Government of West Bengal
Department of Urban Development & Municipal Affairs
"NAGARAYAN"
DF-8, Sector-I, Salt Lake City, Kolkata 700 064

No. 03-(Law)/UDMA-15011(15)/17/2021-LS-UD **Dated, Kolkata, the 27th January, 2022**

INTIMATION FOR INVITING SUGGESTIONS/ FEED BACK ON DRAFT 'FAECAL SLUDGE AND SEPTAGE MANAGAMENT POLICY FOR THE URBAN AREAS IN WEST BENGAL'

The Department of Urban Development and Municipal Affairs has set-up a High Level Committee (HLC) for Drafting of "Faecal Sludge & Septage Management Policy for the Urban Areas in State of West Bengal".

After several rounds of meeting and extensive discussions, the said committee has prepared a draft policy which is now placed in the website of the Department of UD & MA. Now the Department seeks valuable feedback and suggestions if any, from all concerned by 21.02.2022 for finalizing the policy.

Please offer feedback/suggestion within the stipulated date in the under mentioned Email I.D.

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27/01/2022.

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Draft Report
on
Faecal Sludge and Septage Management Policy
for the
Urban Areas
in State of West Bengal

Prepared in terms of UD & MA Department, Govt. of West Bengal's

Order No. 80 UMDA/ 24011(99)66/2021
dated 25th October 2021

2022

1.0 Introduction

In West Bengal as per 2011 census the urban population was 29 million. Current urban population of the State is around 30.9 millions[1]. Approximately 22% Urban Population are covered with Sewerage and Sewage Treatment facilities under off-site sanitation system which is existing in nine (9) Urban Local Bodies (ULB) including Kolkata Municipal Corporation (KMC). So, majority of urban population is covered with on-site Sanitation system. At present, in West Bengal there are seven (7) Municipal Corporations, one hundred and eighteen (118) Municipalities and three (3) Notified Area Authorities providing civic services to urban population.

In the State, water is supplied conforming to the guidelines of CPHEEO manual. Each ULB generates waste water as 80% of water supply. Municipal waste waters (sewage/sullage) contain substantial quantum of organic and bacterial pollution load. Municipal waste water if untreated may cause surface water and groundwater pollution. In addition, the faecal sludge and septage generated due to on-site sanitation process in household and community toilets if disposed without proper treatment in un-controlled manner may also cause surface water and groundwater pollution.

Normally focus on sanitary interventions in urban area relates to ensuring access to toilets (on-site sanitation) and construction of Sewerage Network and Sewage Treatment Plants (off-site sanitation). Issue of Faecal Sludge and Septage Management (FSSM) in safe and sustainable manner remained neglected. In un-sewered cities and towns due to the absence of proper policy and planning, open disposal of untreated faecal sludge and septage is causing environmental pollution and risk to public health. The ULBs in one hand have achieved ODF status by ensuring 100% use of toilets but on the other hand, they are very much handicapped with the scientific faecal sludge and septage management System.

1 As per document submitted by the State to Hon'ble NGT

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

Faecal Sludge: It is the solid or settled contents of pit latrines and septic tanks. Faecal sludge differs from sludge produced in Municipal Waste Water Treatment Plants. Faecal sludge characteristics can differ from place to place. The physical, chemical and biological qualities of facecal sludge are influenced by the duration of storage, temperature, intrusion of groundwater or surface water in septic tanks or pits, performance of septic tanks, tank emptying technology and pattern.

Septage: Faecal sludge produced in septic tanks.

(Ref: Septage Management in Urban India: NUSP)

In order to facilitate off-site sanitation systems, sewerage network, pumping stations and Sewage Treatment Plants are to be built. Such systems are expensive to build and also expensive to operate and maintain properly. It is for this reason off-site sanitation system with sewerage network, pumping stations and Sewage Treatment Plants are not feasible for most of the ULBs. Thus on-site sanitation option with septic tanks and sanitary pit latrines for excreta treatment is feasible in most of the un-sewered ULBs.

1.1 Existing Situation

On-site sanitation system is prevailing in un-sewered ULBs in West Bengal. In these ULBs mostly septic tanks have been constructed for treatment of human excreta. The septic tank facilitates anaerobic treatment of sewage (human excreta + water) by way of anaerobic digestion of settled solid (sludge) and liquid resulting in reduction of biodegradable organic matter and release of methane, carbon dioxide, hydrogen sulphide gases etc. The septic tank effluent although clarified to a large extent, still contain appreciable amount of dissolved and suspended organic solids and pathogen. Such effluents from septic tanks normally get discharged in surface drains in the absence of soak pits. ULBs provide services for emptying of faecal sludge/septage from septic tanks on request from the tax payers of the cities / towns.. However, the service provided by the ULBs has been assessed to be inadequate due to non-availability of vehicles, man-power and infrastructures for treatment and disposal of faecal sludge/septage. In many ULBs, uncontrolled open dumping of faecal sludge/septage is

practiced. Private Agencies are also operating in ULBs for de-sludging of septic tank as and when residents call them. Private agencies do not follow the scientific system of sludge withdrawal from the septic tanks as well as treatment and safe disposal/utilization of dried sludge. Often faecal sludge/septage are disposed in open nullah/outfall channel causing pollution of rivers, canals and other water bodies. One of the reasons of high Faecal Coliform concentration in rivers may be the direct disposal of faecal sludge/septage in outfall channels leading to the rivers.

In Kolkata Metropolitan area where 41 ULBs are existing, a good number of Sewage Treatment Plants have been constructed under GAP-Phase I, GAP-Phase II and Namami Gange Program for abatement of pollution of river Hooghly (Ganga). Under GAP-Phase I and GAP-Phase II, intercepting sewers were laid as well as sewage treatment plants were constructed to treat intercepted and diverted sewage/sullage in different cities and towns. Under Namami Gange Program sewerage network, pumping stations and Sewage Treatment Plants have been constructed in a few towns. None of the Sewage Treatment Plants are receiving faecal sludge/septage for treatment till date.

1.2 Need for FSSM Policy

Currently septic tanks accounts for substantial proportion of toilets in urban areas of West Bengal. Other types include on-site two-pit or single-pit pour flush toilets. In some towns use of on-site deep single pit toilets are still in practice. In cities and towns where sewerage and sewage treatment facilities are available, septic tanks and pit latrines are hardly found in limited in number.

In un-sewered towns, provision of system for Faecal Sludge and Septage Management are required.. In towns, especially along lower Ganga region, where Sewage Treatment Plants with intercepting sewers are available but without having sewerage network, there must be also provision with arrangement of FSSM.

Inadequate safe and sustainable sanitation is the one of the important reasons of pollution of water and soil resources as well as adverse impact on public health. More attention may be given for proper construction of on-site sanitization system (septic tanks) and the management and safe disposal of faecal sludge and septage. Mostly septic tank and pit latrine design and construction are subject to local practices with considerable variation and without conforming to the Bureau of Indian Standards (BIS) or CPHEEO manual.

Following deficiencies may be observed in ULBs for managing faecal sludge and septage :-

- **Limited capacities and resources with ULBs.**
- **Households do not request for cleaning of septic tanks regularly**
- **Some ULBs have de-sludging equipments or there are private players providing cleaning services but the extent of services is far from adequate.**
- **In many cases faecal sludge and septage is disposed in open drains and open areas (trenching ground) posing considerable environmental and health risks.**
- **Sometimes sanitary workers do their job of septic tank or latrine pit cleaning in hazardous condition without adequate protective gear and equipments.**

In the above context, these issues may be addressed in a holistic manner, with a strategy to select appropriate option for proper management considering local situation. There is a need to develop FSSM system with provision of faecal sludge and septage treatment and use of sludge as soil conditioner or manure. A policy on Faecal Sludge and Septage Management is needed to be framed highlighting suitable regulations, institutional framework, capacity building, education and awareness among all stakeholders. This policy seeks to address on-site sanitation system in all un-sewered cities and towns in West Bengal with an aim to manage all faecal sludge and septage 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. In addition, the policy will include rational management system to be undertaken for faecal sludge and septage for towns having sewerage network with Sewage Treatment Plants as well as for towns having Sewage treatment Plant with intercepting sewer but not covered by sewerage network.

1.3 Gaps and issues in Urban Sanitation

In West Bengal, while on-site sanitation systems are prevailing in most of the towns, organized faecal sludge and septage collection, transportation, treatment and resource recovery etc. by ULBs are yet to be set up. In many ULBs the Cess-Pool Vehicle with suction pumps and equipments are inadequate in number. In

many municipal areas private players are operating to clean septic tank without following sanitation safety planning. Again following issues create barrier to regular septic tank cleaning and septage collection in different ULBs in the State :-

- **Manual cleaning is still going on.**
- **Faulty construction of septic tanks (with sealed or cemented cover placed under toilet, inaccessibility in emptying etc) often dis-incentivizes frequent cleaning.**
- **Septic tanks are normally constructed without design norm and guidelines prescribed in National Building Code, the Indian Standard Code and the CPHEEO manual and accordingly, majority of the septic tanks are over sized. As a result, households typically notice the need for cleaning once the tanks get filled up and call for emptying services. Interval of septic tank cleaning often recorded between 8 years and 12 years in many households. Even over-flowing septic tanks could be noticed with septage getting discharged in surface drains (mostly soak pits are not constructed).**
- **In many ULBs informal private players (contractor/agency) dominate septic tank cleaning services. Their approach is generally unscientific with disposal of faecal sludge and septage in open drain/nullah, canal and other water bodies including lowlands. There is no monitoring mechanism of the services by the private Contractors/Agencies by the ULBs.**
- **Faecal sludge and septage treatment facilities are not available in most of the ULBs in the state resulting in disposal of sludge in water bodies and land without treatment. Even no guideline is available for treating faecal sludge and septage at the existing Sewage Treatment Plant where feasible.**
- **There is poor awareness about inherent linkage of FSSM with public health.**
- **Fund constraint often lead to ULBs to refrain from taking up rational FSSM system. Non-availability of low cost treatment options creates barrier in installing faecal sludge treatment units in ULBs.**
- **There is adverse impact of lack of sustainable sanitation on health of women and impedes in cognitive development of girls and infants. This policy will promote gender mainstreaming in FSSM where women are seen as active agents and participants of change, not merely as recipients or victim of policies.**

2.0 Public Health and Environmental Hazards

Septic tank effluents and septage contain appreciable level of organic, nitrogen and pathogens and if these are disposed without treatment in water bodies or low lying land then that may cause deleterious effect on environment as well as adverse impact on public health. Disposal of untreated septic tank effluent and septage can lead to the decrease of oxygen and endanger the aquatic organisms in the surface water bodies. Increased faecal coliform concentrations in surface waters render it unsuitable for bathing. Nitrates can contaminate groundwater and if the concentration exceeds more than the permissible limit of drinking water standard then drinking water may cause methemoglobinemia and other health problems. Nitrate and phosphorous in waste water can also lead to eutrophication of water bodies. Pathogens from septic tank effluent and septage mixing reaching groundwater and surface water may cause human diseases through ingestion or recreational contact.

3.0 Objectives and Scope

3.1 Concept

All cities and towns in West Bengal become totally sanitized, healthy and livable and ensure sustenance of good sanitation practices with off-site sanitation System or improved on-Site sanitation services together with faecal sludge and septage management.

3.2 Objectives

The key objective of urban **FSSM Policy** for West Bengal State is to set the context, priorities and direction for, and to facilitate implementation of FSSM services in all ULBs such that safe and sustainable sanitation becomes a reality for all.

The FSSM Policy will -

i. **Ensure benefit of safe sanitation to all citizens with containment, emptying, transportation, treatment and disposal / re-use of all faecal sludge, septage and other liquid waste and their by-products and end-products.**
ii. **Identify ways and means towards creation of an enabling environment for achieving sustainable FSSM.**
iii. **Delineate roles and responsibilities of key stakeholders including citizens for effective implementation of FSSM services in the ULBs.**

iv. **Extend support for converging different development programs towards achieving safe and sustainable sanitation for all.**
v. **Ensure strict compliance of Statutory Rules and Regulations related to Environmental Pollution Control while rendering FSSM services in the ULBs.**
vi. **Focus on communication, awareness, motivation, sensitization, training to achieve sustainable FSSM services.**
vii. **Stress on institutional development and capacity building for ULBs for ensuring effective FSSM.**
viii. **Highlight road map for safe faecal sludge and septage treatment in all ULBs by creating FSTPs or co-treatment in existing STPs through decentralized as well as cluster based centralized approach.**
ix. **Provide functional Strategy for sustainable FSSM System in ULBs, stressing emphasis on employment generation.**
x. **Focus on resource recovery by way of use of stabilized faecal sludge and septage as manure or soil conditioner as well as use of treated liquid in agriculture, horticulture, social forestry etc.**

3.3 Specific Milestones

3.3.1 Achieving City Sanitation

All ULBs have target to achieve appropriate city / town sanitation status. Proper waste (solid and liquid) management is a necessity in ULBs with basic objective of abatement of pollution, resource recovery through waste management including recycling and reuse as well as protection and conservation of nature and environment. Solid and liquid waste management as priority has been taken up in ULBs already under various developmental program including Swachh Bharat Mission, Namami Gange, Mission Nirmal Bangla, AMRUT etc. The Policy of FSSM for the State of West Bengal will lead to city-sanitation benchmark in ULBs through proper planning and implementation processes to converge with all other approaches of waste management.

3.3.2. Sanitary and Safe Disposal of faecal Sludge and Septage

- Promoting proper functioning of FSSM system ensuring proper emptying, collection, transportation, treatment and disposal of faecal sludge/septage.
- Promoting resource recovery from FSSM
- Stress on use of treated faecal sludge and septage as manure or soil condition as well as promoting recycle and reuse of treated liquid waste for non-portable applications.

- Promoting proper design and construction of On-Site Sanitation (OSS) facilities as well as modification / repairing / retrofitting of existing OSS facilities in the ULBs.

3.3.3 Awareness Generation and Behaviour Change

- Generating awareness about on-site-sanitation, faecal sludge and septage management and their linkages with public health and environment amongst communities.
- Promoting mechanism to bring about behavioral change towards achieving healthy sanitation practices as well as maintaining Safe OSS System.

3.4 Scope

FSSM Policy aims for proper containment, collection, transportation, treatment and safe disposal of faecal sludge and septage from on-site-sanitation System.

Hence only on-site-sanitation facilities and areas served by such facilities would fall under the purview of this FSSM Policy. It does not seek to cover Conventional Sewerage System including treatment plants for waste water management.

FSSM Policy will address synergies between FSSM and Sewerage System or Municipal Solid Waste Management. It will focus on feasibility of co-treatment of faecal sludge and Septage at Sewage Treatment Plants or co-processing of faecal sludge and septage during composting of organic portion of municipal solid waste.

The scope of FSSM Policy extends to all the projects, program and schemes that facilitate and support sanitation services in urban and peri-urban areas.

The policy applies to every ULB, outgrowths in urban agglomeration, census towns as declared by the Registrar General and Census Commissioner of India, notified areas, places of tourism, and places of pilgrimage, religions and historical importance in the State of West Bengal.

4.0 LEGISLATIVE AND REGULATORY CONTEXT

4.1 Central and State Laws and Rules

The legal context for FSSM includes municipal building rules / bye laws, environmental rules, laws for the legal prohibition of “manual scavenging” and

institutional laws that provide for the establishment, power and functions of Urban Local Bodies (ULBs).

Water (Prevention and Control of Pollution) Act 1974, Environment (Protection) Act 1986 and West Bengal Municipal Act and subsequent amendments provide a framework for control of effluent, sewage and septage discharge.

The Environment (Protection) Act applies to the final and safe disposal of post processed residual faecal sludge and septage to prevent contamination of ground water, surface water and ambient air. The effluent from faecal sludge and septage treatment plant must be guided by Water (Prevention and Control of Pollution) Act, 1974 and shall conform to the standard laid down by MoEF&CC and CPCB while sludge-solids to be used as compost must conform to the specification of compost as laid down in SWM Rule 2016..

National Building Code of India (NBC 2005) as applicable for septic tanks, soak pits, cesspools, leach pits etc may be considered as important guideline while planning and framing strategy for implementation of FSSM services in the ULBs. CPHEEO Manual on sewerage and sewage treatment, Model Building Bye-laws 2016, framed by the Town and Country Planning Organization can also be consulted and referred.

The Employment of Manual Scavenges and Construction of Dry Latrines (Protection) Act, 1993 put a ban on dry latrines i.e. latrines with no-water seal or flushing mechanism, and the employment of persons for manually carrying human excreta. This was supplemented in 2013 with the Prohibition of Employment as Manual Scavengers and their Rehabilitation Act 2013 by which “hazardous cleaning” in relation to sewers and septic tanks was also banned.

West Bengal Municipal Act 1993 and subsequent amendments, West Bengal Building Rules 2007 and subsequent modifications can be consulted and referred while framing FSSM strategy in the ULBs.

5.0 Implementation Strategy

5.1 Systematic approach to create infrastructure for faecal sludge and septage treatment

The Government of West Bengal has adopted systematic approach to implement FSSM plan across full sanitation service chain in all ULBs in the State. Emphasis is being given for municipal waste water treatment including recycling and reuse towards minimizing

surface water and ground water pollution. As on-site-sanitation system is prevailing in most of the ULBs, and that ODF status has been achieved in the ULBs, The State Government has already started improving Solid Waste Management System in the ULBs as per SWM Rule 2016 as well as taken up systematic approach for faecal sludge and septage management to achieve ODF++ status. In towns having sewerage system with direct house connection of sewage, the FSSM system does not apply, but in such towns where septic tank / pit latrines remain in working condition in-spite of having house connection with the sewerage, FSSM System requires to be adopted.

5.2 Three - pronged approach for State-wide FSSM strategy –

The State has taken three-pronged approach towards adopting State-wide FSSM Plan and strategy, such as:

a. **Co- treatment of faecal sludge and septage generating in the ULB at own or nearby STPs**
b. **Setting up of independent Faecal Sludge and Septage Treatment Plant (FSTP) at ULB level or at cluster of ULB level.**
c. **In case of small town (Population less than 100000), co-treatment of faecal sludge and septage in new Sewage Treatment Plants (connected with intercepting sewer with diversion) will be taken up, where feasible.**

5.3 Implementation Strategy for Kolkata Metropolitan Area (KMA)

In Kolkata Metropolitan Area besides Kolkata Municipal Corporation (KMC), there are 42 ULBs (3 Municipal Corporation and 39 Municipalities). In KMA, 24 Sewage Treatment Plants having different technologies are available for treating municipal sewage / sullage. The functional capacity of 24 STPs has been estimated by KMDA as 562.53 MLD. According to KMDA, septage generation in KMA (except KMC) has been estimated as 1874 KLD. Each STP is capable of treating an additional 5% plant capacity with septage load.

Hence, co-treatment of faecal sludge and septage generating in the ULBs in KMA (except Kolkata) will be the best approach for FSSM. Accordingly co-treatment of faecal sludge and septage for an ULB is recommended in STP of the same ULB as far as practicable.

In case of some ULBs, the faecal sludge and septage may be co-treated with sewage in other nearby ULBs. Again, in order to minimize transportation cost, setting up of

independent FSTPs at ULB level or at cluster of ULB level is recommended. Table 5.1 and 5.2 indicates faecal sludge and septage treatment strategy in KMA-

Table 5.1 – Faecal Sludge & Septage treatment in STP of same ULB

Strategy	**ULBs to be covered in KMA**	
Faecal Sludge and septage of the ULB to be co-treated in the STP of the same ULB	1. Bansberia (Part) 2. Hooghly Chinsurah 3. Chandannagar 4. Bhadreswar 5. Champdani 6. Baidyabati 7. Serampore 8. Uttarpara-Kotrung 9. Howrah MC 10. Kalyani 11. Kanchrapara 12. Halisahar	13. Naihati 14. Bhatpara 15. Garulia 16. North Barrackpore 17. Barrackpore 18. Titagarh 19. Khardah 20. Panihati 21. Baranagar 22. Maheshtala 23. Budge Budge 24. Gayeshpur

Table 5.2: Faecal Sludge and Septage Treatment in STPs of other ULB (In KMA)

Strategy	Septage of following ULBs	Other ULBs where septage to be treated in STP
Faecal Sludge and Septage of the ULBs to be treated in the STPs of other ULBs	Rishra	Serampore
	Konnagar	Uttarpara - Kotrung
	Pujali	Budge Budge
	Bansberia (Part)	Hooghly - Chinsurah

Table 5.3: Faecal Sludge and Septage of ULBs to be treated in FSTP (In KMA)

Strategy	Septage of following ULBs	ULB where FSTP Constructed / to be constructed
Faecal Sludge and Septage to be treated in FSTP	Uluberia	Uluberia
	Barasat	Barasat

	Baruipur	Baruipur
	Madhyamgram	Madhyamgram
	New Barrackpore	New Barrackpore
	Bidhannagar MC (for Rajarhat-Gopalpur)	Bidhannagar MC (for Rajarhat-Gopalpur)
	Rajpur-Sonarpur	Rajpur-Sonarpur
	Dankuni	Dankuni
	South Dum Dum	South Dum Dum (two units)
	North Dum Dum	
	Dum Dum	

5.4 Implementation Strategy for Non-KMA Towns

There are 87 towns in Non-KMA area. Mostly septic tanks are used as On-Site-Sanitation System for treatment of human excreta. In addition, two pit pour flush toilets are also in use in many Municipal Towns but their numbers are much less compared to septic tanks. Tentative estimate reveals that in Non-KMA towns, functional Septic tanks may be around 1500000 and two–pit PF toilets may be around 22000. The quantity of septage may be estimated as 3425 KLD (Considering emptying volume 2.5 cum, interval of septic tank cleaning as 3 years).

Again quantity of digested (matured) sludge to be removed from pour-flush toilets may be around 25 m^3 / day.

In Non-KMA towns functioning Sewage Treatment Plants will be available at Durgapur (DSP), Katwa, Nabadwip, Rampurhat(Tarapit), Berhampore, Jangipur and Raghunathganj.

In addition Sewage Treatment Plants will be constructed at Siliguri and Ranaghat for abatement of river pollution.

Hence, basic implementation strategy for FSSM for Non-KMA towns will be as follows:-

- In towns where facility of STP will be available, the septage of that town will be co-treated in the STP.
- In other towns facility for treatment of FS&S will be developed in phased manner. Technology for FSTP will be selected as per local condition. If STP is constructed for used water treatment in the ULB, the same will be used for co-treatment of faecal sludge and septage.

- In some towns, if necessary, cluster-mode approach will be taken-up for construction of FSTP by assessing the proximity of ULBs, operational cost, transportation cost, overall management etc.

Table 5.4: Faecal Sludge & Septage Management Strategy for towns in Non-KMA

SL No.	District	ULB	FS & S treatment in same ULB
1	West Burdwan	Asansol MC	FSTP or STP
2		Durgapur MC	STP (DSP), FSTP
3	Bankura	Bankura	FSTP or STP
4		Bishnupur	FSTP or STP
5		Sonamukhi	FSTP or STP
6	Birbhum	Dubrajpur	FSTP or STP
7		Bolpur	FSTP or STP
8		Nalhati	FSTP or STP
9		Rampurhat	STP (Tarapit)
10		Saithia	FSTP or STP
11		Suri	FSTP or STP
12	East Burdwan	Katwa	STP or STP
13		Kalna	FSTP or STP
14		Burdwan	FSTP or STP
15		Guskara	FSTP or STP
16		Dianhat	FSTP or STP
17		Memari	FSTP or STP
18	Alipurduar	Alipurduar	FSTP or STP
19		Falakata	FSTP or STP
20	Coochbehar	Tufangunj	FSTP or STP
21		Coochbehar	FSTP or STP
22		Mathabhanga	FSTP or STP
23		Dinhata	FSTP or STP
24		Haldibari	Cluster FSTP
25		Mekhligunj	
26	Uttar Dinajpur	Kaliagunj	FSTP or STP
27		Raigunj	FSTP or STP
28		Islampore	FSTP or STP
29		Dalkhola	FSTP or STP

30	Daksin Dinajpur	Balurghat	Cluster FSTP
31		Gangarampur	
32		Buniadpur	FSTP or STP
33	Jalpaiguri	Jalpaiguri	FSTP or STP
34		Dhupguri	FSTP or STP
35		Mal	FSTP or STP
36		Maynaguri	FSTP or STP
37	Darjeeling	Darjeeling	FSTP or STP
38		Kurseong	FSTP or STP
39		Mirik NAA	FSTP or STP
40		Siliguri MC	FSTP / STP
41	Kalimpong	Kalimpong	FSTP or STP
42	Malda	English Bazar	Cluster FSTP
43		Old Malda	
44	Murshidabad	Beldanga	FSTP or STP
45		Berhampore	STP
46		Domkal	FSTP or STP
47		Murshidabad	Cluster FSTP
48		Jiagunj-Azimgunj	
49		Jangipur	STP
50		Dhulian	FSTP or STP
51		Kandi	FSTP or STP
52	Nadia	Santipur	FSTP or STP
53		Nabadwip	STP
54		Ranaghat	STP
55		Chakdaha	FSTP or STP
56		Krishnagara	FSTP or STP
57		Haringhata	FSTP or STP
58		Birnagar	Cluster FSTP
59		Taherpur NAA	
60		Cooper's Camp NAA	FSTP
61	East Midnapure	Haldia	FSTP or STP
62		Panskura	FSTP or STP
63		Contai	FSTP or STP
64		Egra	FSTP or STP
65		Tamralipta	FSTP or STP

66	West Midnapore	Kharagpur	FSTP or STP
67		Midnapore	FSTP or STP
68		Chandrakona	FSTP or STP
69		Ghatal	Cluster FSTP
70		Kharar	
71		Khirpai	
72		Ramjibonpur	FSTP
73	Jhargram	Jhargram	FSTP or STP
74	Purulia	Purulia	FSTP or STP
75		Jhaldah	FSTP or STP
76		Raghunathpur	FSTP or STP
77	North 24 Parganas	Ashoknagar Kalyangarh	Cluster FSTP
78		Habra	
79		Baduria	FSTP or STP
80		Bongaon	FSTP or STP
81		Gobardanga	FSTP or STP
82		Basirhat	Cluster FSTP
83		Taki	
84	South 24 Parganas	Diamond Harbour	FSTP or STP
85		Joynagar-Majilpur	FSTP or STP
86	Hooghly	Arambag	FSTP or STP
87		Tarakeswar	FSTP or STP

Used water management for towns less than 1 lakh population has been newly added as a component under SBM- Urban 2.0 and AMRUT 2.0 Mission has funds earmarked for used water treatment including faecal sludge management, for cities with more than 1 lakh population. As per SBM- Urban 2.0 guidelines, in the towns / those parts of town not covered with sewer network, ULBs need to have in place adequate mechanism for faecal sludge treatment. Clubbing of ULBs has been considered where feasible for construction of FSTP.

5.5 Implementation Strategy for KMC

Though majority of the holdings of Kolkata City are connected with Sewerage System, yet there are many holdings in different wards still continuing to use septic tanks for human excreta treatment. Around 910 MLD Sewage from Kolkata City flows through East Kolkata wetland where sewage under-go

natural treatment in fish ponds as well as utilized for irrigation to grow vegetables and crops. Naturally treated sewage ultimately gets discharged in river kulti-gong at Ghusighata. Under Kolkata Environment Improvement Program (KEIP) a few sewage treatment plants are coming up for treatment of a part of sewage of Kolkata. The city also has Garden Reach STP and Bangur STP for treatment of sewage.

The faecal sludge and septage management strategy for Kolkata would be as follows : -

- Part of faecal sludge and septage will be co-treated in sewage treatment plants available in the city.
- Septic tanks will be abolished / by-passed in areas where holdings will be connected with the underground sewerage system.
- FSTP will be constructed if necessary after assessing the quantity of septage and co-treatment capacity in sewage treatment plants.

5.6 Faecal sludge and Septage treatment: Technology options.

Faecal sludge and septage treatment involves following:

(a) Sludge treatment
(b) Liquid waste treatment.

Different technologies could be applied for treatment of faecal sludge and septage with an aim to **'resource recovery'**. Following technology options for FSTP are suggested:

(i) Option – 1 :
Pre-treatment (screening)- Anaerobic Lagoon - lime treatment- sludge drying bed for dewatering- dried sludge to be used as organic manure - filtrate (from SDB) to be treated in Constructed Wetland – treated liquid to be used for plantation.

(ii) Option – 2 :
Pre-treatment (Screening)- Anaerobic Digester – Dewatered (in SDB) and dried sludge- Composting - reuse as organic manure – treatment of SDB filtrate and digester supernatant in Reed Bed or Constructed Wetland.

(iii) Option – 3 :

Pre-treatment (Screening) - lime stabilization -Sludge drying bed – dried sludge use as compost - filtrate of SDB is treated in Constructed Wetland / Waste Stabilization Pond / Oxidation Pond / Oxidation Ditch.

(iv) Option – 4 :

Pre-treatment (Screening) – lime addition – Sludge drying Bed -dried sludge mixed with compost from municipal solid waste – use as compost / soil conditioner - filtrate from SDB treated in Anaerobic Baffle Reactor (optional) / Constructed Wetland / Oxidation Pond – Reuse for plantation / gardening etc.

5.7 SBM Urban 2.0

SBM Urban 2.0 highlighted that in the towns / those parts of the town not covered with sewer network, ULBs needs to have in place adequate mechanism for faecal sludge and septage treatment. The approach to treat the faecal sludge may follow the hierarchy / order of priority given bellow:

- **Towns with existing STP :**
  Wherever STP is available, faecal sludge is to be co-treated with sewage in STP.

- **Towns without STP :**
  In ULBs where no Used Water Treatment facility is available, ULBs will need to ensure that used water generated in its jurisdiction is properly collected, conveyed and treated to environmental discharge standards before its discharge into water body / over land. While planning for used water treatment facility, faecal sludge management may be factored in such a manner that it is co-treated in the facility itself. This will result in reduced Capex and Opex and would also save precious land, thereby, promoting sustainability and improved service delivery. Hence, used water treatment facility is to be built (STP) and faecal sludge may be co-treated in the STP. Further, till STP facility is created, faecal sludge can be transported in nearby STP having facility to co-treat faecal sludge to economize Capex and Opex.
- **Towns with – FSTP but without STP :**
  Used water treatment is to be built.

5.8 Strategy to be adopted for towns without STP in view of SBM – Urban 2.0.

SBM – U 2.0 provides funds to address the issue of used water management including safe containment, transportation and disposal of faecal sludge and septage for toilets, for cities with population of less than 1 Lakh. Inclusion of used water management component under SBM – U 2.0 will help to achieve following two objectives:

- **All used water is safely collected, treated and reused to feasible extent and no untreated used water is discharged into water bodies or in open environment. This will be achieved by laying Interception and Diversion (I & D) structures including provision of Pumping Stations and pumping main / gravity main upto STP.**
- **All faecal sludge and septeage are properly collected, treated and by - products reused. This may be achieved by setting up of STPs / STP – cum – FSTP including procurement of adequate numbers of septic tank de-sludging equipments.**

Hence, UD & MA Department will stress on both faecal sludge and septage management and used water management for towns (71 Nos.) in West Bengal having population less than 1 lakh.

In parallel, both faecal sludge management system and used water management system will be developed by creating appropriate infrastructures in other towns in West Bengal having population more than 1 lakh. AMRUT 2.0 Mission has funds earmarked for used water treatment including faecal sludge management for towns with more than 1 lakh population.

5.9 Time-frame

Following time-frame will be adhered to in setting up of FSSM System in municipal towns:-

Sl. No.	Coverage	**Number of Cities / Towns to be covered by FSSM System**			
		By March - 2022	**2022-23**	**2023-24**	**2024-25**
1	Cities / Towns in KMA	8	16	13	4
2	Cities / Towns in Non- KMA				
	(ii) Population less than 1 Lakh	-	20	28	23
	(iii) Population more than 1 Lakh	-	6	6	5

6.0 Additional Relevant Issues to be considered

Following relevant issues are to be considered for FSSM:-

6.1 Integration of Containment system in building plan approvals system

Often septic tanks are constructed without following the design norm / guidelines resulting in many underperforming septic tanks. The toilet containment system (on – site – sanitation) is to be finalised by the ULB's on the basis of the guidelines for design and construction given in the CPHEE0 Manual and IS 2470. The design parameters of septic tanks are to be assessed / checked before occupancy certificate for the building is issued.

A model design of septic tanks as per CPHEEO Manual and IS-2470 and as per provision of West Bengal Building Rules may be prepared by MED / KMDA and will be circulated to ULBs.

6.2 Involvement of Private Agency / Self – help group (SHG)

In FSSM system involvement of private agencies and self help groups can be considered. The ULBs may hire additional cess pool vehicles for septic tank cleaning from private agencies. The SHG can be involved for managing the cleaning operation of septic tanks. Willing women groups may be encouraged to form SHG for rendering the FSSM services. This will generate employment opportunity to considerable number of people in the ULBs. For carrying sludge from households to nearest STP, battery operated cesspool vehicles may be encouraged.

6.3 Septic tank and pour flush toilet pit cleaning – user charges

ULBs may impose user charges for septic tank or pour flush toilet pit cleaning to meet the operation and maintenance charges. User charges for septic tank cleaning will be higher than pour flush pit cleaning. State UD & MA Department will frame guideline for the charges considering the volume of septic tank / pit and distance of transportation.

6.4 Cleaning interval of septic tank and pour flush toilet pit.

Interval of cleaning of septic tank may preferably be 3 years, while P.F. toilet pit cleaning interval is 4 years.

6.5 Land availability for FSTP Construction:

In many ULB, legacy wastes are getting salvaged through bio-mining process to reclaim land.. It is suggested that a small part of land may be utilised for the construction of FSTP. However, if alternate lands are available then ULB can use the same for construction of FSTP.

6.6 Septic Tank cleaning in Industry

Most of the Industries use septic tank as on-site-sanitation system for the employees / workers. ULB will render services to clean septic tanks of the factories and accordingly fees are to be charged by the ULBs. The fees for septic tank cleaning in industrial units will be fixed by ULBs considering volume of the septic tank and distance of transportation.

6.7 Safety Measures

All safety measures need to be ensured during emptying of septic tank, transportation and treatment of septage. Protective gears are to be used by all workers to protect themselves from occupational health hazards. FSSM System will be in conformity with the sanitation safety planning.

7.0 Strategic Policy Actions

The Strategic Policy Actions outline the road map for effective implementation of FSSM in urban areas across the State. The Strategic Policy Actions have been classified under the following categories.

7.1 Stakeholder participation & IEC

Awareness, motivation and sensitization campaign would be organised to educate various stakeholders about FSSM. ULBs can be tasked with spreading awareness among residents about Government Schemes, benefits of scheduled septic tank cleaning, various incentives for the same, good sanitation practices and monitoring of FSSM operations. In this context if necessary, ULBs may take hand-holding support from expert organizations. Ward councilors, Ward Committees etc may be involved in the stakeholders awareness campaign. UD & MA Department can identify institutions and agencies to undertake awareness and communication operation at State and ULB level.

7.2 Institutional and Regulatory Framework

A dedicated FSSM cell can be set up within the UD & MA Department to manage FSSM related initiatives and activities e.g. city – FSSM plan, DPR, implementation, awareness campaign, operation and maintenance and sustainability. State level Task Force on FSSM can be constituted. District level FSSM Committees can be formed for overall supervision, coordination and monitoring of FSSM System in different cities / towns of the District. FSSM cell may explore possibility of partnership building with various multilateral, bilateral and CSR agencies for generation of funds.

State level FSSM guidelines would be formulated and that will include Standard Operating Procedures (SOP) and training materials for ULBs.

The guidelines and SOP shall include:

- **Format for city level strategy and FSSM Plan.**
- **Advisory on selection of suitable FSSM interventions.**
- **Specification for desludging (cess pool) vehicles, cleaning machines, equipments and safety gears.**
- **Technology options for FSTP and feasibility of co-treatment with STP.**
- **Operative manual for desludging and treatment plant operators.**
- **Scope of involvement of private agencies and SHGs in FSSM.**
- **Format for assessing financial requirement for FSSM by ULBs-- Capital and O&M.**
- **Guidelines on monitoring mechanism.**

7.3. Partnership Building

A strong network of partners in various sectors and of various backgrounds would be established. 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, private contractors and vendors for construction of treatment plants etc. for individual towns / cities or on a cluster based approach. State may engage technology partners for developing GIS based containment user database, GPS enabled septic tank cleaning operations and monitoring systems etc.

7.4. Funding Pattern

Funding pattern as per SBM – U 2.0 may be as follows:

Table 7.1 Funding Pattern for FSSM & Used Water Management[2]

Sl. No.	Category	Central Share Per Unit (%)	Min. State Share Per Unit (%)	Balance (from 15th FC, ULB Share, Private Sector Share)
1	ULBs with population less than 1 Lakh	50	33	17
2	ULBs with population from 1 Lakh to 10 Lakh	33	22	45
3	ULBs with population above 10 Lakh	25	16	59

2 Execution agency for FSTP: the Municipality concerned

Table 7.2 Funding Pattern for IEC & Capacity Building

Sl. No.	Category	Central Share (%)	State Share (%)
1	All categories of ULBs	60	40

7.5. MIS and GIS based System

An MIS and GIS based Single window System can be operationalized which coordinates and facilitates the FSSM services in the State. It includes the following:

- **Call Centre for on-call desludging services.**
- **Schedule for periodic desludging for ULBs and desludging operators.**
- **Mobile and e-mail reminders of schedule desluging to households.**
- **GPS monitoring panel for desludging vehicles (cess pool)**
- **Inventory of all FSSM assets in the ULBs.**
- **Service level benchmarking of all ULBs.**
- **Capabilities of producing auto-generated and custom updated / reports / dashboard for relevant stakeholders** etc.

7.6. Monitoring and Evaluation

Following issues will be highlighted for monitoring and evaluation of FSSM system.

- **The State will evaluate FSSM operations through dedicated service level benchmarks for all ULBs.**
- **State FSSM Task Force / FSSM cell will establish benchmarking system similar to benchmark framework suggested in natural FSSM policy.**
- **A mechanism of performance evaluation tool shall be framed by the state FSSM cell.**
- **Grievances redressal mechanism would be put in place, to be linked with single window system, telephone call based system or part of local e-governance platform (MIS based).**

7.7 Capacity Building and Training

A capacity assessment would be carried out for all ULBs and necessary measures would be taken to fill the gaps on human resources, expertise equipment, resources, financial management etc. Short courses and workshops can be organised on FSSM operation to strengthen the human resources of ULBs.

8. Expected Outcomes

The policy set out broad aspirations, objectives and goals of FSSM. The expected outcomes are tangible end results if objectives and goals are achieved. The expected outcomes are highlighted below:

- Enhancement of sanitation coverage.
- Ensuring timely desludging.
- Environmental improvement.
- Safe waste handling, treatment and use/disposal.
- Better public health.
- New opportunities.
- Skill and employment generation.
- Capacity building.
- Enhanced community awareness and participation.