



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List of Acronyms

BMGF	Bill and Melinda Gates Foundation
FSSM	Faecal Sludge and Septage management
NFSSMA	National Faecal Sludge and Septage management Alliance
NIUA	National Institute of Urban Affairs
PPP	Public Private Partnership
PwC	PricewaterhouseCoopers Pvt. Ltd.
SBM	Swachh Bharat Mission
SCBP	Sanitation Capacity Building Platform
SWM	Solid Waste Management
ULB	Urban Local Body
CB	Capacity Building
GoI	Government of India
ETP	Effluent treatment plant
STP	Sewage Treatment Plant
ODF	Open defecation Free
ODF++	Open Defecation Free and holistic sanitation service delivery
SMP	Septage Management Plan
CSP	City Sanitation Plan
NGO	Non-Governmental Organisation
WTP	Water Treatment Plants
PMC	Project Management Consultant
DPR	Detailed Project Report
UGD	Under Ground Drainage
ISO	International Organisation for Standardisation
ISI	Indian Standards Institution
ICT	Information & Communication Technology
KLD, MLD	Kilo Litre per Day, Million Litre per Day
MIS	Management Information System
GIS	Geospatial Information System
RFP	Request for Proposal
SME	Small and Medium Enterprises
M&E	Monitoring and Evaluation
FS	Faecal Sludge

1. Background of the study

India's human waste problem is acute and getting worse every year. The last household census in 2011 identified that 48% of households in India defecate in the open. In rural India, more than 67% of households did not have access to toilets. In 2014, Government of India (GoI) launched Swachh Bharat Mission (SBM), a major initiative to address the open defecation problem. SBM first focussed on providing households with access to sanitary latrines. As on today, SBM has helped build more than 78 million individual toilets and 0.3 million public-toilets across the country, at an overwhelming cost of INR 1.34 lakh crore. Consequentially, more than 2,355 towns/ cities, and 3.84 lakh villages have already become Open Defecation Free (ODF), and GoI is targeting to achieve 100% ODF status across all habitations in India by 2019. The programme has also invested in awareness and education campaigns to ensure that people understand the need to eradicate open

Eliminating open defecation is a step in the right direction, but does not fully address the underlying health and hygiene issue. Now that more households are using toilets, the quantum of fecal sludge that has to be properly treated and disposed will increase manifold. This is a larger mandate than building sanitary latrines. Taking cognizance of this challenge, GoI has started to make policy reforms prioritising FSSM interventions. This is visible in the following policy documents:

1. *National Urban Faecal Sludge and Septage Management Policy, 2017* – sets direction for implementation of FSM projects; defines responsibilities and calls for policy and legislations at state and ULB level; provide implementation plans at State and ULB level to roll out FSM projects
2. *Primer on Faecal Sludge and Septage Management, 2017* – provides standards, specifications, technology options, and roll out approach for FSM at State and ULB level
3. *National Urban Sanitation Policy MoUD, 2008* – states the importance of safe and hygienic facilities with proper disposal and treatment of sludge from on-site installations as well as proper Operation and Maintenance (O&M) of all sanitary facilities
4. *Advisory on Septage Management MoUD, 2013* – recommends developing a Septage Management Plan (SMP) as a part of City Sanitation Plan (CSP).

Pan India adoption of FSSM will require a paradigm shift in approach to holistic sanitation and will need significant allocation of resources by state and city governments. Regulatory provisions will help create a demand for FSSM services at State/City level. The role of private sector players becomes crucial to mobilise resources and fast track implementation. However, given that the sector is in a nascent stage, private sector needs to be adequately sensitised about the potential to build mutually beneficial engagement models and work together. Across India, small private firms are active in desludging and disposal of septage in an unorganised and unregulated manner. They often violate pollution control norms by dumping waste in open drains, rivers, or in the open environment. On treating faecal sludge, there are only few FSTPs in the country that have been built in the last decade mostly as demonstration pilots

City governments need to step in to regulate and promote FSSM activities, and develop engagement models that address entry barriers for private sector participation. One of the key barriers to private sector participation in FSSM is the knowledge gaps that has led to private firms taking a conservative view of the risk-returns in FSSM projects. There are information gaps and misconceptions about FSSM sector that have to be addressed to ensure a level playing field for private sector participation.

Recognising this challenge, Government of India, along with various NGOs and development agencies, is keen to build private sector capacity and encourage private sector participation.

National Institute for Urban Affairs

National Institute of Urban Affairs (NIUA), is a premier institute which conducts research, capacity building and dissemination of knowledge for the urban sector in India. They are also involved in conducting various programmes to improve the capacities of the stakeholders at state government, Urban Local Bodies (ULBs), elected representatives, universities, and training institutes. NIUA with the support of Bill and Melinda Gates Foundation (BMGF) has started a project, Sanitation and Capacity Building Platform (SCBP), to support capacity building of stakeholders across the value chain of urban sanitation with specific focus on faecal sludge and septage management.

In September 2017, under the National FSSM Alliance (NFFSSMA), a National Consultation with the Private Sector agencies involved across the value chain of FSSM was convened in New Delhi on 22 September 2017. This workshop attempted to highlight the emerging demand and business opportunities in the urban sanitation sector for septage and wastewater treatment and to identify and understand the challenges and capacity building needs of the private sector. As a follow up to the consultation workshop, a decision was taken by NIUA to undertake a detailed Market Assessment and Strategy for Capacity building of Private sector.

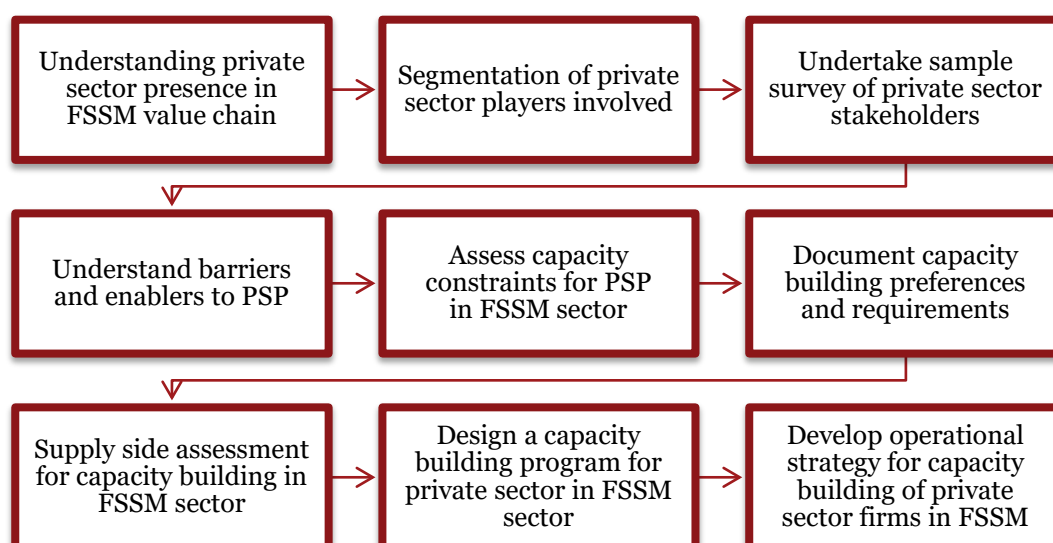
Objective of the study

The purpose of the study is to develop a capacity building strategy for private sector firms to enable them to participate in FSSM projects across the country. The objectives of our study are:

- Developing an appropriate segmentation of the private sector stakeholders
- Identification of challenges and barriers for private sector participation in FSSM sector
- Assessing capacity building needs of private sector and demand
- Developing operational strategy for design of delivery of capacity building program

Our approach to the assignment

We started with data collection on private sector presence in FSSM sector and met with representative firms to first hand understand their business constraints and assess the need for capacity building. At the interim stage, we present our findings from the survey that are relevant to understanding and addressing capacity constraints to private sector participation in FSSM sector



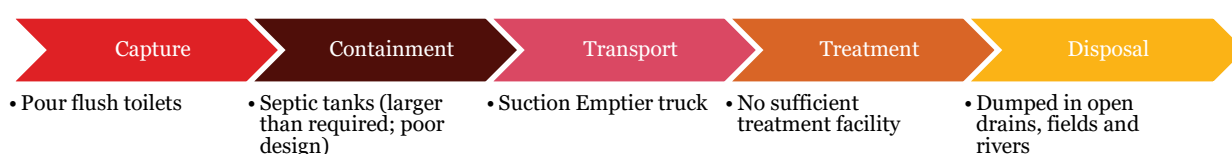
2. Segmentation of private sector stakeholders in FSSM value chain

2.1. Understanding private sector presence

There are many small and unorganised private players operating in FSSM value chain, such as the masons responsible for constructing septic tanks and latrines and truck operators involved in emptying faecal sludge. In urban areas that do not have access to underground sewers, septic tanks remain the most preferred option for faecal waste containment. Often times, these tanks are larger than necessary, and not emptied on a regular basis.

In most cities, small and medium sized truck operators carry out desludging of septic tanks. Tanker operators dump the faecal waste in fields or open drains, and even sell the sludge as manure to farmers in drought prone districts. Figure 1 shows the FSSM value chain as it is currently practised.

Figure 1 FSSM Service Value chain, as practiced in India



According to various studies, 40% to 50% of urban households have their toilets connected to septic tanks. Post Swachh Bharat Mission implementation, this proportion will only increase, as coverage of underground sewer system lags far behind. The resulting faecal sludge has to be treated properly before being disposed. However, as on today, almost all of this faecal sludge is dumped into open drains or fields outside cities/ towns, leading to severe land and water pollution. Specially designed vehicles called suction trucks (or equivalents) are used to empty septic tanks and transport faecal sludge to points of disposal. Most of these truck operators are small private firms or proprietorships.

There are only a handful of Faecal Sludge Treatment Plants (FSTP) in the country. Most of these FSTPs are less than five years old, and serve as demonstration pilots, funded and operated by development agencies.

Government of India has recognised that centralised sewer based systems and non-networked onsite sanitation solutions will have to coexist to provide holistic sanitation to a city, and has launched policy measures to improve FSSM. In response to the policy push from GoI, many states have started with implementation of urban FSSM programs, focussing on infrastructure development and effective service delivery. Given the scale of work to be done, inherent institutional challenges, and technology complexity, the role of private sector will be high in both design and rollout of FSSM services.

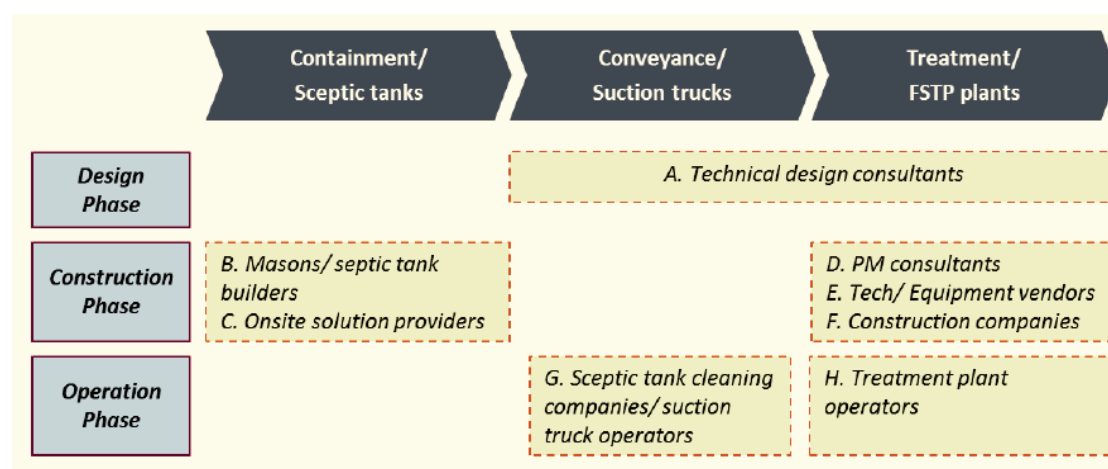
2.2. Segmentation of private sector stakeholders in FSSM

Based on secondary research and from our interactions with sector experts and stakeholders, we have identified the following key segments of private sector players who are currently operating or will have a role to play in the FSSM value chain

1. Masons/ septic tank installation firms
2. Suction truck operators/ septic tank cleaners
3. Consultants – technical design/ transaction advisory/ project management
4. Firms involved in construction and operation of WTPs/ STPs/ FSTPs

Figure 2 shows the segmentation of private sector firms involved in FSSM value chain

Figure 2: Market Segmentation across FSSM value chain



2.3. Data collection and survey of private stakeholders

The objective of our survey was to study the profile of private sector stakeholders mentioned in the previous section, understand their perception of business risks and opportunities in FSSM work, barriers to participating in projects, knowledge constraints and capacity building preferences.

Sampling plan: Key considerations for the sampling plan are:

- Geographically distributed samples covering all priority states as mentioned in TOR
- Samples to cover all private sector segments in FSSM value chain with more weightage to unorganised players such as Masons, and septic tank cleaning companies

The following table presents segment wise sampling plan for survey

Table 1: Sampling plan for survey

Segments	MH	MP	CG	JK	AP	TN	OD	UP	RJ	GGN	Target
Technical design consultants	1	1			1		1		1		5
Masons/ septic tank builders	1	1	1	1	1	1	1	1	1		9
Onsite sanitation solution providers	2					1		1			4
Program Management Consultants	1						1	1		2	5
Technology/ Equipment vendors	1				1	1				2	5
Treatment plant construction firms	1				2	1	1	1	2		8
Septic tank cleaning companies	1	1	1	1	1	1	1	1	1		9
Treatment plant operators	1	1			1	1			1		5
Total	9	4	2	2	7	6	5	5	6	4	50

Survey questionnaire: Our team designed the questionnaire for survey covering three major aspects – profile and industry presence of private sector stakeholder, constraints to participation in FSSM projects, and capacity building needs and preferences. The team discussed and finalised the draft survey questionnaire with the client. We organised a briefing session for our survey team to explain the context, objectives and data expectations from the survey.

Identifying target participants: For consultants and construction/ O&M companies, we prepared a preliminary list of private sector firms that are active in FSSM sector or keen to enter the same. We also reached out to companies that have expressed interest in FSSM projects launched by select State Governments. The long list of companies is enclosed in Annexure E.

We then shortlisted companies based on factors such as size, sector experience, area of operation, etc., and prepared a representative sample for survey. For unorganised segments such as suction truck operators, or masons, we leveraged our work relationship with state level organisations to identify private sector operators. The list of firms surveyed is enclosed in Annexure D

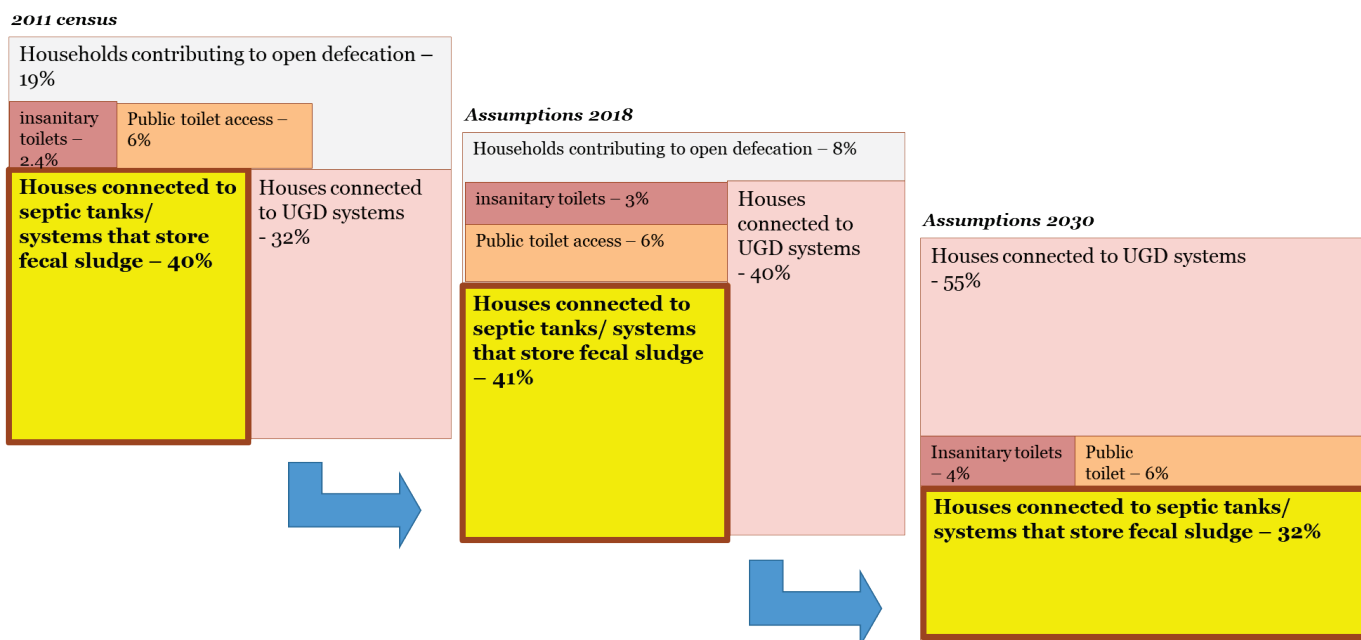
Focus segments: Our sample survey covered all the segments and sub segments of the FSSM value chain. However, in drafting the capacity building strategy, we have focussed on two major segments – consultants and construction/ O&M operators.

3. Demand for FSSM services

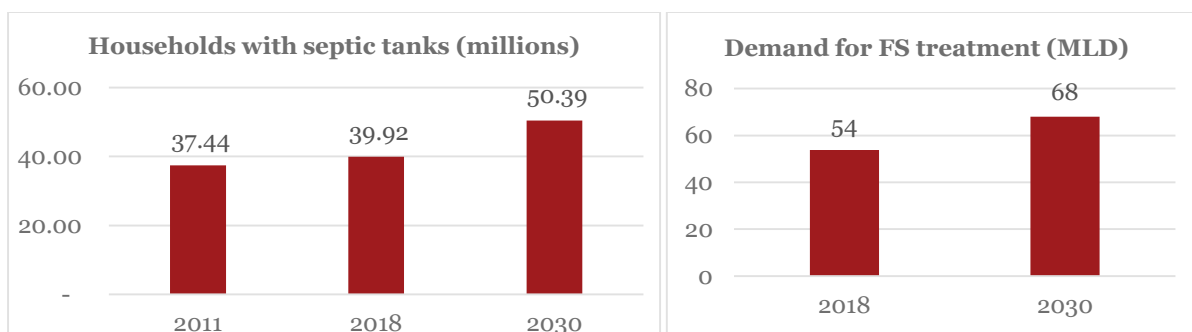
In this section, we present an estimated demand for FSSM services across Urban India for the next decade. The objective is to present an idea of the size and scale of FSSM sector in the coming decade. When estimating demand, we made the following assumptions:

- We assume that rural sanitation will involve mostly twin pits and onsite solutions, while FSSM services will be largely an urban requirement
- We used Census 2011 data as the basis for projections

As per 2011 census, 37.4 million households in urban India had septic tanks or sanitary pits that required desludging and safe disposal of faecal waste. Close to 19% of households contributed to open defecation and rest depended on unsanitary pits, public toilets, or other onsite systems. With the progress made under Swachh Bharat Mission (SBM) Urban, most households will have access to individual household toilets or community toilets. The canvas of containment infrastructure over years, based on our assumptions is shown below:



Though UGD based sanitation systems will slowly reduce dependency on septic tanks and other onsite sanitation solutions, we estimate that close to 32% of households will continue to depend on to septic tanks/ sanitary pits in 2030. This shows the relevance of faecal sludge treatment plants as an essential part of urban sanitation infrastructure, especially in peri urban areas, and in areas where co treatment of faecal sludge in conventional STPs is not feasible. The following is an estimate of demand for



4. Capacity building of private sector— needs and demand assessment

From containment to treatment and reuse, various private players play an active role in the FSSM value chain. In this chapter, we present the capacity needs and demand of the two major private sector stakeholder groups – Companies involved in construction/ operation of FSTPs and Consultants.

4.1. Companies involved in construction/ O&M of FSTPs

Given that there are only few FSTPs in India, companies that have experience in construction and operation of Sewage Treatment Plants (STPs) or Effluent Treatment Plants (ETPs) will enter the FSM sector. Based on the size of operations, such companies can be classified into three categories – small, medium and large firms. The following figure presents their profile and level of interest in FSM sector

Small	Medium	Large
<ul style="list-style-type: none"> • annual turnover < 30 crores • Mostly regional players • Very limited experience in operation of STP/ ETP • Clients: private sector industries/ institutions, apartment complexes 	<ul style="list-style-type: none"> • annual turnover - 30 to 200 crores • Regional players working in multiple states • Have experience in O&M • Clients: mostly industrial/ institutional & few ULBs 	<ul style="list-style-type: none"> • annual turnover > 200 crores • National players including subsidiaries of global firms • Substantial experience in O&M of large STPs/ ETPs • Clients: ULBs, water authorities, large industries

Small and medium sized firms are more interested in FSSM sector and some of them are already involved in FSSM service delivery. For example, Divija Constructions, an SME involved in wastewater treatment sector, has submitted proposals for setting up FSTPs in Sambhar- Phulera, Rajasthan. Larger firms such as JITF Water Infrastructure Ltd. find FSTP projects to be financially unattractive due to small project size and higher operational risks.

4.1.1. Barriers and capacity building needs

During the primary survey, private sector operators spoke about the following major challenges in entering FSSM sector and capacity building requirements. The summary of survey responses from consulting firms is included as Annexure B

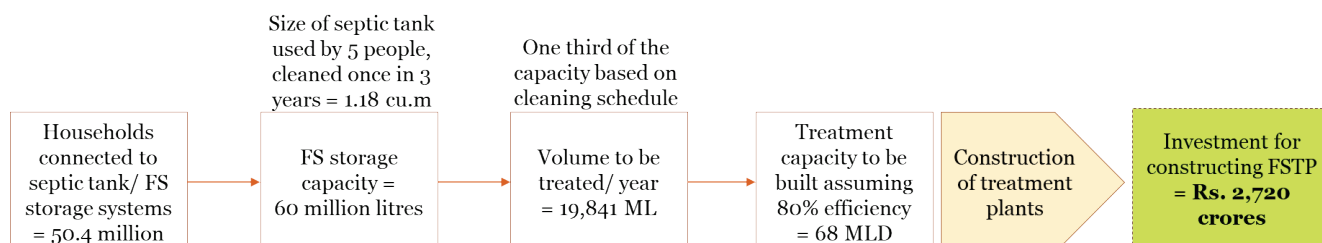
No	Challenges to participation	Capacity building needs
Technical Challenges		
	<p><i>“Divija Construction, Rajasthan: Access to technology - like technologies available, construction and operation of FSTP processes. None of the staff are aware about the technologies available, managing FSTPs, technical cycling, managing dry beds etc.”</i></p> <p><i>“Water World Supermart, MP: Recently we have travelled to Orissa for exploring business opportunity. But we don't have any dedicated platform for getting this information instantly.”</i></p> <p><i>“JITF Water Infrastructure Ltd: In FSTPs, apart from UASB, there is no technology intervention. There should be a technology intervention and advanced technology need to be used.</i></p>	
1	Less aware of technology options for treating faecal sludge (other than drying beds).	Technology options for conveyance and treatment of faecal sludge covering, <ul style="list-style-type: none"> • comparative assessment • cost economics,

No	Challenges to participation	Capacity building needs
		<ul style="list-style-type: none"> • business plan, • vendor details, and • operating guidelines
<p><i>“Water World Supermart, MP: We are not constructing or engaged in operating FSTP as such; We human waste/fecal sludge that we receive in STP (MBBR Technology), we treat in with Sludge drying bed technique. We dispose-off de-moisturized sludge into dumping ground”</i></p> <p><i>“WTE Infra Projects, MH: We are co-treating fecal sludge with domestic waste water for more than 50 residential societies. After de-moisturizing treated sludge we dump it in municipal waste collection vehicles.”</i></p>		
2	Lack of experience and know how on reuse of treated sludge. Many firms that dealt with sludge had disposed them off as solid waste. Very few firms had explored reuse of treated sludge as a commercial activity	Knowhow on reuse of treated faecal sludge <ul style="list-style-type: none"> • technology involved • cost economics and business plan • Operational/ marketing strategy
<p><i>“Water Systems India Pvt. Ltd.: Mixing of industrial effluents with waste collected from human habitations is one of the big challenges. Strict systems should be kept in place to avoid such instances.”</i></p> <p><i>“Divija Construction, Rajasthan: Availability of sludge – in case of STPs there is constant flow of sewage in the system where as in FSTPs, sludge availability is highly unreliable and there will be variation in the input.”</i></p>		
3	Risk of quality variations in influent due to mixing of industrial waste with faecal sludge by suction truck operators.	Methods and strategies to assess characteristic of influents, range of technology options to manage a wide range of influent parameters
<p>Operational Challenges</p> <p><i>“Divija Construction, Rajasthan: Data related to no. of septic tanks in the town, accessibility of tanks to collect sludge is not available“</i></p> <p><i>“Rajkamal Builders Infrastructure Pvt. ltd: Management of faecal sludge is more complicated, i.e. getting the sludge/ waste water to treatment plant site is very difficult. Whereas in sewerage projects, there is very less risk in getting the waste water at STP site as water comes automatically to the. For example, bringing 1 MLD faecal sludge to FSTP, operator has so many responsibilities and risks like vehicle management, managing labor and drivers, separate accounting for fuel”</i></p>		
1	Demand risk – As UGD coverage increases, demand for FSSM services will decline; unregulated FS conveyance operations will impact demand for treatment at FSTPs.	ICT enabled tools and methods to assess and secure demand such as <ul style="list-style-type: none"> • prepare consumer profile, • schedule desludging, • supervise conveyance, and • incentivise stakeholder participation
<p><i>“WTE Infra Projects, MH: People perceive it as dirty job, so qualified staff does not get much attracted towards this field of work”</i></p>		
2	Lack of availability of skilled workforce due to social stigma attached to the sector	Awareness on the importance of FSSM in providing holistic sanitation and good practices in ensuring workplace safety
<p><i>“WTE Infra Projects, MH: We have experienced knowledge barrier, Foreign technology can't be used in India as water quality parameters (chemical, physical, biological) at the same time fecal sludge chemical properties differ largely; thus technology should be locally researched and developed”</i></p> <p><i>“Water Systems India Pvt. Ltd.: Either the waste collection at source should be done by the operator who can then regulate the quality of the waste being collected and hence, can decide on the output of the STP, or, the designer and the operator should be allowed to fix the quantifiable outputs depending on the raw material received so that the contract doesn't bind him to attain unrealistic targets which will only hinder his participation in the tender.</i></p>		
3	Lack of standard input – output parameters and evaluation methods	Consensus between stakeholders on standard input output parameters and methods to evaluate output linked performance
<p>Management & business development challenges</p> <p><i>“Water World Supermart, MP: We want to understand the good practices associated with bid process management, to increase the chances of winning the project“</i></p>		

No	Challenges to participation	Capacity building needs
	<p><i>“WTE Infra Projects, MH: Tendering Process are generally evaluated on cost parameters (L1, L2) thus we sometime loose despite having strong technical credentials. Comprehensive guide to rules and regulations of all states for efficient tendering process. We require a training to bid for projects awarded by multilateral funding agencies located in India and abroad.”</i></p> <p><i>“JITF Water Infrastructure Ltd: if qualification criteria is kept as experience in construction and operation of FSTPs, then companies like us have to form a JV with smaller who have this experience. Hence, qualification criteria has to be decided very carefully“</i></p> <p><i>“G.E.T Water Solutions Pvt. Ltd.: major challenges in winning the FSTP projects is the procurement. Proper Prequalification criteria is not set which allows normal civil contractors to qualify for the project and since they quote the lowest just for the sake of winning the project, the project gets awarded to them where they do a bad job and the entire project fails.</i></p> <p><i>“Rajkamal Builders Infrastructure Pvt. Ltd: Govt. may keep a fixed criteria and empanel agencies for construction of FSTPs. Criteria may be experience in construction of STPs of certain capacity and technology. If there is an empanelment, it will encourage bidders to participate as there will be limited completion and there are more chances for winning projects. After empanelment a base rate may be fixed and distribute the works among the contractors applied.</i></p>	
1	Unrealistic eligibility/ evaluation criteria, performance parameters, and payment terms act as entry barriers for small firms	<p>Consensus between stakeholders on</p> <ul style="list-style-type: none"> • bid parameter, • eligibility/ evaluation criteria, • performance parameters, and • payment terms
	<p><i>“G.E.T Water Solutions Pvt. Ltd: During execution, the primary problem is payment. The firm can only work if their cash flow is maintained. Without receiving proper agreed payment on time puts the company in jeopardy and ultimately leads to loss in sources which are required to complete the project on time with quality.</i></p>	
2	Payment risks due to bureaucratic delays increase operational costs	Consensus between concessionaire and authority leading to improved payment terms that protect interests of both stakeholders
	<p><i>“Water World supermart: In few cases to check water quality of discharged water, we had to send it to CPCB laboratory (we doubt the exactitude of report) if we could get training about technical skills required for setting up the laboratory for checking discharged water parameters.”</i></p> <p><i>“JITF Water Infrastructure Ltd: Contract size of FSTPs will be very small and project sites would be small or medium towns. It is not possible for a firm like us to participate in smaller bids. If we take up projects below 20 crore, the overheads shoot up and the project may end up in very low profit margins, which is not favourable. Even if we club 4 to 5 projects and win a 100crore project in total, the project will be scattered geographically, the teams should be scattered, and the overheads will shoot up accordingly. This is the reason we would hesitate moving into these projects.”</i></p> <p><i>“Rajkamal Builders Infrastructure Pvt. Ltd: As of now, we are not interested in this sector as the size of the project is very less and there are more complexities in the projects“</i></p>	
3	Financial constraints and lack of knowhow on tools required for financial planning and raising finance.	<ul style="list-style-type: none"> • Financial feasibility assessment • Performance monitoring – quality testing and compliance • Business plan and financing options for PPP based FSTP projects
	<p><i>“Water Systems India Pvt. Ltd.: challenges is a strong bid document that addresses the market concern and makes it fair for the designers and vendors. It should be based on quality and not on cost as lack of funds invites poor performance and ultimately affects the bigger goal of treating sewage properly.“</i></p>	
4	Lack of understanding of policies and regulations that have cost implications	<ul style="list-style-type: none"> • Policy and regulatory overview - billing and collection of charges

4.1.2. Demand for FSTPs and construction/ O&M contractors

By 2030, the capacity for storage of faecal sludge in septic tanks or equivalent structures will be about 60 million cubic meters, and the treatment capacity required will be 68 MLD. The capital cost of an FSTP is about INR 8 lakh per KLD. With an assumption that 50% of faecal sludge will be co-treated in STPs, the investment required for construction of new FSTPs (34 MLD) would be about 2,720 crores.



Based on existing FSTP clusters and review of procurement plan documents for FSTPs in select states, the average size of an FSTP for an urban area can be about 15 KLD. Given that 68 MLD of treatment capacity is required, the country needs approximately 2,266 FSTPs. Construction will happen in a phased manner. Assuming that one firm will construct and operate three FSTP clusters (10 FSTPs in one cluster), there will be about 76 construction/ O&M companies in FSSM sector.

Construction and operation of FSTPs will have a broad range of staffing requirements that fall under one of the three categories - technical, financial, and managerial staff. Knowledge gaps and capacity building strategy often can be different for these staff categories. The estimated number of target beneficiaries in each category is given below:

S No	Implementation stage	Technical team	Financial manager	Managerial/ business dev	Operational supervisory
1	<i>Design & construction</i>				
a.	Staff for 1 firm	1	1	1	-
b.	Staff for 76 firms	76	76	76	-
2	<i>Operation & maintenance</i>				
a.	Staff for 1 firm	10	3	5	30
b.	Staff for 76 firms	760	228	380	2,266
	Total staff deployed	836	304	456	2,266

4.2. Consultants – TAs, PMCs, and DPR consultants

Consultants will play a key role in the development phase of FSSM project at state and ULB level and typically fall under three categories – Transaction advisors, DPR consultants, Project Management Consultants, with clearly defined roles in supporting implementation of FSSM projects. Transaction advisory are less domain dependent, while DPR consultants and PMCs are engineering consultants with greater domain focus and expertise. For the purpose of this study, we have grouped consultants into transaction advisors and PMCs/ DPR consultants.

4.2.1. Transaction advisors (TAs)

TAs supports state government and ULBs in design and procurement stage of the project. They focus in areas such as understanding baseline condition, developing strategy for service level improvements,

project structuring, financial feasibility assessment, financing options, procurement strategy, and bid process management.

4.2.1.1. Barriers to participation and capacity needs

In our interactions with stakeholders, we identified the following barriers faced by consultants – transaction advisors in FSSM and related projects (wastewater, solid waste management)

S No	Challenges to participation	Capacity building needs
<p><i>“Mahindra Consulting Engineers Limited, TN: The government should make the procurement on QCBS basis with the mandate to the designers to adopt the best available technology.</i></p> <p><i>“Mahindra Consulting Engineers Limited, TN: Main issue is lack of funds for the development of STPs and FSTPs. Even after being fully aware of the best technology being available that suits the project perfectly, the designer is not able to adopt or recommend the same as it is too expensive for the client to bear. Hence, the designer is compelled to design using a weaker technology that affects the quality of the project and the purpose is defeated.”</i></p>		
1	Exposure to FSSM related technologies and domain knowhow that will form the basis for future project structuring and bid process management	Technology options for conveyance and treatment of faecal sludge covering, <ul style="list-style-type: none"> • comparative assessment • cost economics, and • business plan
2	Lack of knowhow on preparatory studies required for successful roll out of FSSM services at ULB level	<ul style="list-style-type: none"> • tools for baseline survey • consumer profiling • baseline demand assessment
<p><i>“Mahindra Consulting Engineers Limited, TN: The biggest challenge faced during the PMC period is the procurement of the contractor. Inexperienced, non-productive and unaware contractors are appointed due to lack of funds, who take up project for the mere sake of earning money but don't have the expertise of constructing the various parts of a STP like the waste segregation, purification etc.”</i></p>		
3	Lack of understanding of market dynamics for FSTP construction and operation	<ul style="list-style-type: none"> • stakeholder engagement strategies • risk assessment & allocation in FSSM
<p><i>“Mahindra Consulting Engineers Limited, TN: The output characteristics dependent on the raw material being fed into the system and because of poor quality sludge available to run the plants, the output requirement cannot be met and the project is stalled. Hence, many of the designers and the PMCs shy from bidding for the project.</i></p>		
4	Lack of standards in input – output parameters and performance evaluation.	<ul style="list-style-type: none"> • Consensus on IO parameters • M&E framework - indicators & methods for performance assessment
<p><i>“Mahindra Consulting Engineers Limited, TN: The procurement mechanism for design consultants and PMCs is very weak. The procurement guidelines, pre-qualification and technical criteria are made on unrealistic figures which are very hard for the industry to meet.”</i></p>		
5	Lack of knowhow on standards, good practices in bid process management, and contract design and management	<ul style="list-style-type: none"> • Procurement toolkit for bid process management including draft contract
6	Lack of knowhow on reuse potential, options and feasibility	<ul style="list-style-type: none"> • Reuse technical options, cost economics, and business plan

4.2.1.2. Demand for capacity building of Transaction Advisors

Consultancy being a knowledge business, it is difficult to estimate the number of firms that are available to provide transaction advisory services. In addition, the number of firms engaged will depend on the level of decentralised decision making at state level. Assuming that the state level implementation happens in three phases, with teams of 3 – 5 expert consultants per state in every phase, we estimate that there will be **30 to 50 expert consultants** engaged as Transaction Advisors for implementation of FSSM projects.

4.2.2. PMCs/ DPR consultants

Design consultants are responsible for preparation of detailed project reports that includes costing, technical specifications and parameters, and design diagrams for FSSM projects. PMCs support ULBs during the implementation phase by managing contracts, supervising rollout of FSSM services, and through M&E activities. Many of these consultants operate only at state/ regional level and become the go-to consultants for state or ULB administration, and work across a wide range of sectors. Others are subsidiaries of international engineering consulting firms with strong technical/ domain expertise.

4.2.2.1. Barriers and challenges for PMCs/ DPR consultants

S No	Challenges to participation	Capacity building needs
<p><i>“Panse Consultants, Pune: We haven’t done any project specific to FSTP in fast. But recently we have got contract from Sinnar Municipal Council For FSTP for 17 KLD.”</i></p> <p><i>“Rudrabhishek Enterprises Limited, UP: We require capacity building for FSM related technologies”</i></p>		
1	Exposure to FSSM related technologies and domain knowhow that will form the basis for future project structuring and bid process management	Technology options for conveyance and treatment of faecal sludge covering, <ul style="list-style-type: none"> • comparative assessment • cost economics, • business plan, and • operating guidelines
<p><i>“Panse Consultants, Pune: We mainly co-treat sewage and fecal sludge. We have access to technology but we are still not clear what to do with treated waste so if there any information/model available about its correct scientific disposal or usage we are more interested in it.”</i></p>		
2	Lack of experience and know how on reuse of treated sludge. This was highlighted by many consultants including Mahindra Engineering Consultants Ltd.	Knowhow on reuse of treated faecal sludge <ul style="list-style-type: none"> • technology involved • cost economics and business plan • Operational/ marketing strategy
<p><i>“Rudrabhishek Enterprises Limited, UP: Capacity building required areas are FSM planning, DPR preparation, Municipal norms / regulations, Contract management, Technical execution of FSTPs, Procurement, Financing FSM (costing, project finance management, financing / fund raising, PPP</i></p> <p><i>“Unity Consultants, Pune: We require more information about PPP project and guidelines associated with it. Technical we are competent enough.”</i></p>		
3	Lack of understanding of the contractor’s market leading to poor design	<ul style="list-style-type: none"> • Financial feasibility assessment • Risk assessment and contract management in FSSM projects • stakeholder engagement • risk allocation in PPP contracts • Financial feasibility & business model
4	Lack of skills and access to tools for value for money assessment, and financial modelling for feasibility assessment, design standards, and DPR formats.	

5	Lack of understanding of policy and regulatory environment for incentivising FSSM sector and risk mitigation for stakeholders across the FSSM value chain	<ul style="list-style-type: none">• DPR preparation• Database of technology/ equipment vendors and suppliers
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4.2.2.2. Demand for capacity building of PMCs/ DPR consultants

As per our assessment in 4.1.2, there will be close 228 FSTP clusters (10 FSTPs each) in urban India. Considering that implementation will happen in three phases, DPRs for every FSSM cluster will be completed by a team of 2 – 3 technical experts in each phase. In such case, there will be about **152 to 228 technical experts** engaged as DPR consultants.

5. Capacity building strategy

We did a quick review (desk research) of the ongoing capacity building efforts in India. Many national and international organisations have invested in developing training modules and organised capacity building workshops targeting both government and private sector stakeholders. The list of ongoing and completed workshops and training events are presented in Annexure C.

Some of the agencies that have the capacity to deliver FSSM training capacity-building events are:

NATIONAL:	INTERNATIONAL:
A. WaterAid India	A. UNSECO-IHE Institute for Water Education
B. Centre for Water and Sanitation (C-WAS), CEPT University	B. Swiss Federal Institute of Aquatic Science and Technology (Eawag)
C. Consortium for DEWATS Dissemination Society (CDD)	C. Asian Institute of Technology
D. Anil Agarwal Environment Training Institute (AAETI), affiliate of CSE	D. International Institute for Water and Environmental Engineering
E. National Institute of Urban Affairs, NIUA	E. University of KwaZulu-Natal
F. Indian Institute for Human Settlements (IIHS)	
G. Administrative Staff College of India, Hyderabad	
H. Centre for study of Science, Technology & Policy, CSTEP	
I. WASH Institute	
J. Manipal University, Jaipur	
K. Universities and institutes that currently have urban sanitation related courses	

For capacity building on decentralized sanitation in Urban India, Sanitation Capacity Building Platform (SCBP) at NIUA is one such organic collaborative platform of training centres, resource centres, universities, consultants and experts, that can develop training modules and anchor trainings for private sector stakeholders.

NIUA has developed six training modules on FSSM as part of SCBP:

1. Basic Orientation Module on FSSM for ULB officials, engineers
2. Training Module on Integrated Wastewater and Septage Management (IWWSM)
3. Advanced Training Module on FSSM Technology for Engineers
4. Training Module on Preparation of FSSM DPR for Consultants
5. Orientation Module on FSSM for Elected Representatives (*Draft*)
6. BCC/IEC Module on FSSM (*Draft*)

Based on our understanding of ongoing capacity building efforts and level of involvement of NFSSMA stakeholders, we propose the following guiding objectives for the capacity building strategy:

1. Leverage existing material prepared by different stakeholders
2. Standardise parameters, good practices, estimates, and projections
3. Focus on strengthening delivery channels and outreach

With this approach, we recommend the following four core components for the capacity building strategy for encouraging private sector participation in FSSM sector



5.1. Building standardised training material

As a first step, training content shall be developed in modular format, so that it will be easy to customise training sessions and to update training material. Based on the capacity building requirements discussed in the previous section, some of the key topics/ sections under which the capacity building content can be developed include:

1. Technical options – for treatment, conveyance, and reuse
2. Operational standards – SOPs for different functions across the value chain
3. Financial aspects – costing, feasibility, business plan,
4. Public private partnerships
5. ICT interventions – consumer database, desludging calendar, geo tagging of suction trucks
6. FSSM toolkit – baseline study, stakeholder engagement framework, feasibility study. DPR formats, standard procurement documents, draft contract (for different procurement modes)

NIUA can play a lead role in organising this content development work. The following are sequential tasks for preparing modular content for the FSSM training

1. Set up core expert committee with sub committees for specific sections discussed above
2. Collate tools and training material and prepare a detailed list of modules
3. Develop modular content that is searchable and upload on an easily accessible platform such as an online FSSM training portal or FSSM-wiki
4. Establish peer review and feedback process to update the training material prepared. Organize discussion sessions online/ consensus workshops to debate conflicting standards, variations in approach and recommendations, and to prepare standard content.

NFSSMA publications:

In addition to developing the modular knowledge material, NIUA can also work towards publishing reference books such as:

1. Handbook on construction of Faecal Sludge Treatment Plants
2. Standard Operating Procedure for operation and maintenance of FSTPs
3. Procurement guidelines for FSSM service delivery on PPP basis
4. Standard operating guidelines for ULBs in regulating FSSM service providers
5. Technical ISO/ ISI standards and specifications for FSSM service delivery processes and equipment/ tools
6. Monitoring and Evaluation Framework and roadmap for FSSM services

These documents can become ready reference books for ULBs and private sector players in providing FSSM services.

5.2. Capacity building interventions

Based on our interactions with private sector operators and consultants, and the capacity building needs outlined in Chapter 4, we recommend the following capacity building interventions for consultants and FSTP operators

5.2.1. Construction/ O&M companies

Drawing from our assessment presented in Chapter 4, there are three major areas of capacity needs – technical, operational, and financial/ managerial. Most construction companies surveyed preferred to visit an operational FSTP to understand the challenges involved at field level. Based on the capacity needs, we suggest the following capacity building interventions:

S No	CB intervention	Topics covered	Delivery mode	No of days	Target staff	No of sessions
1	Technology options in FSSM	<ul style="list-style-type: none"> FSSM value chain Technology options for treatment of FS – comparative overview Suitability assessment Risks and mitigation strategies Quality testing Field visits 	Classroom based Field visit State level	Three	<ul style="list-style-type: none"> Technical Managerial 	30 sessions (35 staff per session)
2	FSTP operations	<ul style="list-style-type: none"> Process flow in standard FSTPs Standard operating procedure Performance monitoring Risks and mitigation strategies Reuse options Data management Compliances – best practices Field visit 	Classroom based Field visit Cluster level	Three	<ul style="list-style-type: none"> Operational Technical 	75 sessions (50 staff per session)
3	Design of FSTPs	<ul style="list-style-type: none"> Preparatory surveys – need, formats, tools Stakeholder engagement strategies Introduction to toolkits Technical options for FS treatment Reuse strategy and options Design standards and good practices ICT tools 	Classroom/ workshop State level	Three	<ul style="list-style-type: none"> Technical Managerial (design team)	10 sessions (20 staff per session)

S No	CB intervention	Topics covered	Delivery mode	No of days	Target staff	No of sessions
		<ul style="list-style-type: none"> ○ consumer sanitation profile ○ desludging calendar • I-O parameters and performance monitoring • Operational risks and mitigation strategies 				
4	FSTP – financial management	<ul style="list-style-type: none"> • Introduction to FSSM toolkits • Technology options and capital cost estimates • Policy & regulations – billing & collection • Contract management & financial risks • Cash flow management for FSTPs • Reuse of treated sludge – business model • Financial risk mitigation – construction phase • Financial risk mitigation – operations phase 	<p>Classroom session/ workshop</p> <p>State level</p>	Two	<ul style="list-style-type: none"> • Financial • Managerial 	<p>10 sessions</p> <p>(30 staff per session)</p>
5	Webinars	<ul style="list-style-type: none"> • FSSM services in India • Introduction to ICT tools for FSSM service delivery <ul style="list-style-type: none"> ○ consumer sanitation profile ○ desludging calendar ○ tracking suction trucks • Success stories and good practices 	Video based lessons	-	<ul style="list-style-type: none"> • Technical • Financial • Managerial • Operational 	
6	Consensus workshop on Service Level Benchmarks	<ul style="list-style-type: none"> • Output parameters and performance monitoring for FSTPs • Defining Service Level Benchmarks • Developing guidelines and standards 	Workshop at national level	Three	<ul style="list-style-type: none"> • Technical • Financial • Managerial 	<p>5 sessions</p> <p>(4 regional and 1 national)</p>
7	Certification programme on FSSM – 4 month course	<ul style="list-style-type: none"> • End to end program covering topics such as need for FSSM, technical options, standard operating process, preparatory surveys, risk mitigation, and staffing • Certification based on contribution to learning discussions, and dissertation 	Online training course (delivered on platforms such as <i>coursera</i> or FSSM knowledge portal)	-	<ul style="list-style-type: none"> • Technical • Financial • Managerial 	-

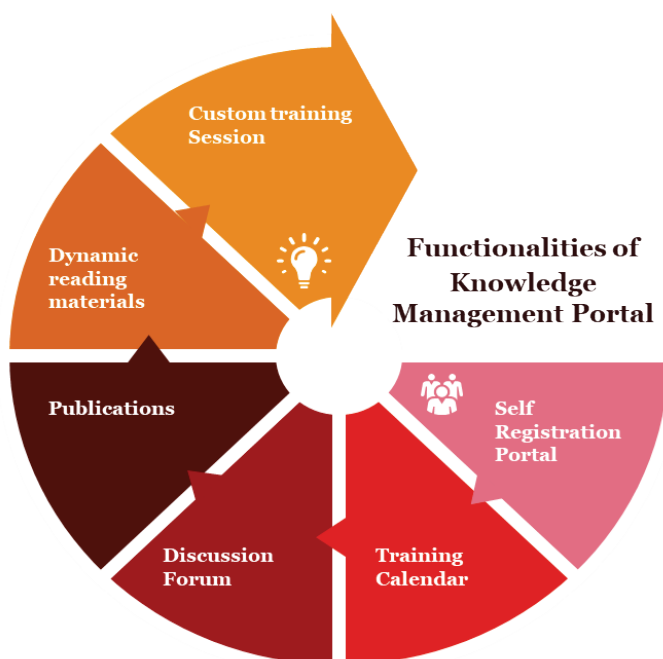
5.2.2. Consultants involved in FSSM projects

S No	CB intervention	Topics covered	Delivery mode	No of days	Target staff	No of sessions
1	Technology options in FSSM	<ul style="list-style-type: none"> FSSM value chain Technology options – comparative overview Suitability assessment Reuse – options and business model Project Risks and mitigation strategies Performance measurement & quality check Field visits 	Classroom based Field visit Regional level	Three	<ul style="list-style-type: none"> DPR/ PMC consultants 	10 sessions (20 consultants per session)
2	PMC toolkit workshop	<ul style="list-style-type: none"> Preparatory surveys & studies Stakeholder engagement Risk allocation in PPP contracts Financial feasibility assessment Performance monitoring (M&E) tool Procurement guidelines and standard docs Policy and regulatory overview 	Classroom based Regional level	Five	<ul style="list-style-type: none"> Transaction advisors 	10 sessions (15 consultants per session)
3	DPR consultants	<ul style="list-style-type: none"> Technology options – comparative overview Preparatory studies and data acquisition Project Costing – structure and resources Regulations, compliance, & quality standards DPR preparation – formats & good practices Field visit and exercise 	Classroom based Field visit Regional level	Five	<ul style="list-style-type: none"> DPR/ PMC consultants 	10 sessions (20 consultants per session)
4	Consensus workshop on SLB	<ul style="list-style-type: none"> Output parameters & performance monitoring Defining Service Level Benchmarks Developing guidelines and standards 	Workshop at national level	Three	<ul style="list-style-type: none"> Technical Financial Managerial 	5 sessions (4 regional and 1 national)
5	Certification programme on FSSM – 4 month course	<ul style="list-style-type: none"> End to end program covering topics such as need for FSSM, technical options, standard operating process, preparatory surveys, risk mitigation, and staffing Certification based on contribution to learning discussions, and dissertation 	Online training course (delivered on platforms such as <i>coursera</i> or FSSM knowledge portal)	-	<ul style="list-style-type: none"> Technical Financial Managerial 	-

5.3. FSSM knowledge management portal

One of the findings from our survey and expert discussions is that most of the technical inputs, standards, and FSSM planning and management tools are already available and accessible, but has not been fully made use of by target beneficiaries. Therefore, we have placed greater emphasis on outreach by building effective knowledge management and communication platforms. NIUA can lead in building and operating this online digital platform – *FSSM knowledge management portal*

5.3.1. Functionalities of the knowledge management portal



The portal can evolve into a one-stop source for all knowledge resources and tools; and a platform for all capacity building initiatives – ranging from workshop/ training registration, to discussion forums. The functionalities of Knowledge Management Portal are discussed in detail:

1) Self-Registration:

- Visitors to the portal will be nudged to register and create a short profile. All registered users will be members of the portal
- This will help create a database of people interested in FSSM sector and can be used as a reliable database for effective outreach
- Registered members will be sent weekly digests from the portal with updates, and monthly newsletters covering sanitation news and notifications

2) Training Calendar

- The calendar presents a concise view of all capacity building events of the past and those that are scheduled in the near future
- The profile of every event will include agenda, target participants, timeline, venue, profile of presenters/ anchor organisation, benefits, and commercial details
- The calendar will allow portal members to register for a specific event. The portal will then send automated reminders, notifications from anchor organisations for the event, payment of entry/ participation fee (if any) for the event,
- The calendar will also facilitate sharing of training material to all registered participants

- At the backend, NIUA will work closely with partner agencies under NFSSMA or otherwise to design and launch training programs. These could be of two types – general sessions that is open for all to register, custom programs that are in response to requests from beneficiary organisations/ state agencies/ ULBs
- The portal will focus on outreach and facilitate delivery while actual sessions are managed and delivered by the partner organisations responsible

3) Modular training material and other reading materials

- As discussed in the previous section, the knowledge repository developed in modular format can be uploaded as searchable content (textual, video based, and tools) in the portal. The portal will provide easy access to members who can refer to this repository to read about a specific topic under FSSM
- The content uploaded will draw from existing material prepared by NFSSMA partners and will be standardised, searchable, and peer reviewed
- In addition, dynamic content from partners, such as research publications, working papers, advocacy notes, case studies, etc., can also be uploaded in the portal for regular reading

4) Publications

- As discussed in the previous section, NSSMA shall prepare and publish handbooks and Standard operating procedures for various FSSM service functionalities.
- These publications can be updated based on feedback received and republished on a periodic basis (say once every year)

5) Discussion Forum

- The portal will include a discussion platform where members can actively involve in moderated discussions related to FSSM
- This forum will also be used as a communication channel to receive feedback on modular training material and publications, debate on comments, and finalise revisions required

5.4. Expert level certification exam

One of the key constraints voiced by stakeholders is that it is difficult for experts with FSSM knowhow to differentiate themselves in the procurement process for government projects. This is rooted in the selection methodology used for hiring expert consultants and operators. Given that there are only a few academic programs, where FSSM is a mandatory course and most online training events do not include evaluation and certification of participants, we recommend that NIUA under the NFSSMA banner can develop and administer a national level certification exam in FSSM sector. Some of the key points to consider in design and implementation of this certification exam are:

- Participation can be limited to people from relevant background (academic or experience wise)
- Exam question paper can be designed by an expert panel put together by NIUA
- The exam is best conducted online as it will reduce administrative costs. In this regard NIUA can partner with testing centres or develop an online module for supervised test delivery

Marketing of the certification exam:

- The certification will be a credible method to evaluate an expert, and therefore can be included as mandatory criteria for selection of FSSM engineers and experts in procurement documents.
- Partner organisations and capacity building institutions can be encouraged to promote the certification exam and to design course curriculum to help students clear the certification exam

Annexure A- Survey Responses from consulting firms

Parameter	Mahindra Consulting Engineers Ltd	MITCON Consultancy & Engineering services Ltd	Panse Consultants	Unity Consultants	Rudrabhishek Enterprises Limited
General information					
Geographical Coverage	National: 20 states International: 10 countries	All over India	All over India	All over India	Delhi, Rajasthan, Haryana, Himachal Pradesh, Uttarakhand, Uttar Pradesh, Bihar, Jharkhand, Madhya Pradesh, Odisha, Assam.
Average annual turnover	INR 15 crore	INR 62 crore	INR 5 crore	--	INR 37 crore
Technical staff	50 out of 60	180 out of 225	5 out of 15	70 out of 125	116 out of 181
Business areas	Design, Transaction Advisory, Project management of Urban, Industrial, Social, Agricultural, Water and Wastewater sector	Infrastructure consulting, Environment management, Agro infra and food consulting, Power Sector consultancy	Environmental project report services, waste water and treatment consultancy and ETP sector.	Project management consultancy	Urban Planning, Infrastructure Services, Project Management, GIS, Architecture, Fund Raising & Financial Advisory, EPC.
Nature of work	Water, wastewater, sewage and effluent treatment projects.	Project management, project design and planning financial outlay.	Project management, ETP and STP installation.	Project advisory services, feasibility studies for infrastructure, Project monitoring and management	Preparation of DPR, feasibility report on Sewerage system, water drainage system.
Clientele	TWAD board, state industrial development corporations, state housing boards, educational	Government and private clients	Residential societies and small ancillary industrial units.	Government clients	Various Government clients.

Parameter	Mahindra Consulting Engineers Ltd	MITCON Consultancy & Engineering services Ltd	Panse Consultants	Unity Consultants	Rudrabhishek Enterprises Limited
	institutions, various MC's and ULB's				
FSSM specific information					
Experience	Yes; involved in feasibility, project planning, design, EIA, value chain analysis, output measurements and managing the project end to end.	Involved in laboratory testing for discharge effluents, GIS mapping, DPR preparation and so on.	No FSSM project done till now but have received a contract from Sinnar Municipal Council for 17 KLD.	Tied up with IHE-UNESCO for designing and delivering the online training modules related to fecal sludge management	NA
If interested (Y/N)	Already present in the sector	--	Interested	Already present in capacity building	NA
Challenges faced	<ul style="list-style-type: none"> Procurement guidelines and technical criteria made on unrealistic figure. Lack of funds Procurement of contractors Ni consortium of expert firms 	Not encountered challenges as such.	Qualification criteria for turnover is above 50 crore.	NA	NA
Capacity building related information					
FSSM/sanitation / sewerage related staff	30 experts, 100 support staff (draughtsman, CAD operator, site engineers)	Around 25 people; out of 10 are consultants and 5 Managerial staff	3-5 people working in mid-level, rest are hired on ad-hoc basis	Around 55 people	Director: 01 Managers: 07 Engineers/Planners: 30
Current capacity building efforts	Training Provided on project basis	Workshops are arranged once in 2-3 months, for new hires 15 day laboratory training is provided.	No efforts done till now.	Internal training is provided.	NA

Parameter	Mahindra Consulting Engineers Ltd	MITCON Consultancy & Engineering services Ltd	Panse Consultants	Unity Consultants	Rudrabhishek Enterprises Limited
Budget for capacity building	No annual budget allotted	5% of each year's total budget	No allotted budget	5-7% of budget is allocated	Around 5 Lac
Required areas	Municipal norms/regulations, contract management, business opportunities.	Not in need for training. But they would like to partner with organizations like NIUA	Workshops which stresses on successful case studies, treated waste usage and disposal	Information about PPP project and guidelines associated with it.	FSSM planning, DPR preparation, Access to technology, Municipal norms / regulations, Contract management, Technical execution of FSTPs, Procurement, Financing FSSM
Preferred mode	Web-based	Workshops/interactive training session in partnership with NIUA	Full time sessions preferably web based	Conference or Workshop	NA
Willing to pay	No	Depends on nature and financial requirements.	Depends on the cost.	Depends on the capacity building course and budget provisions.	Yes.

Annexure B- Survey Responses from operators

Table 1: Already executing FSTP/treating fecal sludge and high interest in Capacity building

Parameter	Water Systems India Pvt Ltd	Divija Constructions	Water World Supermart	WTE Infra Projects Pvt Ltd
General Information				
Geographical Coverage	All over India	Rajasthan	Madhya Pradesh, Chhattisgarh	Across India and Foreign locations
Average annual turnover	INR 15 crore	INR 20 crores	--	INR 33 crores
Technical staff	65 out of 120	30 out of 50	4 out of 15	250 out of 350
Business areas	Design, building and maintenance of STP, ETP sector.	Design, engineering and execution of water supply, sewerage.	R.O. Water filters, UV water systems, AWS (Advanced Water softener), ETP and STP, Swimming pool filtration plant.	STP (Sludge drying bed technology), ETP, CPU (Condensed Polishing plant – Sugar Industry), RO-plant
Nature of work	Project management of water, wastewater projects.	Water and wastewater projects including laying of distribution pipe network, construction and operation of treatment plants.	Water filtration system for industrial/ institutional players, STP projects	Manufacturing and operation of STP's, ETP's and water/wastewater treatment plants
Clientele	Central and State Government clients.	Government and private clients	Mostly private clients	Residential societies, Institutional/Commercial clients.
FSSM specific information				
Experience	Involved in design, feasibility, project planning, construction, and implementation and managing project end to end.	Preferred bidder by RUIDP for construction and operation of FSTP in Sambhar-Fulera, but exposure to FSSM is very limited.	Receive fecal sludge at STP and it is treated using Sludge drying bed technique	Co-treatment of fecal sludge with domestic waste water for residential societies.
If interested (Y/N)	Already present	Yes	Yes	Yes.

Parameter	Water Systems India Pvt Ltd	Divija Constructions	Water World Supermart	WTE Infra Projects Pvt Ltd
Challenges faced	<ul style="list-style-type: none"> Varying input characteristics of input waste Lack of political will 	<ul style="list-style-type: none"> Sludge availability is unreliable Lack of awareness among staff about technologies available, managing FSTP's and so on. Unavailability of data regarding no. of septic tanks 	<ul style="list-style-type: none"> Customers not agreeing with price 	<ul style="list-style-type: none"> Cost intensive pre-feasibility studies Stigma associated with job restricts joining of qualified staff
Capacity Building related information				
FSSM/sanitation / sewerage related staff	20 experts, 50 support staff (draughtsman, CAD operator, site engineers)	50 staff present	6-7 staff	200-250 people
Current capacity building efforts	Training Provided on project basis	Plans to visit Devanahalli FSTP with support of RUIDP. Conducts internal training programs.	On-job training provided	1-day re-skilling session every 3-4 months
Budget for capacity building	No allotted budget	NA	No	No
Required areas	Awareness related to proper segregation of waste at source, mishandling of industrial waste, various business opportunities	<ul style="list-style-type: none"> Access to technologies 	<ul style="list-style-type: none"> Technical execution of FSTP's Bid process management Municipal norms and regulations 	<ul style="list-style-type: none"> Technical execution of FSTP's Knowledge about successful case studies Procurement Business development
Preferred mode	Interested in any mode as long as it is focused on business development	Circulation of training material through CD's or online training. Visit to properly functioning treatment plants	Exposure/field visits to best practices in FSSM; web-based training preferred.	Full time sessions; web-based online training preferred.
Willing to pay	No	No	No	Yes

Table 2: No expertise in FSSM but interested in FSTP services

Parameter	GET Water Solutions Pvt Ltd	SL water technologies	Enviro care Private Limited	Good care Environment System	Arkin Creations Pvt Ltd
General Information					
Geographical Coverage	Pan India	Vizag, Vijayanagaram, Srikakulam, Mumbai, Chennai	Tamil Nadu	Tamil Nadu	Pan India
Average annual turnover	INR 50 crores	INR 1.2 crores	--	--	INR 7 crores
Technical staff	250 out of 300	9 out of 11	300 out of 500	7 out of 17	20 out of 80
Business areas	Design, construction of Water/wastewater plants, Effluent Treatment plants	Treatment Plant Design, Construction, installation, commissioning, operation and maintenance.	Design, engineering and execution of water supply, sewerage, effluent treatment and other treatment plants	Design, engineering and execution of water supply, sewerage, effluent treatment and other treatment plants	Sewage treatment and Water Treatment Solutions.
Nature of work	Water and waste water projects, effluent treatment projects and desalination projects	Operation if STP, ETP, RO plant projects.	Operation and maintenance of water and waste water, sewerage, effluent treatment projects.	Operation and maintenance of water and waste water, sewerage, effluent treatment projects.	Manufacturing, installation and commissioning of Sewage and water treatment projects.
Clientele	State Government agencies and private players. Delhi Jal board, MACE, TCE, DLF, ITC to name a few	Private clients	Municipal corporations, industries, housing complexes.	Municipal corporations, industries, housing complexes.	Clients include IFFCO, Dalmia Bharat, DSM Pharma, and Government agencies like NTPC, NHPC ,BHEL
FSSM specific information					
Experience	No experience but have a fair idea about the industry and the best practices being followed globally.	No expertise in FSTP but holds 6 year work experience in Sanitation.	No experience in FSTP, involved on O&M of STP's	No. have dealt only with Water and waste water projects	Deal with Bi-toilets for Sanitation project

Parameter	GET Water Solutions Pvt Ltd	SL water technologies	Enviro care Private Limited	Good care Environment System	Arkin Creations Pvt Ltd
If interested (Y/N)	They have identified FSTP market to have huge potential	Yes	Yes	Yes	Yes
Challenges faced	<ul style="list-style-type: none"> Improper prequalification criteria's Agreed payments on time to maintain cash flows. 	--	--	--	Convincing clients to change the conventional technologies. Lack of awareness among clients about the quality of technologies.
Capacity building related information					
FSSM/sanitation/ sewerage related staff	Around 300 (include all of their offices)	6	300	17	Around 60
Current capacity building efforts	Training is provided on regular basis.	--	Provide training to all new joiners; Regular monthly training for all employees	Not attended or conducted any training program	Staff is trained almost on a quarterly basis
Budget for capacity building	No	No	No	No	No
Required areas	Project based capacity building to be provided.	<ul style="list-style-type: none"> Access to technology Technical Execution of FSTP Financial aspects 	<ul style="list-style-type: none"> Construction of FSTP Functioning of FSTP 	<ul style="list-style-type: none"> Construction of FSTP Functioning of FSTP 	--
Preferred mode	Visit to functioning FSTP's.	Full day session; prefer hands-on and in-house training along with exposure visits	Classrooms program with visits to various treatment plants	NA	In house training and web based online trainings.

Parameter	GET Water Solutions Pvt Ltd	SL water technologies	Enviro care Private Limited	Good care Environment System	Arkin Creations Pvt Ltd
Willing to pay	Yes; depending to type of training provided.	Yes	No	No	No

Table 3: No keen interest in FSSM

Parameter	Rajkamal Builders Infrastructure Pvt Ltd	JITF Water Infrastructure Ltd (Jindal)
General Information		
Geographical Coverage	Gujarat, Madhya Pradesh, Rajasthan	Pan India
Average annual turnover	INR 350-400 crores	INR 300-400 crores
Technical staff	100 out of 1600	120 out of 150
Business areas	Laying of sewerage lines, construction and operation of WTP's, STP's.	Water solutions, NRW, O&M of waste water
Nature of work	Water and wastewater projects and also construction projects of roads and bridges.	Water, wastewater and desalination projects.
Clientele	State Government agencies and private players	State Government agencies and private players
FSSM specific Information		
Experience	No exposure to FSSM/FSTP projects	They have exposure to FSTP's. Had a JV with Manila Water. Have identified the importance of septage treatment.
If interested (Y/N)	No; due to small project size	No; project size is very small
Challenges faced	<ul style="list-style-type: none"> Complex nature of fecal sludge. Risks and responsibilities like vehicle management, fuel, managing labors and drivers and so on. 	Financial constraints: small contract size of FSTP's. Even if 4-5 projects are clubbed, they will be geographically scattered which makes it further difficult.
Capacity Building related information		
FSSM/sanitation /	Around 19-20	Around 120

Parameter	Rajkamal Builders Infrastructure Pvt Ltd	JITF Water Infrastructure Ltd (Jindal)
sewerage related staff		
Current capacity building efforts	No organized training programs conducted.	In-house discussions and trainings. 1-2 day training once in 6 months.
Budget for capacity building	NA	Combined budget for all level employees is allocated when in need.
Required areas	<ul style="list-style-type: none"> • Access to technologies, municipal norms • FSSM overview like vision and future opportunities in FSSM 	<ul style="list-style-type: none"> • Access to technologies • Technical execution is FSTP's
Preferred mode	Full day sessions preferred.	Class room training sessions preferred. Prefer personal training over web-based.
Willing to pay	Yes	Yes

Annexure C – Ongoing/ completed programs

Training Institute	Type of Capacity Building	Platforms/Delivery Channels	Region	Format
Stakeholder : MoHUA/CPHEEOA				
ASCI	Managerial (Monitoring, Program Management) Technical (Knowledge) Others (Policy)	Direct (ASCI)	National Level	Classroom
CDD	Managerial, Others (Planning)	Department of Rural Drinking Water Supply and Sanitation, Govt. of Karnataka (Exposure visit for Jt. Secretary, MDWS)	National Level	Exposure/Field Visit
NIUA/SCBP	Facilitation	Partners	National Level	Workshops
PMU	Technical and Managerial	WASH institute and KPMG	National Level	Others (Technical support through PMU)
WASHI	Technical	Direct(CPHEEO and AMRUT Division)	National Level	Consultancy meetings with Municipal bodies and private players)
Stakeholder: Senior Govt. Officials				
ASCI	Managerial (Monitoring, Planning, Leadership) Technical (Knowledge) Others (Policy)	Direct (ASCI)	National Level State Level (AP, Telangana)	Classroom combined with Exposure Visit
CDD	Managerial and Technical Others (Planning)	Direct (CDD Society) Through partners (NIUA-under SCBP, IHS) Through Govt. Agency – CMAK&DMA, Govt. of Karnataka(State Level Workshop on SBM and FSSM)	National Level (Bangladesh, Afghanistan) State level (Karnataka, Rajasthan, Jharkhand, Telangana, Uttar Pradesh, J&K, Himachal Pradesh) City Level (Bhagalpur, Kamleshwar, Devanahalli, Umred, Shimla, Unnao)	Classroom Exposure visit
CSE	Managerial	Direct (CSE)	State level (Bihar, UP)	Classroom

Training Institute	Type of Capacity Building	Platforms/Delivery Channels	Region	Format
				Exposure Visit
EY	Technical and Managerial – under Exposure Visit	Direct and partner	District level	Exposure Visit
IIHS	Managerial	Direct	State Level (TN)	Classroom Exposure Visit
NIUA/SCBP	Facilitation	Partners	National Level State Level (UP, Bihar, Rajasthan)	
PMU	Technical	Direct (MoHUA) Through Partner (UNCRD)	National Level	Classroom E-course/Training
WASHI	Technical	Direct (CPHEEO)	National Level	International Level Conference
Stakeholder: Pollution Control Boards (National/State)				
ASCI	Technical (knowledge)	Direct (ASCI) Through a partner (technology task force)	National Level State level (AP, Telangana)	Classroom Exposure Visit
CDD	Managerial Technical	Direct (CDD society) Through Partners (NFSSM Alliance)	National Level	classroom
Stakeholder: Parastatal/ Nodal agencies				
ASCI	Managerial Technical (Knowledge) Other (Convergence with other schemes such as smart cities)	Direct (ASCI)	National Level State Level (AP, Telangana)	Classroom
CDD	Managerial Technical (Knowledge) Other (Planning)	Direct (CDD Society) Through Partners (MCRHRD, NIUA & RCUES, IIHS) Through Govt. Agency (Dept. of Rural Water Supply & Sanitation, Karnataka)	National Level (Bangladesh, Afghanistan) State level (Karnataka, Rajasthan, Jharkhand, Bihar, UP, MP, J&K)	Classroom Exposure Visit
EY	Technical	Through a partner – Twinning program BORDA, DPR preparation- NIUA, FS Sampling and analysis – CSE	State and city level	Classroom , exposure/field visit

Training Institute	Type of Capacity Building	Platforms/Delivery Channels	Region	Format
IIHS	Overview or Awareness sessions / Technical	Direct	State Level (TN)	Classroom Exposure visit
NIUA/SCBP	Facilitation	Partners and Nodal AMRUT agencies	State level (UP, Rajasthan, Bihar, Karnataka, West Bengal, UP, Haryana, Telangana, Kerala, Maharashtra)	ToT on FSSM, IWWSM and Orientation workshops on FSSM) Exposure/Field visit to Pune
PMU	Technical	Direct (MoHUA & KPMG) Direct (WASHI)	State level City level	Classroom E-course/Training Exposure/field visit
Stakeholder: Elected Representatives: Councilors/MLAs/MPs/Mayor				
ASCI	Others (Regulations, policy, awareness and attitude)	Direct (ASCI)	National Level (Parliamentarians) State Level (AP, Telangana) City Level	Classroom
CDD	Managerial Others (Planning)	Direct (CDD society) Through partners (NIUA, IIHE-UNESCO, CMAR, Manipal University, Inspiration) Through Govt. Agency (DMA, Govt. of Karnataka (State Level workshop on SBM & FSSM)	State level (Karnataka, Rajasthan) City Level (Gowribidanur, Bidadi, Ajmer, Kota, Bikaner)	Classroom Exposure visit
CEPT	Others (Sensitization)	Direct (CEPT university) Through a partner (AIILSG) Through a Govt. agency (MEETRA/MJP)	State Level (Maharashtra) City Level (Wai, Sinnar, Chilpun, Umred, Gevrai, Akot, Hingoli, Bhrampour, Wardha)	Classroom
EY	Technical and Managerial – triggering workshop	Direct	District Level	Classroom, exposure visit
NIUA/SCBP	Facilitation	Partners	State and Towns (Rajasthan)	
PMU	Technical	Through partner (CBUD)	City level	Classroom E-course/ training
Stakeholder: EO/COMMISSIONER				

Training Institute	Type of Capacity Building	Platforms/Delivery Channels	Region	Format
ASCI	Managerial (Planning, Organising, Monitoring, PPP, Leadership) Technical (knowledge, attitude) Others (Regulations and policy)	Direct (ASCI)	State Level (AP, Telangana) City Level	Classroom Exposure Visit
CDD	Managerial Technical Others (Planning)	Direct (CDD society) Through partners (IIHS, CSE) Through Govt. Agency (SIUD, Mysuru, CMAK)	State Level (Karnataka, Rajasthan, Jharkhand, TN, Telangana, MP) City Level (Trichy Sircilla, Gowribidanur, Bidadi, Bagru, Jaipur, Dausa, AlwarSikar, Jhunjhunu)	Classroom, Exposure Visit
CSE	Managerial and Technical	Direct (CSE)	City Level (Bijnor, Bodhgaya, Katihar, Chunar)	
CEPT	Managerial Technical	Direct (CEPT university) Through a partner (AIIILSG and NIUA) Through a Govt. Agency (MEETRA/MJP)	State Level (Maharashtra, Rajasthan, UP) City Level (all cities in Maharashtra, few cities in Rajasthan and UP)	Classroom Exposure Visit
EY	Technical and Managerial – triggering workshop	Direct and through a partner – twinning program BORDA	District Level	Classroom, exposure visit
IIHS	Managerial	Direct	City Level	Classroom Exposure Visit
NIUA/SCBP	Facilitation	Partners and Nodal AMRUT agencies	State and Towns (Karnataka, West Bengal, UP, Bihar, Rajasthan, MP, Telangana, Chattisgarh, Uttarakhand)	
PMU	Technical	Direct (MoHUA) Through Partner (UNCRD)	National Level	Classroom E-course/Training
WASHI	Technical	Direct (CPHEEO)	National Level	International Level Conference
Stakeholder: Assistant Engineers				
ASCI	Managerial (organising) Technical (Knowledge, Skill, attitude)	Direct (ASCI)	State Level (AP, Telangana)	Classroom Exposure Visit

Training Institute	Type of Capacity Building	Platforms/Delivery Channels	Region	Format
CDD	Managerial Technical Others (Planning)	Direct (CDD society) Through partners (ASCI) Through Govt. Agency (SIUD, Mysuru, CMAK)	State Level (Karnataka, Rajasthan, Jharkhand, TN, AP, Telangana, MP)	Classroom Exposure Visit
CSE	Technical	Direct (CSE)	State Level (Bihar, UP) City Level (Chunar, Bijnor)	
CEPT	Technical	Direct (CEPT university) Through a partner (AIILSG and NIUA) Through a Govt. Agency (MEETRA/MJP)	State Level (Maharashtra, Rajasthan, UP) City Level (all cities in Maharashtra, few cities in Rajasthan and UP)	Classroom Exposure Visit
EY	Technical and Managerial – triggering workshop	Direct and through a partner – twinning program BORDA	District Level	Classroom, exposure visit
IIHS	Technical	Direct	City Level	Classroom Exposure Visit
NIUA/SCBP	Technical	Partners and Nodal AMRUT agencies	State and Towns (Karnataka, West Bengal, UP, Bihar, Rajasthan, MP, Telangana, Chattisgarh, Uttarakhand)	
PMU	Technical	Direct (MoHUA & KPMG) Direct (WASHI)	State level City level	Classroom E-course/Training Exposure/field visit
Stakeholder: Sanitary and Health Inspectors				
ASCI	Technical (knowledge)	Direct (ASCI)	State Level (AP, Telangana)	Classroom Exposure Visit
CDD	Managerial Technical Others (Planning)	Direct (CDD society) Through partners (ASCI) Through Govt. Agency (SIUD, Mysuru, CMAK)	State Level (Karnataka, Rajasthan, Jharkhand, TN, Telangana, MP)	Classroom Exposure Visit
CEPT	Technical	Direct (CEPT university) Through a partner (AIILSG and NIUA) Through a Govt. Agency (MEETRA/MJP)	State Level (Maharashtra, Rajasthan, UP) City Level (all cities in Maharashtra, few cities in Rajasthan and UP)	Classroom Exposure Visit

Training Institute	Type of Capacity Building	Platforms/Delivery Channels	Region	Format
EY	Technical and Managerial – triggering workshop	Direct	City Level	Classroom, exposure visit
IIHS	Technical	Direct	City Level	Classroom Exposure Visit
NIUA/SCBP	Facilitation	Partners and Nodal AMRUT agencies	States and towns (Rajasthan, UP)	
PMU	Technical	Direct (MoHUA & KPMG) Direct (WASHI)	State level City level	Classroom E-course/Training Exposure/field visit
WASHI	Technical	Direct (WASH Institute)	State Level (TN)	Classroom Exposure Visit; One PG Diploma Course affiliated to Madurai Kamaraj University)
Stakeholder: Masons				
ASCI	Technical skills	ASCI/CDD	City level (several cities in AP and Telangana)	Classroom and Exposure visits
CDD	Technical	Direct (CDD society) Through partners (NIUA)	State Level (Karnataka) City level (Coimbatore, Warangal, Bengaluru, Trichy, Jaipur, Bagru)	Classroom, Exposure visit
CSE	Technical	Direct (CSE)	State Level (Bihar, UP) City Level (Chunar, Bijnor)	Training
CEPT	Technical Others (Sensitization)	Direct (CEPT university) Through a partner (AIIILSG)	City Level (Wai, Sinnar)	Classroom Exposure Visit
EY	Technical	Through partnership with Labour Department Odisha	State level (Odisha)	Classroom, Field experience
IIHS	Technical	Direct/Partners	City level	Classroom
NIUA/SCBP	Facilitation	Partners	Towns (Rajasthan)	
WASHI	Technical	Direct	City level (Bhadrachalam, Bhopal MC)	Training
Stakeholder: Truck Owners				
ASCI	Technical skills	ASCI/DICCI	City level (several cities in AP and Telangana)	Classroom and Exposure visits
CDD	Technical	Direct (CDD society)	City level (Bengaluru)	Classroom and Exposure visits

Training Institute	Type of Capacity Building	Platforms/Delivery Channels	Region	Format
EY	One on one discussion	Direct	City level	Classroom, others – informal discussion with showcasing PPE, videos , etc
IIHS	Overview or awareness sessions	Direct/Partners	City level	Classroom
Stakeholder: Truck Operators				
ASCI	Technical skills	ASCI/DICCI	City level (several cities in AP and Telangana)	Classroom and Exposure visits
CDD	Technical Others (Health and safety)	Direct (CDD society) Through partners (Kam-avida)	City level (Devanahalli)	Classroom
EY	One on one discussion	Direct	City level	Classroom, others – informal discussion with showcasing PPE, videos , etc
IIHS	Overview or awareness sessions	Direct/Partners	City level	Classroom
Stakeholder: Private contractors				
ASCI	Managerial (Contracts, Safety and rights)	ASCI/DICCI	City level (several cities in AP and Telangana)	Classroom and Exposure visits
CDD	Managerial Technical Others (Planning)	Direct (CDD Society)	State level (ADSIS) National level	Classroom and Exposure visits
NIUA/SCBP	Only assessed	Only assessed	--	Orientation
Stakeholder: STP/FSTP Operator				
ASCI	Technical (skills)	Direct(ASCI)	National level	Training
CDD	Managerial Technical Others (Planning)	Direct (CDD Society)	National level	Classroom and Exposure visits
EY	Technical and managerial	Through Govt. agency(OWSSB)	State level; city level	Classroom and Exposure visits
Stakeholder: Consultants/consulting companies				
ASCI	Technical (skills)	Direct (ASCI)	National level	Classroom and Exposure visits
CDD	Managerial Technical Others (Planning)	Direct (CDD Society)	State level (ADSIS) National level	Classroom and Exposure visits
CEPT	Managerial	Direct (CEPT university)	National level	Classroom

Training Institute	Type of Capacity Building	Platforms/Delivery Channels	Region	Format
	Technical Others(sensitization)	Through a partner (NIUA)		
NIUA/SCBP	Orientation and facilitation	Direct and through partners	State , towns (Rajasthan)	Orientation workshop, training on DPR preparation
Stakeholder: Builders				
CDD	Managerial Technical	Direct (CDD Society)	State level (ADSIS) National level	Classroom and Exposure visits
Stakeholder: Corporates				
ASCI	Technical (knowledge)	ASCI/DASRA/ISC	National level (and Regional) State level (AP, Telangana)	Classroom and exposure visits
CDD	Managerial Technical	Direct (CDD Society)	City level (Hassan) National level	Classroom and Exposure visits
Stakeholder: HH/RWA				
ASCI	Technical (knowledge on FSM)	Direct (ASCI)	City level	Training and exposure visit
CDD	Technical, others (planning)	Through partners (NIUA, IIHS)	City level (Trichy, Bagru, Rajasthan)	Classroom and exposure visits
CEPT	Sensitization	Direct (CEPT university) Through a partner (AILSG)	City level (Wai, Sinnar)	Others(FGDs and videos)
EY	Discussion on FSSM during Swachh Sarvekshan in Bhubaneswar	Through Bhubaneswar Municipal Corporation	City level	Other – orientation on FSSM for providing scores
Stakeholder: CBOs/NGOs				
ASCI	Technical (knowledge on FSM), community participation, approaches	ASCI/CFAR/CSTEP	City level	Training
CDD	Managerial Technical Others (Planning)	Direct (CDD Society) Through a partner(NIUA,WASH, BORDA, CFAR, Tata-Dhan foundation)	City level (Bangalore, Jaipur, Jodhpur, Kota) National level	Classroom and Exposure visits
EY	Orientation and sensitization meetings; one on one discussion	Direct and ULB	City level	Classroom

Training Institute	Type of Capacity Building	Platforms/Delivery Channels	Region	Format
NIUA/SCBP	Technical and managerial	Direct and partners	State , towns (Rajasthan, Delhi)	Orientation
PMU	Technical	Through MoHUA	State level (All states)	e-course/training
WASHI	Technical	Direct (WASH institute)	City level (Lucknow, ULB officials in West Bengal)	Training on sanitation and FSSM
Stakeholder: Community organizer				
ASCI	Technical (knowledge on FSSM), Community participation, approaches)	ASCI/CFAR/CSTEP	City level	Training
CDD	Technical, others (treatment champions)	Through partner (CFAR, WASH)	City level (Jaipur, Jodhpur)	Classrooms
EY	Technical and managerial (triggering workshop); one on one discussion	Direct	City level	Classroom
Stakeholder: SHG				
ASCI	Technical (knowledge on FSSM), Community participation, approaches)	ASCI/CFAR/CSTEP	City level	Training
CDD	Others (WASH)	Direct(CDD society) Through partner (BMGF, BMZ)	City level (Devanahalli, /Gorakhpur)	Classroom
CEPT	Sensitization, sanitation credit	Direct (CEPT university) Through a partner (AIIILSG, CHF India, MAVIM)	City level (Wai, Sinnar, Jalna)	Others(FGDs and videos)
EY	Orientation and sensitization meetings; one on one discussion	Direct	City level	Classroom and field
Stakeholder: Academicians/ Academic Institutes				
ASCI	Technical (knowledge)	Direct (ASCI)	State level (AP,Telangana)	Classroom and exposure visit
CDD	Technical, orientation in WASH for students	Direct (CDD society)	City level (Bangalore)	Classroom
CEPT	Managerial Technical Others(sensitization)	Direct (CEPT university) Through a partner (NIUA)	National level	Classroom and exposure visits

Training Institute	Type of Capacity Building	Platforms/Delivery Channels	Region	Format
EY	Technical and managerial discussion on FSSM during Swachh Sarvekshan in Bhubaneswar	Through Bhubaneswar Municipal Corporation	City level	Classroom and PPT in colleges; FSSM material provided as a part of textbooks for high school students
NIUA/SCBP	Orientation	Direct and partner	National level	ToT
Stakeholder: Farmers Associations (reuse stage)				
CDD	Managerial and technical	Direct (CDD society) Through partner (ASCI)	State level (AP) City Level (Devanahalli)	Classroom and exposure visits
Stakeholder: Sanitary workers				
CDD	Technical, others (health and safety)	Direct CDD Society	City level (Bangalore)	Classroom and exposure visit
EY	One on one engagement with sanitary workers, SHG's of manual scavengers	Direct and ULB	City level	Classroom – one to one discussion
IIHS	Managerial/technical	Direct	National level	Classroom and exposure visits

Annexure D: List of private stakeholders interviewed

#	Name of the Organisation	Segment	Person interviewed	Designation	State	Contact No	E-Mail Address
1	Lokmangal Services	Septic Tank Cleaning company/ suction truck operator	Nagarjun Ghate	Owner/ proprietor	Maharashtra	09822856555, 8983366555	lokmgalservices@gmail.com
2	Swachhbhumi Sanitation Solution	Masons/ Septic tank builder	Amrut Patil	Owner/ proprietor	Maharashtra	09112023536, 08657859898	swachhbhumi@gmail.com
3	WTE Infra Projects Pvt. Ltd.	Treatment Plant Construction Company/ Treatment Plant Operator	Darshana Deshpande	Assistant Manager	Maharashtra	08378994688, 07350010552	services@watertreatmentindia.net
4	Panse Consultants	Desgin and Project Management Consultants	Ashwini Asutkar	Purchase cum Project coordinator	Maharashtra	7028931179	sales@panseconsultants.com
5	Thermax Global	Technolgy/Equipment vendor	Somnath Vedpathak	Sr. Executive Purchase	Maharashtra	9823969385	somnath.vedpathak@thermax.global.com
6	MITCON Consultancy & Engineering services pvt.ltd.	Project Management Consultancy	Dr. Sadeep Jadhav	Executive Vice President (Env't. Management and Engineering Division)	Maharashtra	9665043400	sandeep.jadhav@mitconindia.com

7	Maa Narmada Safai Sanrakshak Enterprises	Septic Tank Cleaning company/ suction truck operator	Ramchandra Rao	Owner/ proprietor	Madhya Pradesh	74 15452904, 7772094873	NA
8	Water World Super Mart	Treatment Plant Construction Company/ Treatment Plant Operator	Ajitabh Sharma	Owner/ proprietor	Madhya Pradesh	9826397885	sharma_ajitabh@rediffmail.com
9	Ready Made septic tank	Masons/ Septic tank builder	Manoj Vishwakarma	Owner/ proprietor	Madhya Pradesh	098268 26579	NA
10	Raipur Septic Tank	Septic Tank Cleaning company/ suction truck operator	Sandeep Dhankar	Owner/ proprietor	Chattisgarh	9009993688	dtcryp1992@gmail.com
11	Mahindra Consulting Engineers Limited	Desgin and Project Management Consultants	Srinivasan A	Projects, Head	Tamilnadu	9840996486	mace@mahindra.com
12	Water Systems India Pvt. Ltd	Treatment Plant Construction Company/ Treatment Plant Operator	N.Krishnan	Managing Director	Tamilnadu	044-24513051	sales@watersystemsindia.com
13	RSR Lorry Service	Septic Tank Cleaning company/ suction truck operator	Sathyaraj	Owner/ proprietor	Tamilnadu	NA	NA
14	Saharsh Tank Cleaning Service	Septic Tank Cleaning company/ suction truck operator	Kannan	Owner/ proprietor	Tamilnadu	9941267777	info@tankcleaning.co.in
15	GET Water Solutions Pvt. Ltd	Treatment Plant Construction Company/ Treatment Plant Operator	Cyril Gubbi	Director	Tamilnadu	9840046768	cyrilg2015@gmail.com
16	Envirocare India Pvt. Ltd	Treatment Plant Construction Company/ Treatment Plant Operator	Rajasekaran	Project Manager	Tamilnadu	9994896263	NA
17	Goodcare Environment System	Treatment Plant Construction	S. Murthy	CEO	Tamilnadu	9003255183	NA

		Company/ Treatment Plant Operator					
18	Vitya Consultants	Desgin and Project Management Consultants	K. Krishna	Managing Director	Telangana	9989211387	ed.vitya@gmail.com
19	Indus Ecowater	Onsite sanitation provider	Suresh Kumar	Proprietor	Telangana	9640609000	suresh@modernstp.com
20	Visakha septic tank owners welfare association(union)	Septic Tank Cleaning company/ suction truck operator	Jeeva	Union Head	Andhra Pradesh	NA	NA
21	SL water technologies	Treatment Plant Construction Company/ Treatment Plant Operator	Satyanarayana	Proprietor	Andhra Pradesh	9052848584	slwatertechnologies@gmail.com
22	Godavari Mineral Water Technologies	Technolgy/Equipment vendor and on-site solution provider	Chiranjeeva Rao	Managing Director	Andhra Pradesh	0891-6562666	gmtwater@gmail.com
23	Ramana Septic Tank Cleaners	Septic Tank Cleaning company/ suction truck operator	Ramakrishna Mahanti	Proprietor	Andhra Pradesh	9152606259	mrkmahanti@gmail.com
24	Rudrabhishek Enterprises Limited	Desgin and Project Management Consultants	Harish Kumar Sharma	Chief Business Development Officer	Uttar Pradesh	9717050800	Harish@replurbanplanners.com
25	Fontus water – Earth Water Group	Technolgy/Equipment vendor, Treatment plant construction and operation	H Subramaniam	Chief Operating Officer	Delhi	9810431663	subrah@ewgroup.in
26	Divija Constructions	Treatment Plant Construction Company/ Treatment Plant Operator	Satish Goyal	Partner	Rajasthan	0141-2784684 / 9829147776	divijaconstruction@gmail.com

27	Cogent Training Research Development Consultants Pvt. Ltd	Desgin and Project Management Consultants	Sanjay Shakya	Director	Rajasthan	8003772222	sshakya@cogent-consulting.net
28	JITF Water Infrastructure Ltd. (Jindal)	Treatment Plant Construction Company/ Treatment Plant Operator	Santanu Paul	AGM Business Development	Delhi	9560400517	Santanu.Paul@jindalaquasource.com>
29	Navyaa Watertech Solutions	Technolgy/Equipment vendor and on-site solution provider	Pooja Garg	Proprietor	Uttar Pradesh	9910232922	navyaawatertechsolutions@gmail.com
30	Rajkamal builders infrastructure ltd	Treatment Plant Construction Company/ Treatment Plant Operator	Ilesh Patel	Incharge Rajasthan Region	Rajasthan		NA
31	Sri Krishna Sewage Tank Services	Septic Tank Cleaning company/ suction truck operator	Roshan Yadav	Proprietor	Rajasthan	9314996129	NA
32	Sri Shyam sewer tank service	Septic Tank Cleaning company/ suction truck operator	Satya Prakash Yadav	Proprietor	Rajasthan	9314996129	NA
33	Arkin Creations Pvt Ltd	Technolgy/Equipment vendor, Treatment plant construction and operation	Richa Jha	Director	Haryana	918826894290 +918826419992	richa.jha@arkin.org.in
34	Gour sewer tanks pvt ltd.	Septic Tank Cleaning company/ suction truck operator	Chandrapal	Proprietor	Uttar Pradesh	9152393560	NA
35	Toyatech Eco Solutions Pvt. Ltd.	Treatment Plant Construction Company/ Treatment Plant Operator	Velumani	Managing Director	Tamilnadu	9884321238	info@toyatecheco.com
36	KG cement	Masons/ Septic tank builder	Sarvanan	Project incharge	Tamilnadu	9600073349	info@kgcementproducts.com
37	Horizon Plasto Tech	Onsite sanitation provider	Vasanth M.	Senior sales Executive	Tamilnadu	044 4315 6670	NA

38	Unity Consultants	Project Management Consultancy	Abhay Joshi	General Manager (Projects)	Maharashtra	2025467788	admin@unitepl.com
39	GeoK Energy LLC	Onsite sanitation provider	Mr. Karthikeyan Shanmugam	Managing Director	Tamilnadu	na	na
40	3S India	Onsite sanitation provider	Mr. Arjoon Deshpande		Maharashtra	9823074747	customercare@3sindia.com

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, AILSG, 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.

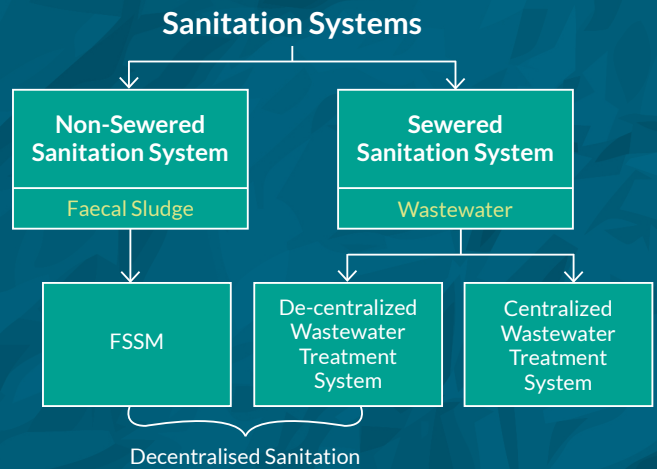
Publications and Reports



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

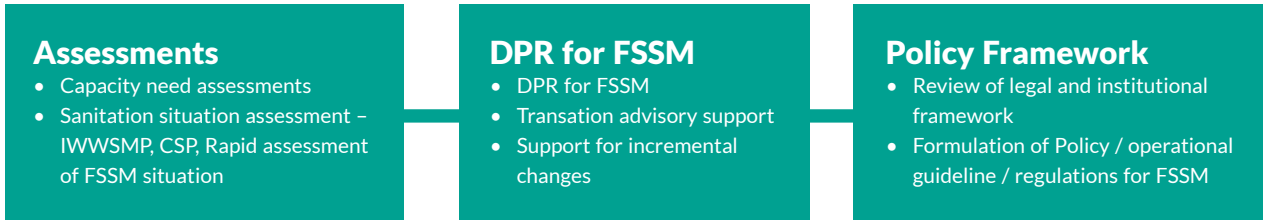
3

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



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 Faecal 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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

Partners of the Platform



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