



सत्यमेव जयते

Government of Rajasthan

**DRAFT POLICY  
ON**

# **FAECAL SLUDGE & SEPTAGE MANAGEMENT (FSSM)**

**2017**





सत्यमेव जयते

Government of Rajasthan

**DRAFT POLICY  
ON**

**FAECAL SLUDGE & SEPTAGE  
MANAGEMENT (FSSM)**

**2017**





सत्यमेव जयते

Government of Rajasthan



**VASUNDHARA RAJE**  
Chief Minister, Rajasthan

(Vasundhara Raje)





सत्यमेव जयते

Government of Rajasthan

SH. SHRICHAND KRIPLANI

UDH & LSG Minister, Rajasthan



(Sh. Shrichand Kriplani)





# ABBREVIATIONS

BIS	Bureau of Indian Standards
BOD	Biochemical Oxygen Demand
CBO	Community Based Organization
CPHEEO	Central Public Health and Environmental Engineering Organization
CPCB	Central Pollution Control Board
CSR	Corporate Social Responsibility
DEWATS	Decentralized Wastewater Treatment System
DLB	Directorate of Local Bodies
DPR	Detailed Project Report
FSSM	Faecal Sludge and Septage Management
FSTP	Faecal Sludge Treatment Plant
GIS	Geographical Information System
GPR	Ground Penetrating Radar
Gol	Government of India
GoR	Government of Rajasthan
lpcd	Liters per capita per day
LSG	Local Self Government Department, GoR
MIS	Management Information System
MoU	Memorandum of Understanding
MoUD	Ministry of Urban Development, Gol
NGO	Non-Government Organization
O&M	Operation & Maintenance
OSSF	On-site Sanitation Facility
PPP	Public Private Partnership
RSPCB	Rajasthan State Pollution Control Board
RUIDP	Rajasthan Urban Infrastructure Development Project
RUDSICO	Rajasthan Urban Drinking Water, Sanitation and Infrastructure Corporation
SBM	Swachh Bharat Mission
SMS	Sending Message Services
SS	Suspended Solids
STP	Sewage Treatment Plant
UDH	Urban Development & Housing Department
ULB	Urban Local Body
URIF	Urban Reform Incentive Fund
VGf	Viability Gap Fund
WWTP	Wastewater Treatment Plant

## Key Terminology

**Effluent:** the wastewater that flows out of a treatment system or supernatant liquid discharged from the septic tank.

**Sludge:** It is the settled solid matter in semi-solid condition. It is usually a mixture of solids and water deposited on the bottom of septic tanks, ponds, etc. The term sewage sludge is generally used to describe residuals from centralized wastewater treatment, while the term septage is used to describe the residuals from septic tanks.

**Faecal sludge:** Faecal sludge is the solid or settled contents of pit latrines and septic tanks. Faecal sludge differs from sludge produced in municipal wastewater treatment plants. Faecal sludge characteristics can differ widely from household to household, from city to city, and from country to country. The physical, chemical and biological qualities of faecal sludge are influenced by the duration of storage, temperature, intrusion of groundwater or surface water in septic tanks or pits, performance of septic tanks, and tank emptying technology and pattern.

**Septage:** Septage is the contents of septic tanks. It includes the liquids, solids (sludge), as well as the fats, oils and grease (scum) that accumulate in septic tanks over a period of time.

**Greywater or Sullage:** Domestic dirty water not containing human excreta. Sullage is also called grey water. It may be the waste water from housecleaning, kitchens and bath rooms.

**Scum:** It is extraneous or impure matter like oil, hair, grease and other light material that floats at the surface of the liquid in the septic tank, while the digested sludge is stored at the bottom of the septic tank.

**Sewage or Black water:** Wastewater generated from toilets containing human excreta and fecal matter is called sewage or black water.

**Pit Latrine:** latrine with a pit for collection and decomposition of human excreta and from which liquid infiltrates into the surrounding soil.

**Pour-flush Latrine:** Latrine that depends for its operation of small quantities of water, poured from a container by hand, to flush away feces from the point of defecation.

**Septic Tank:** An underground tank that treats wastewater by a combination of solids settling and anaerobic digestion. The United States Environmental Protection Agency (US EPA) defines a septic tank as a watertight, on-site treatment system of domestic sewage, consisting of two or more compartments, in which the sanitary flow is detained to permit concurrent sedimentation and sludge digestion.

**Desludging:** The operation of removing sludge (and septage) from septic/digestion tanks, pit latrines or any other primary treatment units is called de-sludging. Usually this is done by mechanical means (by vacuum suction pump) but manual de-sludging is sometimes used despite it being banned in India.

**Faecal Sludge Treatment Plants (FSTPs):** An independent septage and Faecal sludge treatment facility for remediating the solid and liquid components to prescribed standards for safe disposal and reuse.



## 1 Introduction

- 1.1 What is FSSM?
- 1.2 Why FSSM?
- 1.3 Background
- 1.4 Applicability of the Policy

## 2 Key Issues and Challenges

- 2.1 Awareness and Capacities
- 2.2 Planning, Design and Implementation
- 2.3 Institutional Framework

## 3 Policy Vision

## 4 Policy Goals

## 5 Strategic Policy Action

- 5.1 IEC & Stakeholder Participation
- 5.2 Institutional and Regulatory Framework
- 5.3 Partnership Building
- 5.4 Funding and Financing
- 5.5 Implementation and Service Delivery
- 5.6 Intervention Approach for Urban Areas in Rajasthan
- 5.7 Monitoring and Evaluation
- 5.8 Capacity Building and Training

## 6 Expected Outcomes

- 6.1 Milestones & Timeline

## 7 Annexures

- 7.1 Geographical Regions of Rajasthan
- 7.2 Regulatory Framework



# Introduction

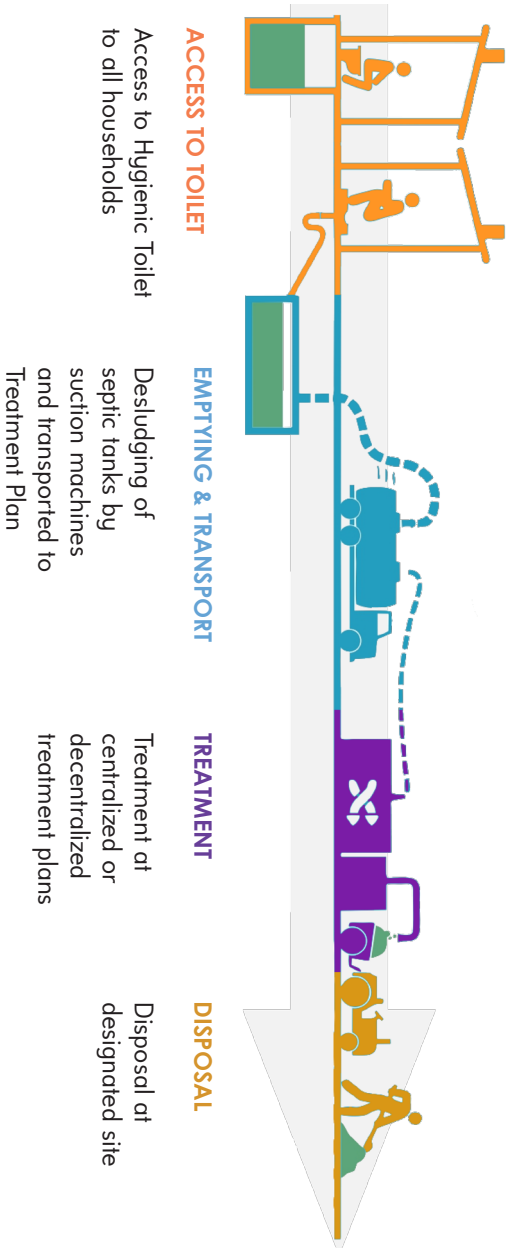
---

## 1.1 What is FSSM?

Faecal Sludge and Septage Management is the process of safe collection, conveyance, treatment and disposal/ reuse of faecal sludge and septage from on-site sanitation systems such as pit latrines, septic tanks, etc., i.e. the management of the mixture of human waste (solid and liquid) that is not conveyed by a centralized sewerage system. A typical FSSM system involves mechanized desludging of a septic tank/pit latrine using a suction emptier machine, which then stores the collected waste in a sealed container and transports it to a treatment facility. In some cases it is a transfer station for temporary storage before being transported to a treatment facility by a different vehicle. At the treatment facility (either a dedicated FSTP or co-treatment in STP), the faecal sludge/septage undergoes pre-treatment, followed by primary and secondary treatment (even tertiary treatment and polishing). Some efficient treatment facilities also incorporate resource recovery (methane, reuse of treated wastewater, manure/soil conditioner, etc.) in the treatment process. The final residual product from the treatment plant is either recycled/reused or disposed safely in the surrounding environment that would comply with all pollution and quality standards.

There can be multiple deviations from this process at different stages of the sanitation value chain depending on site situation, techno-economic feasibility and capacities of the operators & regulators.

Figure 1: Schematic Diagram of FSSM Operation



Efficient FSSM operation entails streamlining all processes and components along the 'sanitation value chain for on-site sanitation systems' during planning, design, implementation, operation and monitoring. Successful FSSM operations need active coordination and participation among relevant stakeholders – ULBs, service providers, operators, residents/community groups, state government, funding agencies, etc.



## 1.2 Why FSSM?

On-Site Sanitation facilities (OSSF) are the primary mode of sanitation system in India. Over 48% of urban Indian households depend on onsite facilities (Census 2011) and this proportion is increasing, especially with the rapid pace of construction of individual and community toilets under SBM (Swachh Bharat Mission).

Most of these are based on on-site facilities such as pit latrines and septic tanks. Conversely, only 32.7% of households have access to a piped sewerage system. In terms of treatment of wastewater/Faecal Sludge, only 64% of the listed STPs in India are operational (as of 2015), while 10% are non-operational, 18% under construction and 8% are proposed on paper. The treatment capacity that is available is only for 37% of the total 62,000 MLD (million litres per day) of human waste that is generated in urban India.

India's urban population is 377 million or 31% of the total population (as on 2011) is expected to increase to 600 million by 2031. The Census 2011 also showed that in 4,041 statutory towns, 7.90 million households (HHs) do not have access to toilets and defecate in the open. Under the SBM, it is envisaged that nearly 80% of these 7.90 million HHs (or nearly 6.3 million HHs) will meet their sanitation needs through newly-built individual household toilet (IHHT) and the remaining 20% (or nearly 1.6 million HHs) will rely on existing or newly-built community toilets.

Poor sanitation has significant health costs and untreated faecal sludge and septage from cities is the single biggest source of water resource pollution in India. Human waste has clearly been identified as the leading polluter of water sources in India, causing a host of diseases including diarrhoea, agricultural contamination and environmental degradation.

A collective need is felt for managing Faecal sludge and septage from these on-site sanitation facilities through efficient, affordable and manageable FSSM services.

### 1.3 Background

As per Census 2011, Rajasthan is home to an urban population of 1,70,48,085 (around 24.87% of the total population of Rajasthan), growing at 29.10% from 2001 (on par with India's growth rate of 31.8%). Based on current rate of urbanization, the state is expected to maintain a similar growth rate in the upcoming decades, ensuring planned development of towns as master plans for 183 towns (out of 187) have been prepared and approved by the state government. There are a total of 222 urban settlements in Rajasthan, along with 190 ULBs. It is incumbent on these ULBs to implement and manage urban services including safe sanitation, faecal sludge & septage management.

Further as per Census 2011, among the 82% households with individual latrine facilities, only 25.63% urban Households in Rajasthan were connected with a piped sewerage network.

Centralized Sewerage systems are not technically or financially viable for most small towns, medium towns and areas with water supply less than 70 lpcd, . It was reported that there is especially considering the difficulty in provision water in many areas of Rajasthan.

As of 2015, 47 out of 63 Sewage Treatments plants in Rajasthan were still either under construction or proposed. On the other hand, more than half the urban population (53.48%) relied on on-site sanitation systems such as Septic Tanks (45.62%), Pit latrines (5.44%) and other systems (2.42%) for collection of faecal sludge and wastewater. This clearly indicates that on-site sanitation far supersede piped sewerage system and is the primary sanitation system in Rajasthan.

Rajasthan has an ambitious target of constructing 5 lakh toilets by 2017 in urban areas, and while it is expected to eliminate the undignified practice of open defecation, it only addresses the first component of the sanitation value chain. The pertinent issue of proper collection, conveyance, treatment and disposal of the faecal sludge/septage is likely to remain.

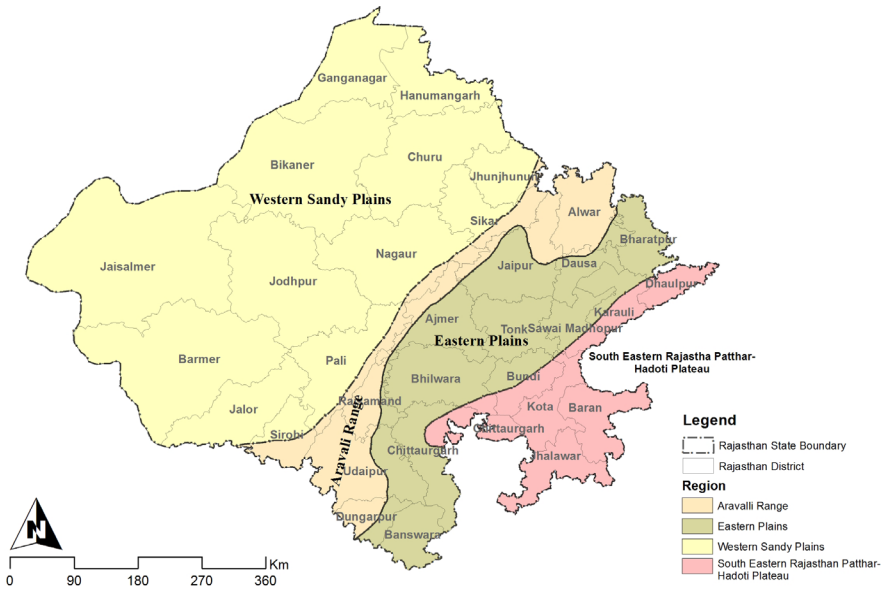
Table 1: Distribution of Settlements according to coverage of households by On-Site Sanitation Facilities

% of HHs with On-Site Sanitation System	Number of Towns	% of Total no. of Towns	Total HHs in these Towns	HHs with OSSF in these Towns	OSSF as % of Total HHs	Major Towns in the Category
> 75%	67	22.60%	793,009	652,480	82%	Ajmer, Udaipur, Bhilwara, Sri Ganganagar, Hanumangarh, Sikar
50 - 75 %	130	43.80%	1,057,743	659,956	62%	Kota, Jaisalmer, Alwar, Bharatpur, Tonk, Sawai Madhopur, Jhalawar
25 - 50 %	89	30.00%	462,110	185,146	40%	Pali, Bikaner
< 25 %	11	3.70%	778,078	155,497	20%	Jodhpur, Jaipur

*A majority of the towns (66.4%) have coverage of more than 50% through OSSFs such as Septic Tanks and Pit latrines. More than 13 lakh households had some form of OSSF.*

The State Sewerage and Waste Water Policy, 2016 for Rajasthan briefly mentions Septage management, by acknowledging its role in public health and sanitation service delivery, along with providing a guideline for septage disposal. But given the limited connection of piper sewer system, absence of sewage treatment facilities in most urban areas and prominence of on-site sanitation as the primary sanitation system in urban areas, Faecal Sludge and Septage Management (FSSM) is expected to assume the central role in providing safe, hygienic and sustainable sanitation services in Rajasthan. This requires a dedicated policy document that addresses specific issues and challenges of FSSM and provides a road map for its implementation. In the spirit of the 'National Policy on Urban Faecal Sludge and Septage Management (FSSM), 2017', this draft document on 'State Urban Faecal Sludge and Septage Management Policy for Rajasthan' identifies the issues of safe sanitation in urban areas and provides an outline for establishing and effectively operationalizing FSSM at state and city level in Rajasthan.

**Figure 2: Geographical Regions of Rajasthan**



Geographical regions of Rajasthan have been taken into consideration to address the issues and challenges that are specific to those regions in terms of FSSM operations and limitations in the way of implementation of policy interventions and City FSSM Plan. Refer Annexure- I for further details of these geographic regions.

### 1.4 Applicability of the Policy

The policy shall be applicable (unless specified otherwise) to all schemes, programs, projects, plans, future policies. It shall be considered as a base for framing up different guidelines of Rajasthan government (relevant ministries, departments, agencies, authorities, Special Purpose Vehicles, etc.) and urban local bodies in Rajasthan with respect to initiatives such as urban development, urban sanitation services, tourism development, heritage conservation, housing projects, slum development, economic development, livelihood generation,

industrial/economic zones, etc. for urban (as defined by census – Statutory towns, Outgrowths and census towns), peri-urban areas and places of pilgrims/historical/religious importance as notified by relevant state government within Rajasthan. The provisions shall also be applicable to approved schemes, activities, projects and initiatives by the private sector, including corporates, donor agencies, NGOs, non-profit organisations, etc. as well as multilateral and bilateral organizations, within the state of Rajasthan.

The guidelines of faecal sludge and septage / sewerage shall also be addressed in a holistic manner, with a strategy that provides for minimum needs and is appropriate and affordable for all areas and population considering the urban situation.

The policy would address the enabling provisions in the form of suitable regulation and institutional framework, capacity building, education and awareness among all stakeholders. It also seeks to address the efficiency of systems in place for onsite sanitation whereof the faecal sludge output needs to be managed in an environmentally safe manner including proper engineering design, construction and maintenance of septic tank systems, pit latrines and such other systems generating faecal sludge.



# 2

## Key Issues and Challenges

---

The road ahead for Rajasthan in operationalizing FSSM in urban areas across the state will be a challenging one. Based on broad estimates for urban areas in Rajasthan (using Houselisting and Housing data in Census, 2011), around 38.7 lakh litres of septage is produced daily from septic tanks, public latrines and pit latrines alone, while almost 3.3 lakh litres of human waste is generated from open defecation. A further 9 lakh litres of faecal sludge (not including the wastewater) is generated from piped sewer system and service latrines. Much of the fecal sludge and wastewater produced is likely to be collected and disposed in an unsafe manner.

Most of the septic tanks present are not constructed as per standard specifications, leading to varying sizes, partial lining, frequent failures, leakages/contamination of water bodies or soil etc. Further, they are not provided with secondary effluent disposal units in the form of piped sewer network, leach pits or leach fields, thus directly discharging septic effluent into drains. Most households only call for septic tank cleaning services when the tank is overflowing or on the verge. The frequency of desludging is typically varies from 10 – 20 years due to irregular sizes and usage pattern, which far exceeds the prescribed interval of 2-3 years as recommended by CPHEEO Manual, MoUD advisory on Septage management (2013). All private desludging operators are unregistered and lack necessary training to safely carrying out these cleaning services. There are no standards or specifications for equipment and trucks, which are custom built with sub-par material. Once the waste is collected by the operator, it is disposed arbitrarily, usually in natural streams, rivers, open land or even inside existing Sewer Manholes. All these unorganised practices are completely undesirable which would cause major public health hazard.

There are very few dedicated treatment facilities for treatment and disposal of septage and faecal sludge in Rajasthan. It is uneconomical for the operators

to treat the waste themselves before disposing it. They are also being partly unaware of its hazardous consequences. Even the ULB-owned desludging tankers are forced to follow the same practice. The ULBs lack sufficient financial and manpower capacities to monitor these informal operations, while also lacking the expertise (besides resources) for planning and managing a treatment plant or implementing a scheduled desludging service on their own. Thus, issues pertaining to awareness, institutional capacities, design & implementation and institutional framework can be observed across the state.

## 2.1 Limited Awareness and Capacities

- Uniform lack of awareness and capacities for Faecal Sludge and Septage Management in urban areas of Rajasthan, especially among the residents, service providers and the ULBs
- Active participation and organization is missing among the residents – limited knowledge on FSSM practices, no community level monitoring of existing operations, untimely desludging of septic tanks by households, prevalence of undesirable toilet hygiene and usage, construction of on-site systems not at par with standards, etc.
- ULBs not properly introduced to planning for FSSM, technologies, standard procedures, management framework, manpower requirements, etc., and thus are unable to take necessary action/initiatives
- Limited capacities and coordination between ULBs and State government. ULBs often lack capacities to mobilize resources (funds, manpower, expertise, equipment, etc.) on their own to deliver effective services, while the transfer of resources from the state govt. to local body becomes a tedious process.

## 2.2 Lack of Proper Planning, Design and Implementation of Sanitation Infrastructure

- Most stakeholders (such as various state government departments, ULBs, residents, desludging operators, service providers, etc.) are not up-to-date on latest developments in FSSM - modern technologies, standard construction techniques, operating procedures, safety & hygiene safeguards, etc.



- Toilet systems – such as septic tanks, single/twin pit pour flush latrines, etc. are not constructed as per design specifications – BIS and NBC, and thus there are frequent incidences of leaks, breakages, failures and contamination of soil, air and water.
- Desludging operators and Service providers are not properly trained and do not use safety equipment during operations.
- As described earlier, there is an insufficient capacity for treatment of all wastewater and faecal sludge/septage generated in Rajasthan. Although new STPs are being proposed under the RUSDP Phase – III and other state and central government schemes such as AMRUT in many cities and towns, it has been observed that small pockets and peripheral areas are being left out from sewerage coverage. These areas would require dedicated septage and faecal sludge processing/treatment facilities for safe disposal or reuse.

### 2.3 Weak Institutional Framework

- Ambiguity in delineation of responsibilities and overlapping mandate among various government agencies at state and city level
- Absence of dedicated service level benchmarks for FSSM
- Limited availability of Standard Designs, Operating Procedures, Guidelines, Manuals, dedicated norms, etc. for city-wide FSSM to aid the ULBs for effective planning and implementation.
- Insufficient funds available for creating and O&M of city wide FSSM infrastructure. They are further unaware of various suitable service delivery mechanisms for financially viable operations.
- ULBs are not empowered to collect sanitation taxes, services charges, etc. required to maintain a steady revenue stream and sustaining FSSM infrastructure



# 3

## Policy Vision

---

“ The State where urban population has an improved quality of life with sustainable faecal sludge and septage management based on active participation of communities, including economically and socially vulnerable sections of the society, while also maintaining environment integrity. ”



# Policy Goals

The primary aim of this policy is to establish FSSM as a central component in delivery of safe sanitation service in Rajasthan by creating a favourable environment for its effective implementation across all urban areas in a pragmatic, sustainable and participatory manner. The Policy will strive for:

- ➔ **Ensuring timely and Safe collection and transport of faecal sludge and septage:** Encouraging a shift towards scheduled desludging of septic tanks, pit latrines, etc. (periodically within 2 – 3 years) in all ULBs, while generating awareness and incentivizing households for the same. The process would ensure complete containment of waste with no direct human contact with the waste under any circumstance.
- ➔ **Complete treatment of all collected waste:** All collected Faecal sludge should reach the treatment facility (without arbitrary and illegal disposal) and treated as per standards for safe disposal/reuse. System of incentives and vis-à-vis imposition of penalties will be tool to monitor desludging operators and to ensure disposal at designated locations. There will be greater use of technologies that consume very less power and use biological processes.
- ➔ **Ensuring resource recovery:** The treatment facility would maximize reuse of treated wastewater and sludge for various public and commercial purposes. This will contribute in part towards cost recovery and even profit generation
- ➔ **Create enabling institutional environment and strengthening regulatory framework:** The mandate, roles & responsibilities of all government departments and other stakeholders would be clearly defined and necessary steps taken for augmenting their capacities. Appropriate institutions, management & monitoring systems and standard procedures would be in place at state and city level that incrementally strengthen FSSM operations in urban areas. Necessary steps would be taken to augment capacities at state, city and community level for government officials, service providers, residents, etc. The institutional framework would also enable an environment conducive for greater participation of private sector.

- **Standardized Infrastructure and Professionalized Operations:** Standards and norms documented and adequately disseminated for design, construction and O&M of FSSM infrastructure such as On-Site Sanitation Facilities (Septic Tanks, Soak pits/Soak fields, Lined Pit Latrines, Digestion Tanks, etc.), Suction Emptier trucks & equipment, Treatment technologies (Sludge Drying Beds, DEWATS, FSTPs, Co-Treatment with STPs, etc.) and criteria for end-product disposal/reuse. Moreover, the services provided by various public and private players should be professionalized with standard operating procedures, operating and monitoring guidelines, etc. through appropriate training and capacity building of relevant service providers and regulators.
- **Innovation in service delivery and management:** Improving service delivery, management and monitoring by introducing technological interventions such as I.T. enabled single window system, GIS/GPS aided planning and operations, custom MIS modules, etc. and greater emphasis on private participation in service delivery.
- **Setting up an Urban Sanitation Fund:** This will be a dedicated fund for sanitation and FSSM, which would consolidate resources and funds from multiple sources – various central schemes and programs, state govt. grants, ULB funds, CSR, URIF, Donor fund, Bilateral/multilateral grants & loans; and through innovative instruments such as Social & Development Impact Bonds, Category – I Alternative Investment Funds, etc. which would be managed by the state government (through a designated nodal agency) and provided to ULBs/ service providers/ other relevant stakeholders based on a transparent and flexible criteria, linked to performance and need. Similarly, ULBs with sufficient capacities can set-up city sanitation funds (linked to the state sanitation fund) for implementation of city-level FSSM strategy, plan and projects.
- **Greater Awareness and Participation:** The residents would become active participants in the planning, implementation and monitoring process, while all stakeholders would be sensitized and sufficiently made aware of the processes, procedures, components, etc. of FSSM. Multiple channels (digital, broadcast, print, physical, etc.) for communication, learning and stakeholder engagement would be used. • Promoting mechanisms to bring about and sustain behavioural changes aimed at adoption of healthy sanitation designs and practices, including the responsibility to ensure safe containment and management of faecal sludge and septage by urban households including liquid effluent.

- **A strong partnership network:** Multi-sector partnership of government agencies/ULBs with other public/private organisations, groups and institutions for collaborating on knowledge improvement, funding, improved services, business opportunities, research & innovation, stakeholder engagement, peer learning, etc. Formal and Informal platforms would be established for networking among various ULBs, service providers, associations, etc. for learning, knowledge sharing and partnership building.

#### 4.1 Intervention Areas for FSSM

- In towns without a centralized Sewerage Network (existing or proposed), full Scale FSSM would be implemented across the town including a dedicated Faecal Sludge Treatment Plant.
- Class – III, IV & V towns.
- Towns and Cities that are partially covered by a centralized Sewerage Network – Un-Sewered areas which could not be connected to organised sewerage system, would be served by FSSM services operations and treatment shall be at dedicated centralized Sewage Treatment Plant.
- Un-Sewered areas within cities where Desludging is not possible, provision for Decentralized Treatment of Wastewater & Faecal Sludge shall be made.





# 5

## Strategic Policy Actions

---

The strategic points on Policy Actions would outline the broad provision to address the aforementioned issues and lay out a roadmap for effective implementation of FSSM in urban areas across the state. The provisions of the policy are broad-based and a detailed State FSSM Guidelines shall be formulated that will elaborate upon the provisions of this policy and aid relevant stakeholders in planning, design, implementation, management, monitoring and capacity building of various components under FSSM in urban areas of Rajasthan. The Strategic Policy Actions have been classified under the following categories:

### 5.1 IEC & Stakeholder Participation

A rigorous awareness campaign should be undertaken to educate various stakeholders about Faecal Sludge and Septage Management.

ULBs can be tasked with spreading awareness among residents about govt. schemes, benefits of scheduled desludging, various incentives for the same, good sanitation practices and monitoring of FSSM operations. This would be done with the involvement of ward councillors, community leaders, CBOs, etc.

Special campaigns can be undertaken for making communities and households aware about the importance of scheduled desludging and the incentives to be given for households that participate in scheduled desludging services. Various neighbourhood and city level institutions such as schools, colleges, CBOs, etc. would be actively engaged as volunteers in these campaigns

Integration of other State and Central government campaigns for IEC and awareness generation for sanitation with related schemes and programs such as SBM, AMRUT, local WASH programs, etc.

State government can identify institutions and agencies to undertake awareness and communication operations at state and ULB level.

Multiple channels may be used for the same - such as media (social, print, broadcast, etc.), advertising, flyers/ brochures/ booklets, workshops, road shows, rallies, announcements, meetings, etc.

All IEC and awareness material would be in multiple languages, especially local dialects.

## 5.2 Institutional and Regulatory Framework

A dedicated FSSM cell & committee can be set-up within Directorate of Local Bodies, LSG to manage FSSM related initiatives such as projects, city FSSM plans, awareness campaigns, single-window systems, etc. along with the State Sanitation Fund. Various external agencies can be engaged for different initiatives and functions.

State-level FSSM rules and guidelines would be formulated that will include Standard operating procedures and training material for ULBs, Manuals for service providers, models drawings/DPRs/Bid Documents, model Septage Management rules for ULBs, technological options, etc.

The State level Guidelines and Standard Operating Manual shall include –

- Format for City level Strategy and Contents for City FSSM plans
- Advisory on selection of suitable FSSM interventions – Number, Type and Capacity of Vehicles, Transfer Station, Treatment Option, Disposal/Reuse option, etc.
- Model Septic Tank design/construction/maintenance,
- Model for desludging vehicles, cleaning machines, equipment and safety gear

- Options and broad specifications for Treatment technologies – Co-Treatment with STP, DEWATS, FSTP, etc.
- Steps for Capacity building at State and City level for govt. officials,
- Operative manual for desludging and treatment plant operators,
- Model criteria for licensing of desludging operators,
- Steps for implementing scheduled desludging services at city level,
- Format for assessing financial requirements for FSSM by ULBs – Capital and O&M

All informal FSSM operations (by masons, desludging operators, cleaners, etc.) would be formalized and professionalized through appropriate channels, such as licensing by ULBs, MIS – based reporting of operations, formal trainings, access to formal finance, etc.

For Licensing of desludging operators and other service providers by the ULBs, a model eligibility criteria shall be framed. It would allow licensed desludging operators to avail various incentives and benefits. All private desludging operators shall be required to obtain a licence from the respective ULB to operate in the city.

Roles of various stakeholders including State government departments, ULBs, residents, service providers and private sector partners shall be clearly defined for reducing ambiguities and overlap of functions. The roles and responsibilities have been briefly provided in the subsequent section.

Various steps would be taken by the state government and ULBs to enable greater private sector participation in FSSM service delivery. Greater thrust would be given to PPP projects in FSSM, VGF ( Validity Gap Funding )from Central and State government wherever FSSM projects are not completely feasible. Incentives and concessions in various state and ULB taxes/charges for setting up Faecal Sludge treatment plants, setting up guarantee funds to provide financial assistance for purchase of desludging vehicles or capacity building, etc.

**Table 2: Roles and Responsibilities of Stakeholders**

Agency	Roles and Responsibilities
Department of Local Self Governance, GoR	Nodal Agency for managing FSSM operations for Rajasthan
	Implementation of State level FSSM initiatives
	Overall supervision and coordination of FSSM operations in Rajasthan
	Formulating a roadmap for realisation of the State FSSM Policy
	Responsible for preparation of the State FSSM Guidelines, Standard Operating Procedures, User Manuals, Model FSSM rules for ULBs, drafting state acts and policies related to urban sanitation and FSSM, etc.
	Guiding all Urban Local Bodies for implementing city level FSSM strategy, plans and projects during planning, operation and monitoring stages
	Coordinating networking among various stakeholders
	Responsible for building partnerships
	Prepare a Training Calendar to conduct trainings and workshops across the state, customized to target various stakeholders such as ULB officials, service providers, NGOs, CBOs, Corporates and Public. Coordinate with the ULBs and engage Professionals to provide trainings on FSSM.
Rajasthan State Pollution Control Board	Ensure compliance of FSSM operations through inspections, environmental monitoring, etc.
	Address grievance related to environmental hazards due to FSSM operations
	Assist in formulation of relevant advisories, guidelines, manuals, etc. to ensure environmental compliance for FSSM operations
Social Justice and Empowerment Department, Govt. of Rajasthan	Ensuring compliance of provisions under the “The Prohibition of Employment as Manual Scavengers and their Rehabilitation Act, 2013”
	Compliance of provisions under “Rajasthan Prohibition of Employment as Manual Scavengers and their Rehabilitation Rules 2014”

Agency	Roles and Responsibilities
Rajasthan Urban Drinking Water , Sewerage & Infrastructure Corporation	Ensure coverage all non-sewer pockets and areas in their project towns through appropriate FSM interventions
	Capacity Building and Awareness of ULBs, Service Providers and other stakeholders for implementation of FSM in their project towns
Other State Government Departments	Sufficiently incorporating the provision of this policy in their projects, schemes, programs, policies, plans, guidelines, activities, etc.
	Provide necessary sectoral inputs towards State FSSM strategy, rules, acts, guidelines, etc.
Urban Local Bodies	Formulating city-wide FSSM strategy
	Timely preparation of city FSSM plan
	Notification of city wide FSSM rules to regulate all FSSM operations in the city
	Create an enabling environment for private sector participation in city-wide FSSM
	Ensuring overall O&M of FSSM operations in the city - involvement of private sector
	Creation of a City Sanitation Cell (as part of sanitation or health department) within all ULBs to oversee the FSSM related operations and management at city/ward level
	Licensing of all private desludging operators based on pre-determined eligibility criteria
	Design an appropriate tariff structure to fund FSSM operations and its timely collection – service charges, sanitation tax, tipping fee from operators, etc.
	Ensuring financially and environmentally sustainable operations – reduce reliance on state and central government grants
	Incorporation of model septic tank design, location, zoning, effluent disposal standards, toilet design, etc. into building byelaws
	Develop training programmes for masons to build requisite skills in construction of quality septic tanks as per ISO norms
Undertake awareness generation and behaviour change campaigns and regular public engagement to ensure active participation by the residents	

Agency	Roles and Responsibilities
Urban Local Bodies	Devise a system of appropriate incentives and penalties for residents and service providers to induce desirable behaviour
	Ensuring capacity building and training – manpower, financial, equipment, exposure visits, etc.
	Overall Monitoring and Evaluation of FSSM operations – benchmarking, ensuring compliance, performance monitoring of desludging operators, etc.
	Provide NOC for Licensing of Desludging trucks and Location of treatment plants
Ward Councillors	Lead the Ward-level awareness generation and behaviour change campaigns
	Inspection during construction of buildings to ensure compliance with bye-laws
	Encourage households towards scheduled desludging and active participation
	Represent ward-level/community level issues related to sanitation
	Assign a 'Swachhta Mitra' in every neighbourhood for community-scale monitoring
Households	Periodic cleaning and desludging of Septic Tanks as per Schedule
	Timely payment of service charge/sanitation tax/other fees, if any, towards FSSM services
	Regular maintenance and monitoring of septic tanks
Desludging Operators	Timely collection of waste from households as per schedule and disposing waste at designated locations only
	Strict adherence to code of conduct/standard operating procedure as per city/state rules and guidelines
	Regular maintenance of equipment and vehicles
	Maintaining up-to-date logs, manifests and reports
Service Providers – Masons, Designers	Acquire requisite skills through training and capacity building to design and construct quality septic tanks as per ISO norms
	Discourage cost-cutting by employers/house owners from cheap and sub-par construction of toilets, septic tanks, soakpits, etc.

Agency	Roles and Responsibilities
Private Sector	Active participation in service delivery of FSSM at state and city level
Financial Institutions	Providing financial assistance to desludging operators for purchasing new vehicles or upgrading existing equipment
	Extending low-interest loans to households for construction, repair of toilets and septic tanks
	Possible source of finances for creation of community or city level assets – community toilets, treatment plants, transfer stations, etc.
Multilateral, Bilateral and other International Institutions	Integrate provision of FSSM Policy into existing programs, projects and activities
	Design of future projects and programs in accordance with the provisions of the policy
Academic, Research and Civil Society Organisations	Undertake primary research to further safe and sustainable FSSM
	Develop models for safe and sustainable delivery of FSSM services to all
	Support implementation of FSSM activities at ground level
	Raise awareness and sensitization on the importance of FSSM among the general population
	Provide monitoring support to the ULB on any unsafe practices that impact effective FSSM
	Set up regular interactions with the ULB to discuss operational issues and be part of the solution

### 5.3 Partnership Building

A strong network of partners in various sectors and of various backgrounds would be established, including renowned specialists/experts, Corporates, Research/Academic Institutions, Civil Society groups/CBOs/NGOs, private service providers, Donor agencies, Bilateral/Multilateral agencies, etc. for bolstering capacities and knowledge in the sector.

There is an increased need to encourage greater private participation in service delivery and financing of FSSM activities by creating an enabling regulatory environment and creating opportunities.

Backward and Forward linkages shall be established with private players, other government departments, trade and farmer associations, etc. for optimum reuse of treated sludge and wastewater. Possibility shall be explored on whether treated and stabilized sludge can be used as organic fertilizer for farming and gardening, biogas recovered can be locally distributed for cooking or production of electricity, while treated wastewater could be reused by industries/power plants/irrigation, etc.

Necessary platforms shall be established such as periodic conferences, workshops, summits, meetings, events, formal groups/associations, and others for regular interaction among various stakeholders and partners for knowledge sharing, peer-learning, progress review, information dissemination, etc.

RUDSICO will be the nodal agency for channelling and utilizing funds (loans and grants) from external sources for sanitation and FSSM projects.

An agreements (such as MoUs) will be drawn which may be signed with prominent partners outlining a common agenda for development and provision of FSSM services in Rajasthan. Various agencies can be designated with specific charge for providing their inputs, such as 'Knowledge Partner', 'Sanitation Technology Partner', 'Media Partner', 'Campaign Partner', 'Capacity Building Partner', etc.

### 5.4 Funding and Financing

New and Innovative modalities for financing FSSM would be explored by ULBs and State government, with involvement of knowledge and funding partners, which may include - PPP, CSR funds, Guarantee funds, Crowdfunding, Donor grants, Social and Development Impact Bonds, ULB Incentive Fund, UPIF, etc.



A State Sanitation Fund should be set-up that will consolidate funds and resources from these aforementioned sources, in addition to central government schemes and programmes, Finance Commission, state funds, etc. It would be managed by the state government (through a designated nodal agency ) and provided to ULBs/ service providers/ other relevant stakeholders based on a transparent and flexible criteria, linked to performance and need.

Preference would be given to FSSM models that ensure maximum cost recovery and even profit generation in the O&M stage, partly through reuse of treated end product (wastewater and sludge) in the form of biogas, electricity, water reuse, fertilizer/manure, compost, etc. especially since O&M costs of FSTPs is usually much lower than conventional STPs for smaller towns (Class III, IV & V towns)

ULBs would be empowered to structure their tariff and revenue models, which may include collection of service charges or sanitation taxes from users, tipping fees from licensed operators, etc. in order to maintain a steady revenue stream for O&M of FSSM assets and services.

Synergy would be ensured between funds and goals of various Central government programs such as AMRUT, SBM, Smart Cities, etc. and state government programmes such as RUSDP Phase-III, etc.

The City-level FSSM strategy and plans would duly assess cost requirements during the perspective period, including capital and O&M costs, and accordingly structure their financial model to make the system more feasible and sustainable.

## 5.5 Implementation and Service Delivery

State government will play a facilitating role in implementing of FSSM at state and city level. Necessary support will be given to ULBs for timely preparation and implementation of city level FSSM plans, strategy and rules.

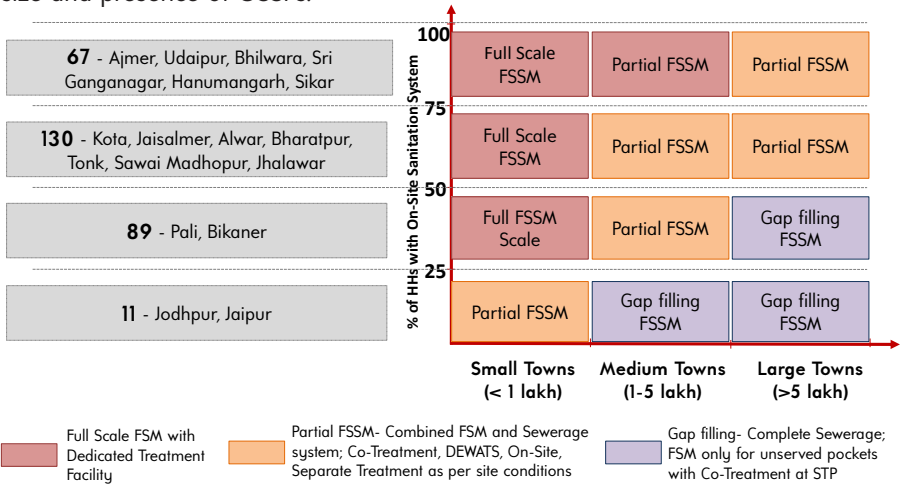
The State governments may explore possibility to link the ULBs with suitable partners (consulting, public outreach, funding, capacity building, etc.) as per the city's requirement for various FSSM related activities.

A system of incentives and penalties may be devised to encourage greater participation among residents, compliance by service providers (heavy penalties for illegal waste disposal, while monetary incentives for disposal at designated site), and better performance of ULBs.

Desludging and Treatment Plant operators shall use requisite safety gear during operations. There should be absolutely no direct human contact with the waste.

## 5.6 Intervention Approach for Urban Areas in Rajasthan

Sanitation and FSSM is a dynamic subject and varies with the context in urban areas, such as the population size and type of predominant sanitation system. Thus a single approach will not be applicable for all towns and need to be disaggregated accordingly. The following table provides a suggestive approach for ensuring city-wide coverage with safe sanitation depending on size and presence of OSSFs.



The basic logic is that in urban areas with higher number of OSSFs, FSSM is more feasible and gains prominence, while as the population of the town increases, FSSM is less efficient and centralized sewerage is more suitable where FSSM provides supplementary coverage to un-served areas. The matrix is suggestive and final sanitation approach shall be decided based on local conditions, availability of funds and consultation between ULB and State government.

For urban pockets where both sewerage system and desludging services are not possible, such as compact inner city areas and congested slums, on-site and decentralized wastewater and faecal sludge treatment solutions such as DEWATS, Bio-digester toilets, etc. would be explored. A more detailed set of techno-economic criteria shall be developed and provided in the State FSSM Guidelines for the same.

Residents who get their septic tanks cleaned as per schedule or in a timely manner can be given a rebate in the service charge/municipal taxes, while others would have to pay a higher amount for the same.

Licensed service providers can be eligible for accessing financial assistance (through available instruments) for upgrading capacities, equipment, safety gears, etc. Desludging operators who dispose collected waste at designated locations would be given direct/indirect benefits, while others would be penalized - applying the principle of 'polluter pays'.

To ensure regular supply of faecal sludge to the plant, steady flow of revenue and implementing Scheduled Desludging service, a robust database needs to be constructed (ideally linked with Property Tax database) of household/community/ward level sanitation assets and practices by the ULBs (type of toilet system, Number/Capacity of Septic Tanks or pit latrines, wastewater outlets, adjacent road widths, etc.). The database would help in scheduling desludging services, planning FSSM infrastructure, regulate tariff collection, facilitate appropriate incentives or impose penalties on households and operators, maintain up-to-date records and manifests, etc. The database should preferably be digitized on a GIS and MIS based platform

An MIS and GIS-based single-window system can be operationalized which coordinates and facilitates the FSSM services in Rajasthan, including:

- Call-centre for on-call desludging services,
- Schedule for Periodic desludging for ULBs and Desludging operators
- Forms for NOCs, applications & guidelines for licencing of operators,
- Repository of all registered service providers and licensed desludging operators, along with a platform to connect with suitable partners (knowledge, funding, capacity building, etc.)
- Mobile and e-mail reminders of scheduled desludging to households,
- GPS-monitoring panel for desludging trucks,
- Inventory of all FSSM assets in the city and throughout the state,
- Service level benchmarking of all ULBs,
- Capabilities of producing auto-generated and custom updates/reports/dashboards for various state government departments, residents, ULBs, etc.

## 5.7 Monitoring and Evaluation

The state will evaluate FSSM operations through dedicated service level benchmarks for all ULBs. A Benchmarking system shall be established for state, similar San-Benchmark Framework suggested in Draft National FSSM Policy. Each ULB will set an yearly target in their City-level FSSM plan on progress and service improvement with respect to these benchmarks, with the goal of achieving the benchmarks by the end of the perspective period.

A performance-linked system of incentives and penalties may be devised for rewarding high performing ULBs and encouraging ULBs with poor performance to improve, as they will be scored annually as per the service level benchmarks for FSSM. A mechanism on performance evaluation tool shall be framed up by the authority.

Local Communities and local groups would be involved in monitoring and compliance of FSSM operations, with encouragement by the ward councillors. The communities would be encouraged to be active and vigilant in reporting incidences of mismanagement by desludging operators, unsafe sanitation practices in neighbouring households, poor Maintenance at Community Toilets, DEWATS, FSTPs or Transfer Stations, etc.

A comprehensive system of reports and manifests would be designed at the city-level, with record of all desludging activities shall be maintained by all service providers.

A robust Grievance Redressal mechanism would be put in place, to be linked with the single window system, telephone call based system or part of local e-governance platform (MIS-based). Typically complaints by users usually pertain to damages to property or septic tank during desludging, insufficient or poor cleaning by the operator, spillage of septage/sludge during transport, illegal or arbitrary disposal by operator, foul smell from the treatment facility, etc. All user complaints and grievances should be acknowledged swiftly within 3 days, with each complaint given a unique complaint identification number and the complaint should be addressed and answered within two weeks by the ULB.

## 5.8 Capacity Building and Training

A Capacity assessment should be carried out across state government departments and ULBs (similar to or part of SLIPs), and necessary measures would be taken to fill the gaps on Manpower, expertise, equipment, resources, financial management, etc.

External agencies would be engaged and proper modules would be prepared for training government officials, service providers, ULBs, etc. on relevant FSSM practices, technologies, operating procedures, techniques, financial assessment, etc.

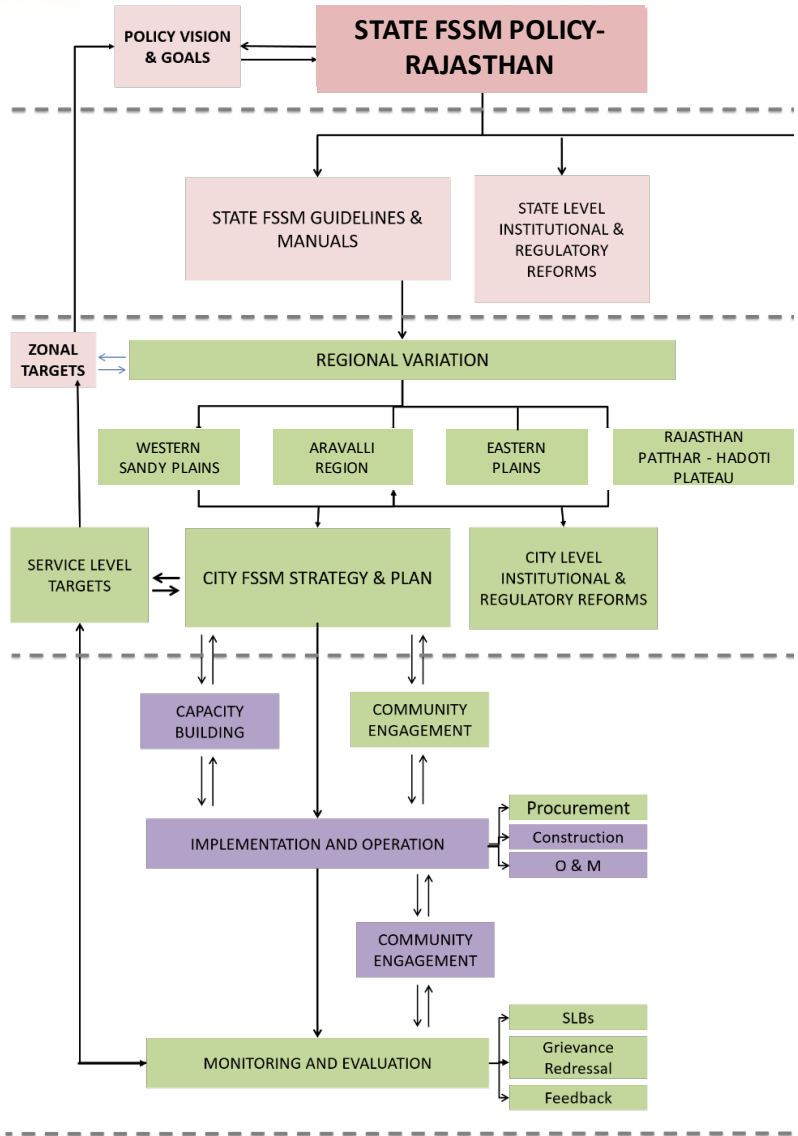
Separate initiation and training Modules shall be prepared for State government officials, ULB representatives, service providers, planners & engineers, prospective partners, etc., each customized for the target audience. Short courses and workshops can be organized on FSSM operations, and successful participants will be given certification at the end of the program/course. Certified professionals will be given preference for all government works and services related to FSSM.

Educational modules on FSSM can be integrated as part of academic teaching at schools and institution of higher education, to sensitize the upcoming population on the importance of safe sanitation and role of FSSM in the same. While the state government may assist the ULBs in the short-term for preparation of city-level FSSM plans and strategies, in the long-term, rigorous capacity building initiatives should be taken to ensure the ULBs are self-reliant for implementation of their FSSM plans.

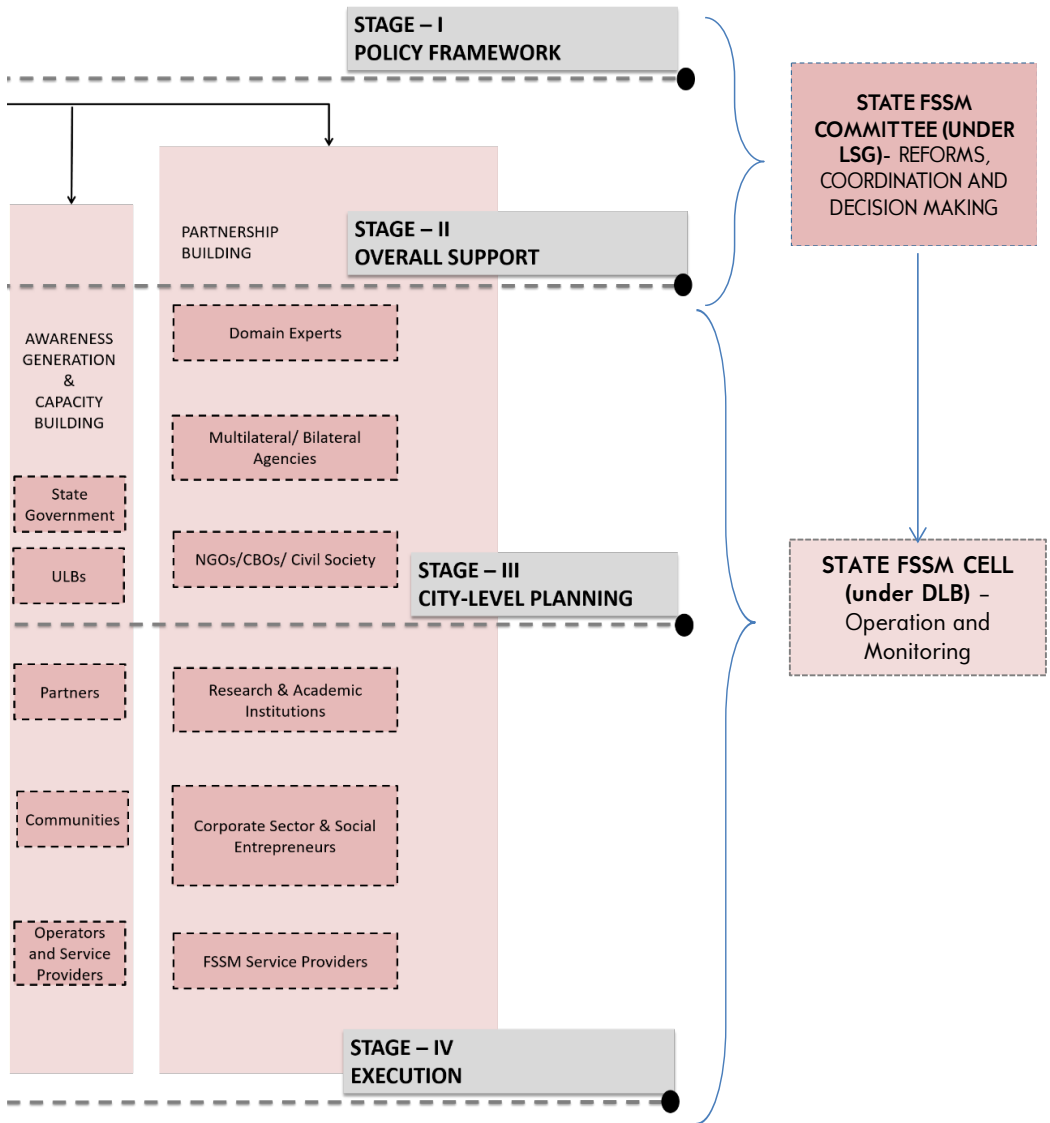
Customized Capacity Building and Training Modules can be designed for ULBs with involvement of various knowledge and capacity building partners based on local site conditions.

Since many FSSM concepts such as an FSTP or Scheduled desludging are quite recent, an important component for capacity building of various government officials and service providers will be planned exposure visits to areas with best practices in FSSM, which will help them get a first-hand experience of such operations and alleviate doubts and misconceptions about its efficiency as a long-term solution.

**Figure 3: Process Flow Diagram and Phasing of FSM Policy Implementations**



UNDERTAKEN BY	ASSISTANCE
State Government	Partners and ULBs
ULBs and Partners	State Government and Partners
Service Providers and Partners	ULBs and State Government



REGULATE AND MANAGE	
	State Government
	ULBs and State Government
	ULBs





# Expected Outcomes

---

While the goals set out broad aspirations and intention of the policy, the expected outcomes are tangible end results if the goals are achieved.

- Enhancement of sanitation coverage - No direct contact with waste - Safe handling and complete containment of Faecal Sludge and Septage during collection, conveyance, treatment and disposal.
- Scheduled Desludging - Greater Progress in transition from reactive on-call service to periodic & scheduled service, along with formalization of service providers (masons, operators, tankers, etc.)
- Environmental improvement - Significant reduction in contamination of soil and water (surface and underground) due to human waste
- Safe waste handling and Better Public Health - Safe handling and complete containment of Faecal Sludge and Septage during collection, conveyance, treatment and disposal. Noticeable improvement in public health indicators including morbidity and mortality rates across urban areas in the state reduced incidences of water-borne diseases is expected as an outcome.
- New opportunities - Avenues in sanitation and FSSM services emerge, based on cost recovery and profit generating business models.
- Greater Institutional Capacities - Augmented capacities across institutions (State and city-level) that could possibly be replicated in other sectors.

## 6.1 Milestones & Timeline

Category	Region	Districts	2017	
			Apr - Jun	Jul - Sep
AMRUT Cities - 28 Class - I Towns (>1 lakh population)	All	M1		
		M2+M3		
		M4+M5		
		M6		
		M7		
Statutory Towns Class - II Towns (50,000 to 1 lakh population)	<i>Western Sandy Plains</i>	M1		
	Jalore, Jaisalmer, Barmer, Jodhpur, Pali, Nagaur, Bikaner, Churu, Hanumangarh, Sri Ganganagar, Jhunjhunu, Sikar	M2+M3		
		M4+M5		
		M6		
		M7		
	<i>Aravalli Region</i>	M1		
	Alwar, North-Jaipur, Udaipur, Sirohi, Dungarpur, Rajasmand	M2+M3		
		M4+M5		
		M6		
		M7		
	<i>Eastern Plains</i>	M1		
	South-Jaipur, Bharatpur, Dausa, Western-Sawai Madhopur, Ajmer, Tonk, Bundi, Chittorgarh, Pratapgarh, Bhilwara, Banswara	M2+M3		
		M4+M5		
		M6		
		M7		
<i>Rajasthan Patthar - Hadoti Plateau</i>	M1			
Dholpur, Karauli, Kota, Jhalawar, Baran, Eastern-Sawai Madhopur	M2+M3			
	M4+M5			
	M6			
	M7			
Statutory Towns Class III & IV Towns (10,000 to 50,000 population)	<i>Western Sandy Plains</i>	M1		
	Jalore, Jaisalmer, Barmer, Jodhpur, Pali, Nagaur, Bikaner, Churu, Hanumangarh, Sri Ganganagar, Jhunjhunu, Sikar	M2+M3		
		M4+M5		
		M6		
		M7		
	<i>Aravalli Region</i>	M1		
	Alwar, North-Jaipur, Udaipur, Sirohi, Dungarpur, Rajasmand	M2+M3		
		M4+M5		
		M6		
		M7		
	<i>Eastern Plains</i>	M1		
	South-Jaipur, Bharatpur, Dausa, Western-Sawai Madhopur, Ajmer, Tonk, Bundi, Chittorgarh, Pratapgarh, Bhilwara, Banswara	M2+M3		
		M4+M5		
		M6		
		M7		
<i>Rajasthan Patthar - Hadoti Plateau</i>	M1			
Dholpur, Karauli, Kota, Jhalawar, Baran, Eastern-Sawai Madhopur	M2+M3			
	M4+M5			
	M6			
	M7			
M1	Preparation of City FSSM Strategy/Plan			
M2	identifying and Operationalizing treatment facility for all collected Septage/ Faecal Sludge (Off-Site) - Either through Co-			
M3	Safe Treatment of all collected Septage/ Faecal Sludge (On-Site/Decentralized)			
M4	Adequate Manpower and Equipment (including desludging trucks) for collection and transport of Faecal sludge/septage			
M5	Minimum one Training/ Capacity Building Program for ULB, Service Providers and Desludging/Cleaning Operators			
M6	All Households with Individual Toilet and not serviced by a Piped Sewerage Network to have a safe on-site containment			
M7	Year for Complete Coverage through FSSM			





## Annexures - I

## 7.1 Geographical Regions of Rajasthan

Table 3: Summary of Geographic Regions in Rajasthan

Region	Districts	Characteristics
Western Sandy Plains	Jalore, Jaisalmer, Barmer, Jodhpur, Pali, Nagaur, Bikaner, Churu, Hanumangarh, Sri Ganganagar, Jhunjhunu, Sikar	Low groundwater table and low water supply,
		Sandy desert soil,
		Arid/semi-arid climate with very low rainfall (< 300mm annual rainfall),
		Extreme weather (observed the highest and lowest temperatures in Rajasthan) and
		Largely sterile land with very low fertility (with exception of the northern districts of Sri Ganganagar & Hanumangarh)
Aravalli Region	Alwar, North-Jaipur, Udaipur, Sirohi, Dungarpur, Rajasmand	Hilly and undulating terrain,
		Rocky sub-surface,
		Low to moderate rainfall (annual rainfall of 450 - 600mm),
		Low groundwater table and
		Sub-humid climate
Eastern Plains	South-Jaipur, Bharatpur, Dausa, Western-Sawai Madhopur, Ajmer, Tonk, Bundi, Chittorgarh, Pratapgarh, Bhilwara, Banswara	Relatively flatter terrain with sporadic hilly tracts,
		Sandy-loam/silty-loam/silty-clay soils with good drainage,
		Moderate rainfall (600 - 800mm annually),
		Moderate depth to groundwater (5-20m) during monsoon,
		Sub-humid to humid climate
Rajasthan Patthar - Hadoti Plateau	Dholpur, Karauli, Kota, Jhalawar, Baran, Eastern-Sawai Madhopur	Good water supply,
		Relatively high rainfall (> 800mm annually),
		Moderate to high depth to groundwater during monsoon (< 10m),
		Hard rocky sub-strata,
		Tropical humid climate and
Relatively flat terrain with sporadic hilly tracts		

## Western Sandy Plains

The western Plain covers a large part of Rajasthan in the west and the northwest of the Aravalli axis. Its northern boundary is marked by Punjab and the southwest by Gujarat and the western boundary is the international boundary between India and Pakistan. The eastern boundary of the western sandy plain is marked by the Aravalli range. Relevant to sanitation, the area is characterized by low groundwater table and low water supply (sourced primarily through the Indira Gandhi Canal), Sandy soil, arid/semi-arid climate with very low rainfall (< 300mm annual rainfall), extreme weather (observed the highest and lowest temperatures in Rajasthan) and largely sterile land with very low fertility (with exception of the northern districts of Sri Ganganagar & Hanumangarh). On-site systems such as pit latrines (twin-pit toilets, soak pit systems, etc.) and septic tanks (except in areas with very low water supply) are suitable in this region due to the low groundwater table. In terms of treatment options for Faecal sludge/septage, the region is suitable for sludge drying beds (planted/unplanted), bio-digesters and co-composting with MSW due to favourable climate (high temperature and low rainfall) and relatively flatter topography. There is good scope for using treated sludge as soil conditioner/fertilizer and treated liquid effluent for small scale agriculture, gardening, etc. especially in the sterile desert soil.

## Aravalli Region

The principal and most dominant mountain range of Rajasthan is the Aravalli range. This range runs diagonally across the State from northeast near Delhi and extends to southwest up to the Plains of Gujarat, for a distance of about 692 kilometers, the range runs from Khetri in the northeast to Khed Brahma in the southwest Within Rajasthan for a length of about 550 kilometers. Relevant to Sanitation, the region is characterized by hilly and undulating terrain, stony/rocky sub-surface, low to moderate rainfall (annual rainfall of 450 - 600mm), low groundwater table and sub-humid climate. On-site sanitation facilities should ideally be partially or completely over-ground due to the rocky sub-surface, and should be less water-intensive. In terms of treatment options, land-intensive treatment options (such as unplanted sludge drying beds) may not be suitable for settlements in hilly/undulating terrain and compact treatment options should be explored, including centralized treatment plants, DEWATS, and On-Site Treatment systems (for community toilets & congested settlements).

## Eastern Plains

The area on the northeast, east and southeast of the Aravalli range is known as the Eastern Plain. The Vindhyan Plateau marks the southeastern limit of the Plain. The western boundary is demarcated by the eastern edge of the Aravalli up to north of Udaipur. Relevant to sanitation, the region is characterized by relatively flatter terrain with sporadic hilly tracts, sandy-loamy/silty-loam/silty-clay soils with good drainage, moderate rainfall (600 – 800mm annually), moderate depth to groundwater (5-20m) during monsoon, and sub-humid to humid climate. The region is suitable for most of the on-site sanitation systems such as pit latrines (twin pit toilets, soak-pits, etc.), septic tanks, etc. except in the rocky tracts where elevated on-site sanitation facilities may be required. In terms of treatment options, almost all centralized and decentralized Faecal sludge/septage/wastewater treatment options are suitable, though open to air options such as unplanted sludge drying beds should be well-covered or replaced with planted sludge drying beds.

## South-Eastern Rajasthan Patthar – Hadoti Plateau

The eastern part along the Chambal River is covered by the Hadoti Plateau. The Great Boundary Fault of the Aravallis forms its northwest boundary which extends eastward across the Rajasthan border. River Chambal drains the large part of this area. Relevant to Sanitation, the region is characterized by good water supply, relatively high rainfall (> 800mm annually), moderate to high depth to groundwater during monsoon (< 10m), hard rocky sub-strata, tropical humid climate and relatively flat terrain with sporadic hilly tracts. All on-site sanitation facilities such as septic tanks, pit latrines, composting toilets, etc. should be partially or completely over-ground due to high groundwater and hard rocky sub-strata that makes excavation difficult with undesirable rate (either too fast or too slow) of water percolation. In terms of dedicated Faecal sludge/septage treatment options, almost all centralized and decentralized treatment options are suitable, though open to air options such as unplanted sludge drying beds should be well-covered, replaced with planted sludge drying beds or completely avoided.

# Annexures -II

## 7.2 Regulatory Framework

The existing national and state level framework in terms of legislation, policy, programs, standards, guidelines, etc. has been presented below. This provides a brief background on the current regulatory regime, important considerations and priorities, setting a context for this policy.

Table 4: Regulatory Framework

Legislations	Brief
Environment (Protection) Act, 1986 and the Water (Prevention and Control of Pollution) Act, 1974	This Act applies in principle to every establishment, agency, or individual discharging any pollutant into the environment. 'Pollutant' includes treated or untreated sewage. It provides a framework for control of effluent, wastewater and septage discharge
74th Constitutional Amendment Act, 1992	Responsibility for the planning and delivery of urban services, including sanitation, lies with urban local bodies under local municipal laws and the 74th Constitutional Amendment Act, 1992.
Municipal Solid Waste (MSW) Rules, 2016	disposal and treatment of faecal sludge and septage, before or after processing, at landfills and for use as compost; and final and safe disposal of post-processed residual faecal sludge and septage to prevent contamination of ground water, surface water and ambient air;
The Employment of Manual Scavengers and Construction of Dry Latrines (Prohibition) Act, 1993	ban on dry latrines, i.e., latrines with no water-seal or flushing mechanism, and the employment of persons for manually carrying human excreta



Legislations	Brief
Prohibition of Employment as Manual Scavengers and their Rehabilitation Act, 2013	It intends to empower “District level survey committee” & “State level survey committee” towards the complete abolition of manual scavenging without certain obligations. “Hazardous cleaning” in relation to sewers and septic tanks is banned and that manual cleaning of sewers and septic tanks, if necessary, may be carried out only in very controlled situations, with adequate safety precautions, and in accordance with specific rules and protocols for the purpose.
Rajasthan Municipalities Act, 2009	It includes public health and sanitation as core municipal function which covers drainage, sewerage, cleaning of public streets and all spaces whether such spaces are vested in the Municipality or not.
Policies, Missions & Guidelines	Brief
National Urban Sanitation Policy, 2008	It intends to make all Indian cities and towns become totally sanitized, healthy and liveable and ensure and sustain good public health and environmental outcomes for all their citizens with a special focus on hygienic and affordable sanitation facilities for the urban poor and women.
Rajasthan Urban Sanitation Policy, 2009	It intends to make all urban centers in state to become totally sanitized, healthy and liveable and ensure and sustain good public health and environmental outcomes for all their citizens.
Rajasthan Environment Policy, 2010	Encouraging optimal use and recycling of wastewater and resource recovery from sewage/wastewater/sludge; Local bodies responsible to plan and implement sanitation services for urban areas to reduce water pollution
Rajasthan Urban Development Policy (Draft), 2015	It emphasis on achieving high standard of life which fulfills the potential of every citizen by achieving unmatched services for health and sanitation.
Rajasthan State Sewerage and Waste Water Policy, 2016	Provides information and suggestions on septage collection and treatment, along with treatment of sludge; and further sets the goals for adequate provision of septage management, monitoring and facilities.
Guidelines for Swachh Bharat Mission (Urban), 2014	It intends to eliminate open defecation, eradication of Manual Scavenging and to effect behavioural change regarding healthy sanitation practices in Urban areas.
National Mission on Sustainable Habitat (NMSH), 2010	National Mission on Sustainable Habitat (NMSH) is a component of the action plan for climate change, focus on waste recycling.

Legislations	Brief
Atal Mission for Rejuvenation and Urban Transformation	Improving basic services (water supply, sewerage & septage, urban transport) in cities through reforms in urban governance, augmentation of basic infrastructure and establishing a sound institutional framework for effective delivery, through an incremental approach
Standards, Manuals & Advisories	Brief
National Building Code of India (NBC) 1983 & 2005	Code governs the design, installation and maintenance of toilets, septic tanks, and sewers. It gives an overview of size of drainage, sewerage including design of septic tanks, sewers, toilets, and other sanitation devices. The NBC also suggests that use of septic tanks without follow-up treatment is not permitted
Indian Standard - 2470	Code of Practice for Installation of Septic Tanks
Manual on Sewerage and Sewage Treatment, CPHEEO in collaboration with JICA, 2013	Guidelines for – design, planning and providing advice on the selection of technology options for urban sanitation (for on-site, off-site sanitation and both decentralized & centralized treatment options); Operation and Maintenance of sanitation systems & resource mobilization; management, administration, project delivery, etc.
Advisory on Septage Management in Indian Cities, MoUD, 2013	Outlines the contents and steps of developing a septage management sub-plan (SMP) as a part of the city sanitation plans (CSP) being prepared and implemented by cities which supplement the NUSP. Septage here refers not only faecal sludge from septic tanks but also from pit latrines and on-site toilets.
Primer on Faecal Sludge and Septage Management, MoUD, 2016	Supplementary document to the Advisory on Septage Management in Indian Cities, 2013. Stresses the need for State-wide operative guidelines, City level toolkits, operational manual, management/ financing/ operating FSSM, and FSSM plan for the city.
National Urban Faecal sludge management policy, MoUD, GoI, Feb 2017	The draft document mainly Outlines need of FSM, awareness generation, national declaration, central laws and rules, and implementation approach.

This draft policy document endeavours to build upon the existing legislative, policy and regulatory framework, and amalgamates it into a single cohesive and comprehensive document, that would guide in FSSM implementation in the urban setting of Rajasthan.



Published By



**Rajasthan Urban Infrastructure Development Project**

A Unit Of RUDSICO

AVS Building, Jawahar Lal Nehru  
Marg, Jaipur-302017, Rajasthan-India  
Phone :-0141-2721966 Fax: No:-0141-2721919  
Email:-mail.ruidp@rajasthan.gov.in