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Government of Rajasthan

DRAFT POLICY

FAECAL SLUDGE & SEPTAGE MANAGEMENT (FSSM)

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VASUNDHARA RAJE

Chief Minister, Rajasthan

The Government of India launched the Swachh Bharat Mission on 2nd October 2014, aimed towards achieving a Clean and Open Defecation Free India by 2019. Rajasthan is leading the sanitation revolution in the country and we aim to sustain the momentum. Rajasthan state has made significant progress under SBM and successfully reached the milestone of ODF on March 2018.

It is our responsibility towards the people to provide them with the safe and sustainable sanitation solutions. On- site sanitation systems i.e. septic tanks, pit latrines etc. provide a way forward for the areas which cannot be served by centralized sewerage system due to resource limitations. In this setting, the State FSSM Policy is designed to provide holistic approach to sanitation beyond just the construction of toilets in terms of safe collection, conveyance, treatment and disposal of human waste. The Policy shall serve as guiding path for the public and private stakeholders to play various roles and responsibilities in sanitation sector through a collaborative effort in making Rajasthan lead sanitation runner in the county. The benefits of this policy shall go a long way in furthering the health and hygiene as well as empowering women of the state.

(Vasundhara Raje)

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Government of Rajasthan

SH. SHRICHAND KRIPLANI

UDH & LSG Minister, Rajasthan

State FSSM Policy tends to achieve the objective of safe and sustainable sanitation in the spirit of the 'National Policy on Urban Faecal Sludge and Septage Management (FSSM), 2017'. This policy addresses specific issues and challenges of FSSM and provides a road map for its implementation at city level in Rajasthan in a holistic manner.

Although the state is expanding the sewerage network across the cities it also imperative to serve the large set of uncovered settlements and small towns with end-to-end sanitation solutions and also recognize the contribution of service providers. State Policy induces and sensitizes the ULBs and other key stakeholders to the various reforms measures of FSM across the value chain.

Strategic interventions have been laid down to ensure timely management of faecal sludge, regulatory framework, financial and organizational setup and most importantly Information, education and communication. Further, Policy sets some milestones to be achieved in a set timeline depending upon the geographical considerations, scale of the town and the share of on- site sanitation systems. This shall be applicable to all the schemes, programs, projects, plans and policies; and will form a basis for framing up of different guidelines of the state with respect to various planning and development initiatives. It is incumbent upon the ULBs to prepare a City FSSM Plan and Strategy that is sensitive to the local considerations and provides tailor made, city- specific solutions. The State policy, in this context, shall act as a guiding document by setting the context, priorities and directions for the ULBs to ensure proper implementation across the state.

(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
GoI	Government of India
GoR	Government of Rajasthan
lpcd	Litres per capita per day
LSGD	Local Self Government Department, GoR
MIS	Management Information System
MoU	Memorandum of Understanding
MoUD	Ministry of Urban Development, GoI
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 that settles at 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 faecal 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 on its operation of small quantities of water, poured from a container by hand, to flush away feces from the receiving pan.

Septic Tank: An underground tank that treats wastewater by a combination of solids settling and anærobic digestion. The United States Environmental Protection Agency (US EPA) defines a septic tank as an 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 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 faecal sludge and septage treatment facility for remediating the solid and liquid components to prescribed standards for safe disposal and reuse.

Contents

1 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 faecal waste which 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 there is a transfer station for temporary storage of faecal sludge 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 undergœs 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 of this process at various stages across the sanitation value chain depending on site situation, techno-economic feasibility and capacities of the operators & regulators. The challenge is to streamline all these processes. This entails various concomitant interventions including institutional and regulatory measures, such as formulating bye-laws/regulations related to on-site sanitation, creating database on on-site sanitation arrangements in the city, explore possibilities for private sector involvement in FSSM & levy tax / charges to finance FSSM activities, monitoring and evaluation framework and public awareness/ stakeholder engagement activities.

Figure 1: Schematic Diagram of FSSM Operation

ACCESS TO TOILET

Access to Hygienic Toilet to all households

EMPTYING & TRANSPORT

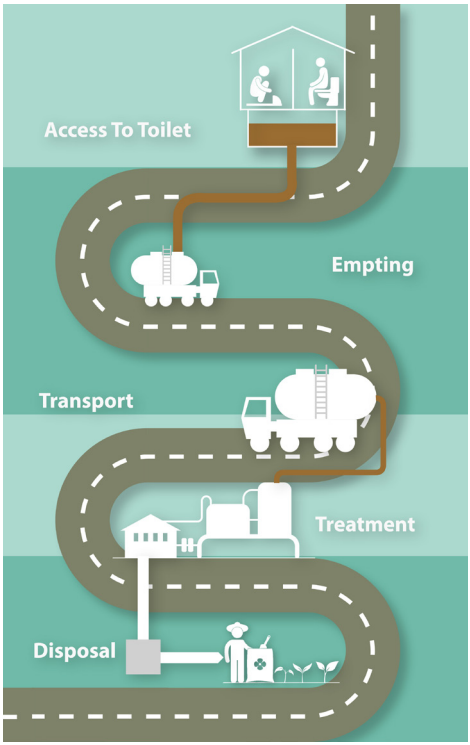
Desludging of septic tanks by suction machines and transportation to Treatment Plant

TREATMENT

Treatment at centralized or decentralized treatment plants

DISPOSAL/REUSE

Reuse of treated effluents for agricultural or other uses, or disposal at designated site



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, ward councillors, residents/community groups, state government, funding agencies, etc.

While FSSM may not be a complete stand alone sanitation solution (as it deals primarily with faecal waste and management of liquid waste is secondary), it is one of the fastest, economical and least intrusive approach in achieving

immediate health and environmental improvement, especially considering budgetary and human resource constraints of smaller urban settlements. It also provides flexibility to incrementally improve the system to achieve complete sanitation coverage in consonance with settlement growth and investment flow.

1.2 FSSM in India

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. Also, these treatment plants are not always enabled to handle sludge/ septage.

India's urban population is 377 million or 31% of the total population (as on 2011) and 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 pollutant of water sources in India, causing a host of diseases including diarrhœa, 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 - Rajasthan

As per Census 2011, Rajasthan is home to an urban population of 17.04 million (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 190) have been prepared and approved by the state government. There are a total of 297 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.

As of 2017, the state of Rajasthan had around 1.23 Million toilets, out of which only 30% are connected to sewerage systems. The rest 70% have adopted some means for containing the black water at their premises by constructing holding structures such as underground tanks, septic tanks, pits, Kui's etc. The sludge and the wastewater removed from such onsite containment units is currently disposed of in an unregulated manner causing health and environmental hazard. In a survey conducted across 100 towns in the state of Rajasthan in 2017, the following insights were revealed.

(Source: DLB, Rajasthan)

1. Households often do not use the toilet under the pretext of the containment units getting filled. Cleaning of containment systems are expensive and may not be accessible. This leads to households resorting to open defecation.
2. The private sector is thriving in providing desludging services to households and commercial institutions. Though this is bridging the gap in terms of access to services, pricing of desludging is currently unregulated making this unaffordable for a few sections of the society.
3. As of 2015, 47 out of 63 Sewage Treatments plants in Rajasthan were still

Table 1: Distribution of Settlements according to coverage of households by On-Site Sanitation Facilities (*Source : Census of India, 2011*)

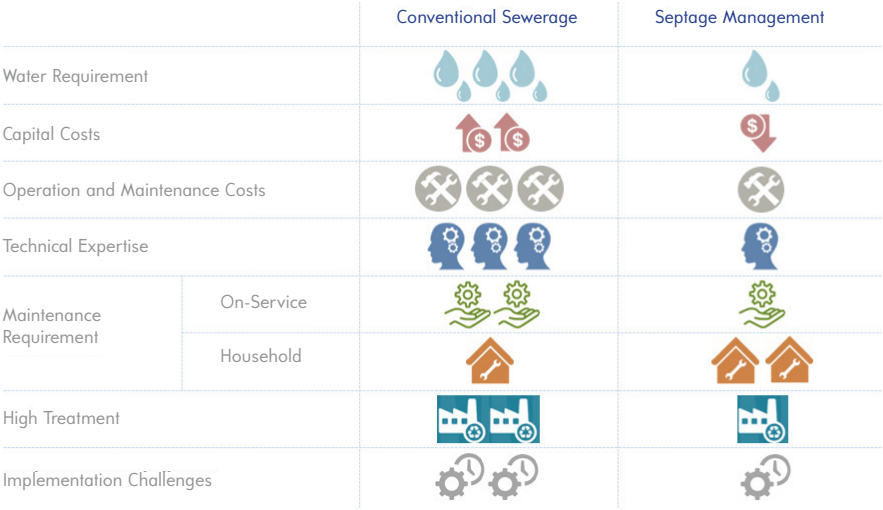
% of HHs with On-Site Sanitation System	Number of Towns	% of Total no. of Towns	Total HHs in these Towns	HHs with OSSF in these Towns	OSSF as % of Total HHs	Major Towns in the Category
> 75%	67	22.60%	793,009	652,480	82%	Ajmer, Udaipur, Bhilwara, Sri Ganganagar, Hanumangarh, Sikar
50 - 75 %	130	43.80%	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.

either under construction or proposed. Due to lack of a safe disposal or treatment system, the current collection of faecal sludge is disposed of in vacant lands and water bodies, which cause surface pollution causing health impacts by contaminating drinking water. Indiscriminate disposal also contributes toward unhygienic environment affecting tourism.

4. Urban Local bodies lack the administrative and technical guidance for regulating the disposal or safe management of faecal sludge.

Figure 2: Advantages of septage management over conventional sewerage system



Rajasthan, given its varying terrain and settlement pattern, faces several challenges, making it expensive to implement piped sewer systems. Considering the current budgetary allocations towards sanitation, providing all households with an access to sewer network may take considerable time, till then some complimentary means have to be put in place to manage the faecal sludge from household containment units.

Rajasthan has achieved ambitious target of constructing 5 lakh toilets in urban areas, and has eliminated the undignified practice of open defecation on March 2018. However, this achievement is only addressing the first component of the sanitation value chain. The pertinent issue of proper collection, conveyance, treatment and disposal of the fæcal sludge/septage is likely to remain.

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 piped 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 a central role in providing safe, hygienic and sustainable sanitation services in Rajasthan.

1.4 Need for FSSM in Rajasthan

Based on the above-described situation in the state, faecal sludge management, wherein the faecal sludge from on-site containment units is collected, conveyed, treated and reused in a safe and sustainable manner, is recommended.

Through Swachh Bharat Mission, the state has achieved the target to eradicate open defecation on March 2018. There are many more households which are now connected to on-site containment units and which, in due period of time, will require desludging operations for the upkeep of functional use of the toilet. Such a need brings forth the requirement to provide an affordable means for desludging these units and treating the fæcal sludge hence collected.

The Private sector is actively engaged in providing desludging service to households with on-site containment unit. However, given the informality of this sector and no regulation on their operations, combined with the insufficient training and awareness leads to unsafe practices. Faecal sludge management by formalising and bringing in place appropriate regulations shall work towards eliminating such practises and thereby strengthen the **Prohibition of Employment as Manual Scavengers and their Rehabilitation Act, 2013.**
Current disposal trends indicate that open/surface water bodies are at huge risk of contamination from the unregulated dumping of faecal sludge directly into them or nearby areas. Such risk can adversely affect the health of communities living around these water bodies and also play a damaging role in attracting tourists. Hence, it becomes need of the hour to regulate and monitor such disposal and create means for safe disposal and treatment into reusable products.

In Rajasthan, many efforts have been put forward for FSSM in recent years. RUSDP through grants support from BMGF are developing pilot project in ULBs like Phulera, Lalsot and Khandela to build very 1st FSTP of state and further adoption of town specific FSSM regulations. Determination of state towards

environmental safety and public health has encouraged it to undertake a Rapid assessment of 100 towns (selected strategically) in the state. These selected towns do not have underground sewerage system where citywide FSSM can be easily implemented. Further, through the Sanitation Capacity Building Platform (SCBP), a group of experts and organizations committed to the goal of sanitation has structured a program on sensitization, Capacity Building and Technical support in Rajasthan. This platform is supporting incremental changes and capacity building for proposed towns of state for FSSM. These efforts by various agencies and pro-activeness of Government of Rajasthan have started an initiative to prepare DPRs of more than 100 towns for FSSM in the state. Numerous other attempts are on-going, being implemented by state government, ULBs, NGOs, and various other agencies regarding FSSM to ensure incremental efforts towards the vision of complete sanitation in Rajasthan.

National FSSM policy 2017 envisaged that state specific FSSM policy needs to be developed. In the spirit of the 'National Policy on Urban Faecal Sludge and Septage Management (FSSM), 2017', this 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.

1.5 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 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 on-site sanitation where of 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 House-listing 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 faecal sludge and wastewater produced is likely to be collected and disposed in an unsafe manner. It is a well-established fact that unsafe sanitation practices lead to negative health outcomes, which disproportionately affect women and girls by imposing health and healthcare burdens.

Containment: 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. Similarly other containment options like single and twin pits, Kuin also have issues in terms of faulty construction and susceptibility of ground water contamination.

Collection and Conveyance: Most households only call for septic tank cleaning services when the tank is overflowing or on the verge. The frequency of desludging typically varies from 10 – 15 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

carry out these cleaning services. There are no standards or specifications for equipment and trucks, which are custom built with sub-par materials.
Many households in the state of Rajasthan do not have access to desludging services. The factors leading to this are a) cost of desludging is high, since in most places the service is offered mostly by the monopolistic private sector, b) physical access to desludging – households settled on small and congested lanes pose technical challenges in desludging with the current equipment and facilities. In addition to the above, low desludging frequency is also an issue that needs to be considered.

Disposal: 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 is no dedicated or earmarked point for disposal of collected faecal waste in most ULBs.

Treatment: There is no dedicated treatment facilities for treatment and disposal of septage and faecal sludge in Rajasthan. The ULBs lack sufficient financial and human resource 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 FSSM 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 are not properly introduced to planning for FSSM, technologies, standard procedures, management framework, human resource 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 on their own to deliver effective services, while the transfer of resources from the state government 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 and other state and central government schemes such as AMRUT in many cities and towns, it has been observed that small pockets and peripherals areas are being left out from sewerage coverage. These areas would require either dedicated septage and faecal sludge processing/treatment facilities or co-treatment with existing STP for safe disposal or reuse.

- 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.

- Though ULBs are empowered by the Rajasthan Municipalities Act, 2009 to collect user charges for civic services such as solid waste, sanitation, etc. but the policy direction is limited for these ULBs for undertaking the same.

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 action in formalizing of standard designs, operating procedures, guidelines, manuals, dedicated norms, etc. for city-wide FSSM to aid the ULBs for effective planning and implementation.

2.4 Gender Implications And Exclusion Of Poor Communities

- Poor sanitation facilities have gender implications as they affect women and girls disproportionately by imposing health and health care burdens
- Women and girls face safety concerns due to dependence on open defecation or unsafe community toilets
- Poor, dispersed and less organized communities tend to be excluded
- Willingness and affordability to pay and support systems in place is critical for successful sanitation programs

3
Policy Vision

"To ensure complete and sustainable faecal sludge and septage management by 2023 and improve urban environment and quality of life for all in an inclusive and participatory manner."

4
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:

PRIMARY GOALS

- **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.
- **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.

- **Gender Equity and Social Inclusion:** Due emphasis to be given to Gender equity and social inclusion where women are seen as active change agents and participants and not merely recipients of interventions. This will help to mitigate gender based sanitation insecurity arising due to lack of safe sanitation facilities and practices by reducing health, nutrition and care giving burdens.

SECONDARY GOALS

- **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
- **Standardized Infrastructure and Professionalized Operations:** Standards and norms are 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, integrated 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.
- **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 government 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.
- **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.

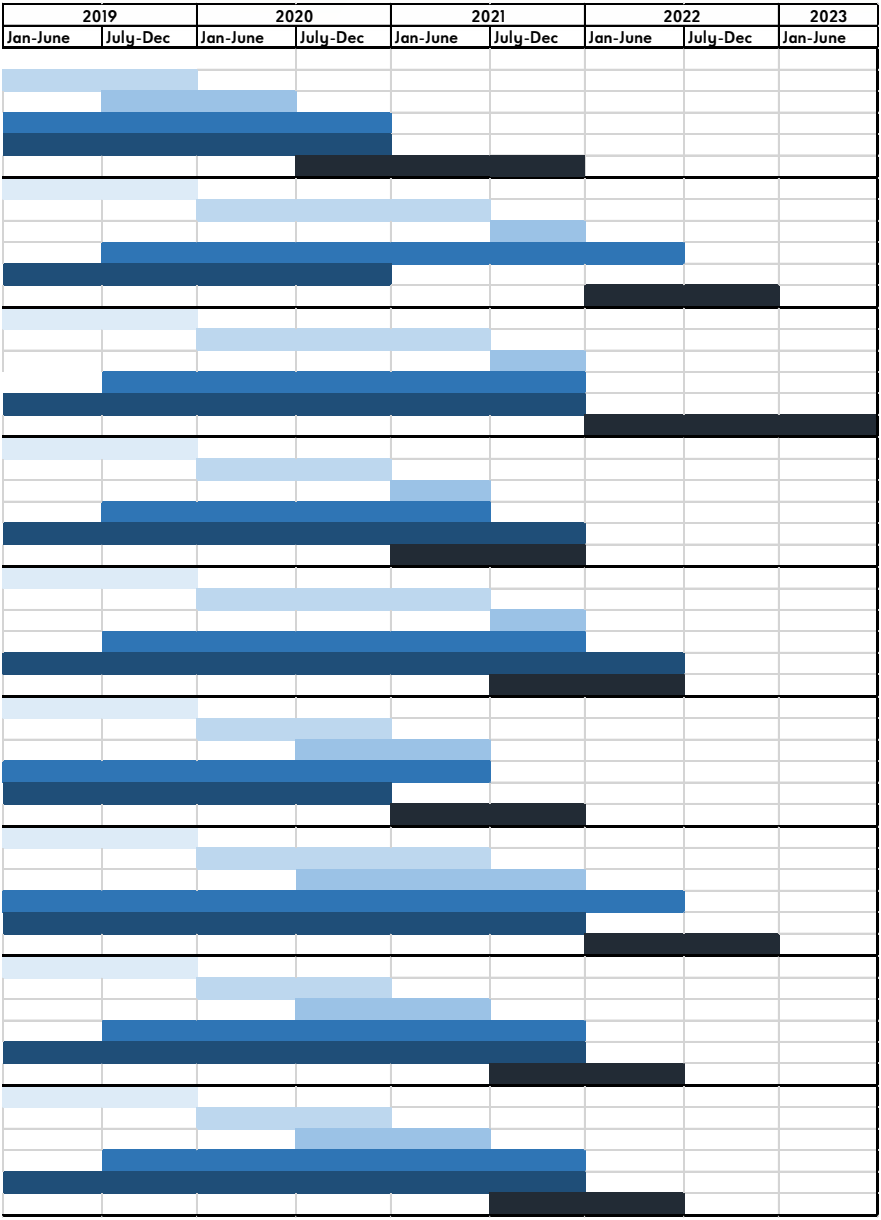
- **Greater Awareness and Participation**: The residents, especially the females of the households, would become active participants in the planning, implementation and monitoring process, while all stakeholders would be sensitized and sufficiently made aware of the processes, procedures, components, etc. of FSSM. Multiple channels (digital, broadcast, print, physical, etc.) for communication, learning and stakeholder engagement would be used. Promoting mechanism 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

- Full scale FSSM including dedicated FSTP shall be implemented in cities without centralized sewerage network (existing or proposed) and in small and medium towns (Class- III, IV & V except district headquarters).
- Partial FSSM with decentralized FSTP or co-treatment at STP shall be implemented in cities with partial coverage of sewerage network such as Class- I & II cities.
- In large and metro cities where certain narrow areas are inaccessible to desludging vehicles, decentralized systems for wastewater treatment shall be adopted such as improved/ advanced septic tanks, bio- digester tank etc.

4.2 Policy Milestones & Implementation Timeline

Category	Region/District	Milestone	2018
			July-Dec
AMRUT Cities - 28 Class - I Towns (>1 lakh population)	All	M1	
		M2	
		M3	
		M4	
		M5	
		M6	
Statutory Towns Class - III & IV Towns (10,000 to 50,000 population)	Western Sandy Plains	M1	
	Jalore, Jaisalmer, Barmer, Jodhpur, Pali, Nagaur, Bikaner, Churu, Hanumangarh, Sri Ganganagar, Jhunjhunu, Sikar	M2	
		M3	
		M4	
		M5	
		M6	
	Aravalli Region	M1	
	Alwar, North-Jaipur, Udaipur, Sirohi, Dungarpur, Rajasmand	M2	
		M3	
		M4	
		M5	
		M6	
	Eastern Plains	M1	
	South-Jaipur, Bharatpur, Dausa, Western-Sawai Madhopur, Ajmer, Tonk, Bundi, Chittorgarh, Pratapgarh, Bhilwara, Banswara	M2	
		M3	
		M4	
		M5	
		M6	
	Rajasthan Patthar - Hadoti Plateau	M1	
	Dholpur, Karauli, Kota, Jhalawar, Baran, Eastern- Sawai Madhopur	M2	
		M3	
		M4	
		M5	
		M6	
Statutory Towns Class- II Towns (50,000 to 1 lakh population)	Western Sandy Plains	M1	
	Jalore, Jaisalmer, Barmer, Jodhpur, Pali, Nagaur, Bikaner, Churu, Hanumangarh, Sri Ganganagar, Jhunjhunu, Sikar	M2	
		M3	
		M4	
		M5	
		M6	
	Aravalli Region	M1	
	Alwar, North-Jaipur, Udaipur, Sirohi, Dungarpur, Rajasmand	M2	
		M3	
		M4	
		M5	
		M6	
	Eastern Plains	M1	
	South-Jaipur, Bharatpur, Dausa, Western-Sawai Madhopur, Ajmer, Tonk, Bundi, Chittorgarh, Pratapgarh, Bhilwara, Banswara	M2	
		M3	
		M4	
		M5	
		M6	
	Rajasthan Patthar - Hadoti Plateau	M1	
	Dholpur, Karauli, Kota, Jhalawar, Baran, Eastern- Sawai Madhopur	M2	
		M3	
		M4	
		M5	
		M6	



M1	City FSSM **Plan, DPR, Bidding and Work Award**
M2	**Set-up of Treatment Facility** - Either through Co-Treatment at STP or dedicated FSTP
M3	**Operationalizing Treatment Facility** including Manpower and Equipment (Collection & Transport)
M4	Minimum two **Training Program** for ULB, Service Providers and Desludging Operators with atleast 50% attendence
M5	All Households with Individual Toilet and not serviced by a Piped Sewerage Network to have a **safe on-site containment units**
M6	Gap Filling and Year for **Complete Coverage** through FSSM

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 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 government 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, women collectives, etc.

Special campaigns can be undertaken for making communities and households aware about the importance of safe sanitation practices including scheduled desludging and the incentives to be given for households that participate in the same. Various neighbourhood and city level institutions such as schools, colleges, CBOs, women collectives, etc. would be actively engaged as volunteers in these campaigns. Initiating behaviour change and awareness campaigns where women are expected to assume a central role as both audience and trainers.

Convergence with State and Central government campaigns for IEC and awareness generation for sanitation with related schemes and programs such as SBM, AMRUT, NULM, 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 must be in multiple languages, especially local dialects with more of graphical illustrations.

5.2 Institutional and Regulatory Framework

A dedicated FSSM cell can be set-up within Directorate of Local Bodies to manage FSSM related initiatives such as projects, city FSSM plans, awareness campaigns, single-window systems, etc. Similarly, FSSM committee can be also setup under DLB for overall supervision, coordination with various state department, partnership building with various multilateral, bilateral and CSR agencies for generation of larger funds. The composition of the committee and cell shall have adequate representation from women. Various external agencies and line department 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,
- Specifications 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 empanelment and 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.

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.

Table 2: Roles and Responsibilities of Stakeholders

Agency/Dept.	Roles and Responsibilities
Local Self Government Department (LSGD), GoR	Overall supervision of FSSM operations in Rajasthan
	Approval of the roadmap for realisation of the State FSSM Policy
	Coordinate with the State government on matters pertaining to FSSM including financial grant for Capital and O&M expenses, assistance to ULBs for planning/design/O&M of FSSM infrastructure, capacity building & training assistance, etc.
	Approval of an annual action plan/strategy every year for FSSM including setting Sanitation Benchmarking Targets, priority goals, increasing coverage of sanitary latrines and on- site containments, monitoring plan, etc. for the perspective year
	Channelize funds from various central, state, bilateral/ multilateral and other sources into a dedicated State Sanitation Fund and ensure objective dissemination to all the ULBs
	Any other responsibility as deemed fit by the State Government
Directorate of Local Bodies *(State FSSM Committee)*	Supervision and coordination of FSSM operations in Rajasthan
	Coordinating networking among various key stakeholders
	Responsible for building partnerships
	Setting of State FSSM Committee under DLB
	Coordinate with the PHED regard to monthly sanitation fee/user charge collection combined with the water bill. Similarly for other towns options like annual FSSM cess, combined monthly fees with other municipal services needs to be explore
	The annual action plan/strategy would be reviewed at the end of each year to assess performance levels, accomplishments and shortcomings; and modified for the perspective year to bridge the gaps.
	Annual review of performance against Service level Benchmarks for Sanitation
Directorate of Local Bodies *(State FSSM Cell)*	Nodal agency for supervising and managing the planning and implementation of FSSM operations across all the ULBs in Rajasthan.
	Formulate a Roadmap for the realization of State Urban FSSM Policy at local level.
	Assist and guide the ULBs in establishment of a City Sanitation Committee for smooth and effective implementation of the FSSM Plan and Regulations at local level.

Agency/Dept.	Roles and Responsibilities
Directorate of Local Bodies *(State FSSM Cell)*	Coordinate with State Sanitation Committee to prepare a uniform structure for planning, designing, project preparation, appraisal, sanction and implementation across all the ULBs.
	Formulating, notifying and modifying important documents such as the State FSSM Plan and Strategy, Model City Septage Management Regulations, changes in the Model Building Bye-laws related to sanitation, model septic tank/soak-pit design, etc.
	Ensure implementation of State FSSM Guidelines, State FSSM Plan and strategy, standard operating procedure manuals etc. across all the ULBs.
	Assist and guide the ULBs in preparation of containment user database, City FSSM Plan and strategy, setting service level benchmarks, selecting appropriate treatment technology and preparing DPR, and carrying out other responsibilities related to FSSM.
	Arrange and manage funds, allocate annual budget, disseminate grants/ aids, VGF for provision of FSSM infrastructure at local level and expenses for IEC & capacity building programmes etc.
	DLB may engage professionals through empanelment to provide technical assistance to ULBs for realization of FSSM operations
	Coordinate with various state government departments and local level authorities to ensure convergence of FSSM Plans and Strategy with other ongoing and proposed projects.
	Identify various stakeholders and coordinate with them to ensure active participation
	Invite public and private agencies to involve in FSSM operations at various levels of sanitation value chain and build partnership
	Establish framework and platform to encourage innovative funding mechanism such as CSR, PPP, Guarantee funds, Crowdsourcing, Social and Development impact bonds, ULB incentive fund, UPIF etc.
	Coordinate with City Sanitation Committees for annual financial audit against the budget and targets.
	Conduct social impact assessment of sanitation related initiatives across the state and evolve goals and actions for further improvement.

Agency/Dept.	Roles and Responsibilities
Directorate of Local Bodies *(State FSSM Cell)*	Setting of State FSSM Cell for closely working & performance monitoring of respective ULBs
	Formulate a monitoring and evaluation mechanism to conduct annual review of the FSSM progress and gaps across all the ULBs
	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.
	Maintain records and prepare annual reports
	Undertake IEC activities/ public awareness campaigns at state level and also facilitate IEC material to the ULBs
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"
Rajasthan Urban Drinking Water, Sewerage & Infrastructure Corporation	Ensure coverage all non-sewer pockets and areas in their project towns through appropriate FSSM interventions
	Capacity Building and Awareness of ULBs, Service Providers and other stakeholders for implementation of FSSM 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.

Agency/Dept.	Roles and Responsibilities
Urban Local Bodies	Formulating city-wide FSSM strategy, benchmarks & timeline
	Timely preparation of city FSSM plan
	Formulation and 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 and Committee (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
	Coordinate training programmes for masons to build skills in construction of quality septic tanks as per ISO norms
	Devise a system of appropriate incentives and penalties for residents and service providers to induce desirable behaviour
	Ensuring capacity building and training – human resource, financial, equipment, exposure visits, etc.
	Overall Monitoring and Evaluation of FSSM operations – benchmarking, ensuring compliance, performance monitoring of desludging operators, etc.
	Undertake awareness generation and behaviour change campaigns and regular public engagement to ensure active participation by the residents, especially women and other vulnerable segments of the community
	Land finalization and setting of faecal Sludge Treatment Facility (dedicated plant or co-treatment with existing STP)

Agency/Dept.	Roles and Responsibilities
Urban Local Bodies	Periodic monitoring of plant effluent discharge
	If required provide NOC for location of treatment plants
Ward Councillors	Approval of FSSM rules and regulations as part of municipal board meeting
	Lead the Ward-level awareness generation and behavior 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
	Construction of proper On-Site Sanitation Facility as per building bye-laws/National Standards
	Regular maintenance and monitoring of septic tanks
Desludging Operators	Timely collection of waste from households as per schedule and disposing waste at designated locations/treatment facilities 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 sub-par construction of toilets, septic tanks, soakpits, etc.

Agency/Dept.	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 programms, projects and activities
	Design of future projects and programms in accordance with the provisions of the policy
Academic, Research, Non-Government and Civil Society Organizations	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
Dept. of Women and Child Development, GoR	Assisting in preparation of IEC material for awareness and behaviour change campaigns in coordination with partner agencies
Media Agency	Active participations in spreading awareness and provide relevant information to residents and other relevant stakeholder groups.
	Highlighting the emerging issues and showcasing good performing example during project implementations.

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/SHGs/women collectives, private service providers, Donor agencies, Bilateral/Multilateral agencies, etc. for bolstering capacities and knowledge in the sector.

The State FSSM Cell shall enable the ULBs by facilitating the identification of professional consultants for preparation of plans, detailed project reports and tender documents, empanelment of suppliers and manufacturers of desludging equipment, private contractors and vendors for construction of treatment plants etc. on a cluster-based approach or for individual towns/ cities.
State may also engage technology partners for exposure of various treatment module innovations including developing GIS based containment user database, GPS enabled desludging operations and monitoring systems etc.
State shall encourage the private players by providing fiscal and non- fiscal incentives in terms of tax exemptions, health insurance, processing fee waiver etc. to actively participate in the FSSM planning and implementation process.

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.
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, 13th and 14th 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). 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 (Viability Gap Funding) from Central and State government wherever FSSM projects are not completely feasible. Cross subsidy module can also be explored to setup and compensate (partially/fully) the cost of plant construction and operation. Incentives and concessions in various ULB taxes/charges for setting up Faecal Sludge treatment plants, providing formal credit to desludging operators for purchase/ repair/ maintenance of desludging vehicles or capacity building, etc.

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

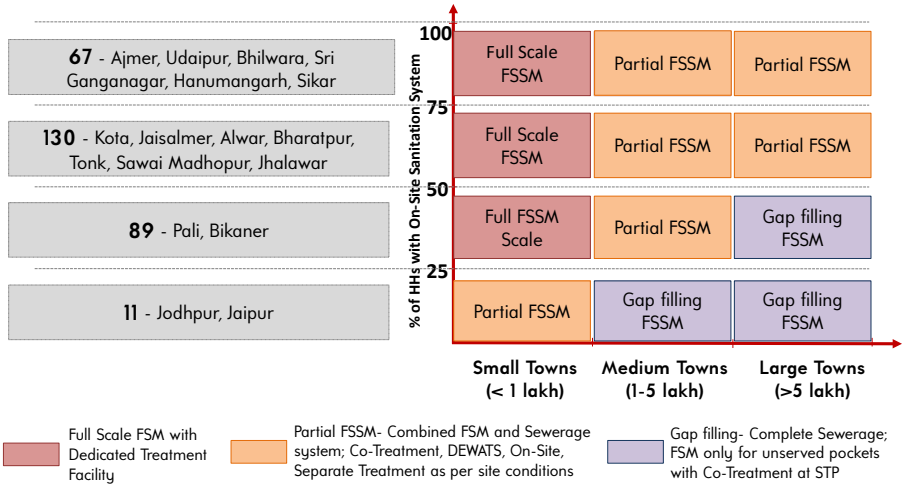
The City-level FSSM strategy and plans would duly assess cost requirements during the perspective period, including capital and O&M costs, and accordingly structure their financial model to make the system more feasible and sustainable. State government will play a facilitating role in implementation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

It is important to ensure that desludging operations are provided to residents at affordable costs. In case of on-call desludging, the ULB will be empowered to control rates for desludging charged by private operators if it feels the current prices are unaffordable or unreasonable. The notified prices shall be decided by the ULB in consultation with licensed private operators.
Desludging and Treatment Plant operators shall use requisite safety gear during operations. There should be absolutely no direct human contact with the waste. For urban pockets where both sewerage system and desludging services are not possible, such as compact inner city areas and congested slums, appropriate on-site, decentralized wastewater and faecal sludge treatment solutions would be explored. A more detailed set of techno-economic criteria shall be developed and provided in the State FSSM Guidelines for the same. The discharge of treated end-product from the FSTP, i.e. both solid and liquid residue, shall comply with the prevailing CPCB/RSPCB norms.

5.6 Intervention and Service Delivery

Figure 3: Sanitation Approach - Based on Size of town and OSSF coverage
Source: Census of India, 2011



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.

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.

Identifying land for FSTP will be challenging for any ULB. A suitable location criteria will be a part of the State FSSM guidelines. Furthermore, preference can be given to land designated as landfill sites or land parcels around the existing landfill site for locating the FSTP.
Cities/towns located in close proximity, say within 10 km of each other, can be clustered and infrastructure such as Desludging Trucks, Treatment facilities, manpower, etc. may be shared amongst them. Clustering is highly advisable for setting up of faecal Sludge Treatment Plants, where multiple ULBs can share a single FSTP through mutual understanding.

One of the biggest challenges in implementing scheduled desludging is collection of service charges that are affordable and cover the cost of services. Similar to user charges for conventional sewerage systems, combined sanitation charges with the PHED water bill may be explored for towns (with adequate coverage and collection efficiency of water supply) implementing scheduled desludging. It further suggest to increase the monthly water tariff by 15% as to cover of desludging operations for all uses of towns. This will require cooperation between the ULBs and the PHED on information transfer and revenue sharing. Similarly options for other towns like Annual FSSM cess, Combined monthly fess with any municipal services can be also explored for the provision of scheduled desludging. The state government can decide on a single user charge across the state (revised periodically), or the charge may be decided on a case-by-case basis. 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.

Apartments, housing colonies, group housing and commercial & institutional development (i.e shopping complex, big hotels, colleges, hospitals etc.) in non-sewer areas should design their own sludge treatment system and this may be incentivized through possible rebate in building permission fee, urban development tax or other similar means.

Licensed service providers can be eligible to access 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'.
Typical desludging vehicles are unable to access households in traditional Indian cities with narrow access. In such situations, alternative approaches should be employed, including - on-site treatment, smaller desludging vehicles/ equipment, etc. Further, for areas where provision of centralized services and infrastructure are not possible, community-led models such as BUMT (Built Use Maintain Treatment) may be explored with support from the ULB and partner agencies in building capacities. Showcase projects should be piloted in each geographical zone as replicable models.

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 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. State FSSM Cell and partners under the direction of state FSSM committee will establish benchmarking system for state, similar to San-Benchmark Framework suggested in 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. These benchmarking and target should be aligned with policy milestone & implementation timeline.

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 state FSSM cell.

Local Communities, women collectives, CBOs, etc. 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 human resource, expertise, equipment, resources, financial management, etc. External agencies would be engaged and customised modules would be prepared for training government officials, service providers, ULBs, planners & engineers, prospective partners, etc. on relevant FSSM practices, technologies, operating procedures, techniques, financial assessment, etc. Short courses may be initiated as skill training programs targeted for creating employment opportunities in the sanitation sector. Specialized courses may be designed for women to find employment in the sanitation sector. This may be integrated with other state/centre sponsored skill development and vocational training schemes and programs.

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 also a potential career prospects to engage large young professionals.

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.

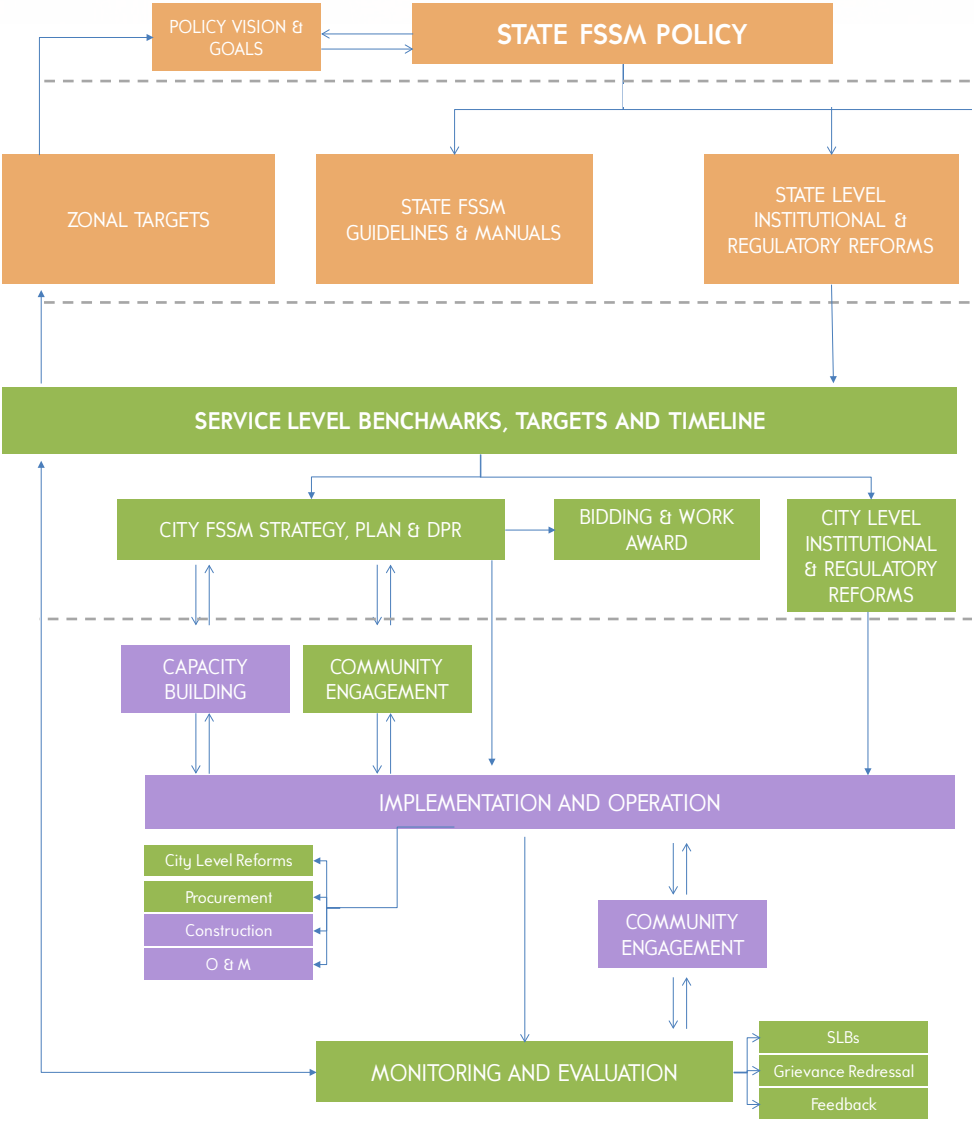
5.9 Suggestive action plan for State Government

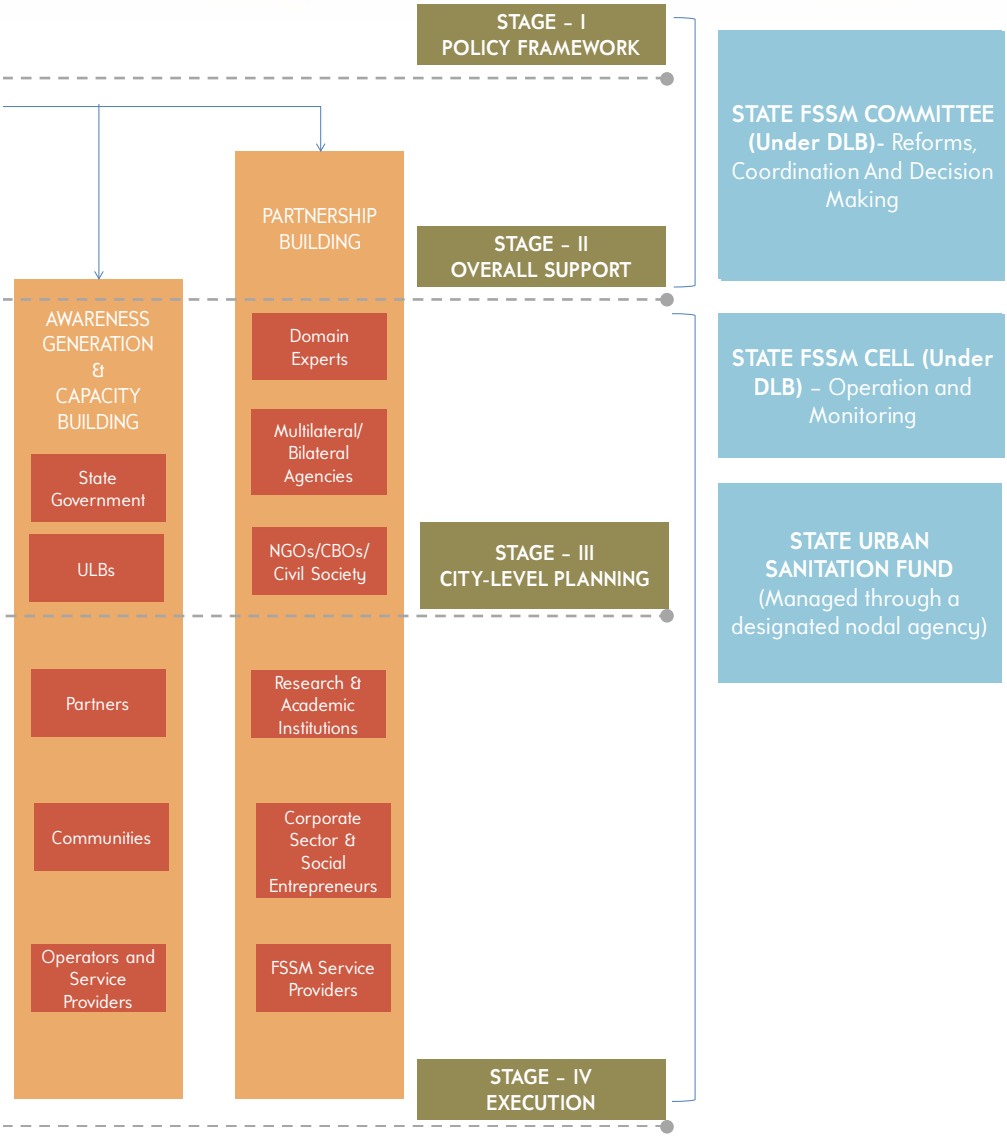
1. Notifiying FSSM Guidelines, Standard Operating Procedures and Model documents for ULBs - Regulations, FSSM Plan format, DPRs, Bid documents, etc.
2. Empanelment of FSSM partner agencies - Technical partners, Capacity Building partners, Media partners, Knowledge partners, etc.
3. Establishing the State FSSM committee, State FSSM cell and urban sanitation fund through appropriate nodal department
4. Engaging a state-wide PDMC for expediting the process of design, procurement and construction of FSTPs and other ancillary equipment (desludging vehicles, etc.). A cluster-based approach may be adopted wherein FSTPs for multiple towns within the cluster (such as a district or other state sub-divisions) may be combined into packages for speedy implementation
5. Ensuring necessary provision for inclusion of FSSM charges like Annual FSSM cess or combined monthly fess with the PHED water bill or any municipal services.
6. Annual review of dedicated FSSM Service level Benchmarks for all ULBs

5.10 Suggestive action plan for ULBs

1. Identification of land for FSTPs - a portion of the land demarcated for solid waste management may be reserved for this purpose
2. Notifying the Model city Septage Management Regulations (with appropriate modifications)
3. Setting up of a city sanitation committee and cell
4. Preparation of a city FSSM plan identifying - funding required, septage generation and size of FSTP required, human resource & training required and additional equipment required. This will be followed by preparation of DPRs for FSTP and additional equipment with guidance from state goverment and selected partner agency
5. Amending the building bye-laws to include design and approval mechanism for safe on-site santiation system as per the state FSSM guidelines
6. Coordinating training of ULB staff and other stakeholders
7. Commissioning and operationalizing the FSTP through appropriate O&M model
8. Simultaneously, licensing of all desludging operators operating in the city and introducing sanitation charges (in case of scheduled desludging)

Figure 4: Process Flow Diagram and Phasing of FSSM Policy Implementations





UNDERTAKEN (LEAD) BY	ASSISTANCE	REGULATE AND MANAGE
State Government	Partners and ULBs	State Government
ULBs and Partners	State Government and Partners	ULBs and State Government
Service Providers and Partners	ULBs and State Government	ULBs

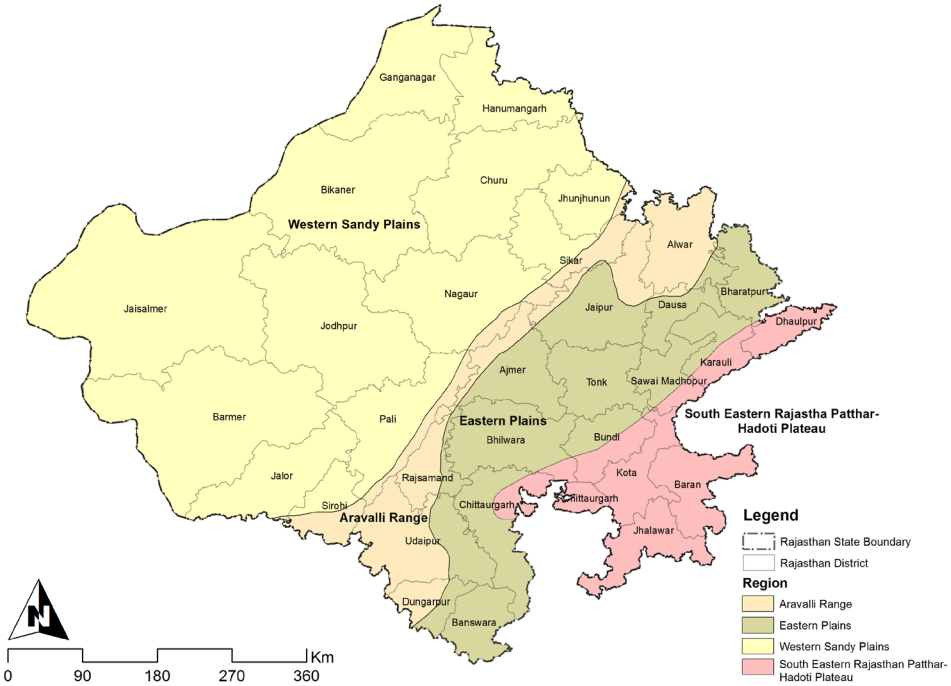
6
Expected Outcomes

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.
- **Timely Desludging** - Greater Progress in transition from irregular on-call service to periodic and 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 technical innovation, user-driven cost recovery and profit generating business models through resource recovery and other innovative means.
- **Skill & Employment Generation** - Skilled manpower for FSSM through incremental capacity building programmes; also evolving opportunities under FSSM as mainstream career prospects for young professionals.
- **Greater Institutional Capacities** - Augmented capacities across institutions (State and city-level) that could possibly be replicated in other sectors.
- **Enhanced community awareness and participation** - Across the sanitation value chain during planning, service delivery and monitoring.

7 Annexure - I

7.1 Geographical Regions of Rajasthan



Geographical regions of Rajasthan may be taken into consideration to address the region specific issues and challenges in terms of FSSM operations and limitations in the way of implementation of policy interventions and City FSSM Plan.

Table 3: Summary of Geographic Regions in Rajasthans

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 arid/ semi-arid climate with very low rainfall (< 300mm annually), extreme weather (observed the highest and lowest temperatures in Rajasthan), low groundwater table and low water supply (sourced primarily through the Indira Gandhi Canal), sandy soil and largely sterile land with very low fertility (with exception of the northern districts of Sri Ganganagar & Hanumangarh).

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 sub-humid climate, hilly and undulating terrain, stony/rocky sub-surface, low to moderate rainfall (450 - 600mm annually) and low groundwater table.

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 sub-humid to humid climate, relatively flatter terrain with sporadic hilly tracts, moderate rainfall (600 – 800mm annually), sandy-loamy/silty-loam/silty-clay soils with good drainage and moderate depth to groundwater (5-20m) during monsoon.

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 tropical humid climate, relatively flat terrain with sporadic hilly tracts, relatively high rainfall (> 800mm annually), hard rocky sub-strata, moderate to high depth to groundwater during monsoon (< 10m) and good water supply.

Annexure -II

7.2 Regulatory Framework

The existing national and state level framework in terms of legislation, policy, programms, 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.
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
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.

Legislations	Brief
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 achieve 100% sanitation, 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 achieve 100% sanitation, 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, 2017	It emphasize 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	Briefly suggests possible interventions for 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.
Atal Mission for Rejuvenation and Urban Transformation (AMRUT)	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 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 document mainly outlines need of FSSM, awareness generation, national declaration, central laws and rules, and implementation approach.

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

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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