

Questions and Answers for the Webinar on Understanding the Septage Desludging Models: What works and What doesn't work? - 23rd July, 2021

S. No.	Question	Answer
1	What is the emptying frequency in Malaysia as per national standards? Is this same for all types of containment systems irrespective to the number of users?	In Malaysia most of the septic tanks are made as per standards. The septage emptying frequency is 2 and 3 years for urban and rural areas respectively.
2	What specific policies were put in place with respect to septic tank design, replacement, frequency of desludging, tariff setting in Malaysia? Were policies national or did they differ from place to place?	All the standards are put in place as per National guidelines since 1994.
3	What is the status of demand based desludging instead of scheduled desludging in Malaysia? Is it consistent or affected by any other factor?	Some lower income premises call for demand desludging instead of schedule desludging. One time additional desludging is given free. After that they have to pay.
4	What is the 'ideal' interval for emptying septic tanks in Malaysia?	It depends on a few factors like size, population, usage etc. It should be about 2 to 3 years.
5	What communication strategy has been adopted for motivating people to pay the service charges?	By advertising on tv, radio, social media, and local promotion programmes including school education.
6	If all operating cost cannot be collected from user, who meets the gap in funding? Why Malaysian govt took decision to manage FSM by IndaWater inexchange of municipality?	The govt premises pay much higher for desludging. Also govt subsidizes the company for not only desludging but sewerage as well. The tariff is very low and cannot cover even operating costs.
7	What is the end product of the fecal degradation at the facilities? Is there any model in place to regain some of the costs of treatment other than charging the public?	Yes, some initiative to recover energy and resources is being tried, but this does not contribute much.
8	How to bring the change in public perception to rectify insanitary latrines into sanitary one?	Developing Shit Flow Diagrams has been a useful tool to make the problem visible and prompt action.

9	Are tariff charges equal for all? Also, is it only used to meet up desludging expenditure or investing for infrastructure as well?	There is different tariff, lower for low cost premises, and high tariff for commercial and industries. Tariffs are very low and cannot cover even operating cost.
10	Any example of adding enzymes in-situ to act on sludge and reduce its quantity?	Yes. But usually this is not prevalent in Malaysia, because of the cost. It is done to address grease and fat mostly.
11	What are the future sustainable applications of dewatered sludge ? As sludge drying creates air pollution problem so how to deal with sludge reuse in eco-friendly manner?	Composting is a good option, to result in organic soil improvement materials.
12	Is co-composting of Faecal Sludge (FS) and dry organic solid waste a good option of stabilizing the FS?	Yes. After pretreatment, and treating the liquid separately. This helps address the pathogens and helminths, and produce a useful end product.
13	Any scope of reducing desludging period by introducing new technologies in form of Microbial action in converted / specialized Septic tanks?	There are some bio augmentation materials which can enhance process within the containment and reduce sludge accumulation. It is not recommended to add on continuous basis because of cost and sustainability.
14	What happens if a septic tank filled in earlier than the scheduled (2 yr) time? What is the percentage of such cases in Malaysia? Do the HH need to pay for this additional emptying?	Yes. Not very common. Usually indicates some problems with the septic tank which will be communicated to the owner to rectify. They need to pay after one additional grace desludging.

15	Is there any methodology for Faecal Sludge (FS) quantification?	<p>FS quantification is done in three ways: Population dependent on different types of containments (septic tanks and pits) and multiply it by sludge accumulation rate as given by CPHEEO</p> <p>2. Speaking to the desludging operators and understanding what is the approximate truck load they empty every day/ week</p> <p>3. Estimating the volume of containments and age</p> <p>Speaking to the desludging operators is the most practical way to do it</p>
16	Is there any alternate technical solution in the area where desludging is not possible?	It depends on why it's not possible. Access road which is too narrow may need smaller vehicles. If distances are too far double pumping in series can be tried. Sometimes hand cart mounted local emptying coupled with transfer stations could be used.
17	What kind of FSM interventions is required for cities with 1 lakh population?	Desludging is mainly on-demand.. There are hardly any standalone FSTPs in North-East of India. but co-treatment of faecal sludge and sewage is happening to a limited extent in Agartala city.
18	Can we have resource recovery options from Septic systems in terms of biogas production etc?	Septic tanks are designed to degrade the faecal matter. if the faecal sludge has remained in the septic tank for more than 1-2 year, the biogas potential goes down. In biogas generation either septic tanks should be emptied regularly or they should be replaced with biogas digestors so that fresh faeces enters the system and biogas is generated.
19	How safe is it to have onsite or drying beds inside the precincts of the city?	There should be buffer distance and mitigation to prevent odour, nuisance, contamination etc to habitable premises.

20	What is the most successful technology used for fecal sludge treatment? What would be the cost for a 100 kld plant?	It depends on the land area for the treatment site, the intended end use of the by-products, the quality of the sludge and frequency of receiving load (desludging frequency)
21	Why trenching was phased out from incremental technologies in Malaysia?	The regulator in Malaysia allowed this only until better systems could be built. However deep row entrenchment if done properly, with properly selected sites and best practises and monitoring is acceptable for smaller towns. In Malaysia we have sampling wells around the site to check the seepage into ground water.
22	How you see use of electro coagulation technology for FSTP?	It is ok. But we need to be careful on how the coagulants will affect the end use. Will they be safe to use in agriculture? This needs to be studied. We need to be careful on the chemical inputs that are being used during the treatment process.
23	Is there any policy of handling STP's generated sludge?	Yes. In Malaysia that is being addressed, and in fact is a bigger volume than Septage and faecal sludge. Some larger sewage treatment plants incorporate sludge treatment, and produce dried sludge cake. Others need to have the sludge offsite to regional sludge treatment facilities.
24	Comparing countries like Indonesia-Vietnam-Bangladesh and India, operations and maintenance are the major issues in the waste treatment. Is there any better practice/scheme that helps community or municipality to upkeep their financial strength?	It is important to consider the capacity available in the Govt / utility / private support sector when selecting the system / scheme / technology. For smaller municipalities / or towns, start with simple technologies requiring low energy / maintenance. This incremental steps by step method will minimise risks. The scale shd also start small. This has multiple advantages: low initial costs, opportunity to build up capacity and expertise, create acceptance among community etc. Then can go for larger / higher tech options. Another way is to appoint an umbrella private sector utility to support technically across multiple municipalities.

25	How to distinguish the implementation of Wastewater and Fecal Sludge Treatment? Does the separation of Domestic Wastewater and Fecal Sludge actually have to be done? What are the difference in regulation and quality standards?	Wastewater is sewerage, which relies on a system of pipes to convey the sewage (including grey water from bathrooms and kitchens) from the house to the treatment facility. But where there is no sewerage pipelines network, or where that system is not appropriate, on site septic tanks or other containments are used. These accumulate sludge over a period of time and must be regularly emptied to enable them to function effectively.
26	In many Indian cities farmer want desludgers to empty their trucks in farms, How do you see this in Indian context? Is it really safe?	<p>This is a practice in many places but it is not uniform across the country. However there are many factors surrounding this:</p> <ol style="list-style-type: none"> 1. Disposal of untreated faecal sludge is an extremely hazardous practice and should not be encouraged. 2. The demand is not everywhere. Only in water stressed areas farmers allow such practices. 3. Even in water stressed areas the demand is limited to agricultural seasons that too before the sowing. In some rare cases the sludge is put in a pit in the field and composted and then used by the farmers. But mostly they flood there filed with sludge post farming and this can have potential public health consequences and odour issues. 4. Untreated faecal sludge is not used for all types of crops. Only certain crops can stand them. <p>Given the above factors faecal sludge is accepted only in certain areas, in certain seasons and for certain crops. Hence, disposal of sludge is an issues. And disposal of untreated faecal sludge into the field should not be encouraged.</p>

27	Unless the demand is generated and faecal sludge (FS) made into resource, there would be difficulties to make the process sustainable. What are your suggestions?	It is good to start with an assumption that FSM is not a profit making enterprise as a whole. The benefits are more indirect to the community in terms of improved health, productivity, economic activity etc. All these can justify top up by the ULB or State Govt the gap in funding / financing.
28	Decentralised vermicomposting or biogas plant as FS management could be seen as long term sustainable and income generation model?	This depends on the acceptance of the reuse products, the quantity, characteristics of the sludge, land availability and funding for CAPEX and OPEX.
29	Are there any interventions that can be done at the HH level to improve the overall desludging operations?	Apart from IEC you can also work on ensuring containments are easily openable, providing easily openable lids, pipes etc.
30	Is the septage disposal into farm ok or not?	No, it is a public health hazard.
31	When scheduled desludging introduced in a city, what happens to the existing private operators with one/two Vacutugs? Municipality signs contract with all operators or engage selectively?	Yes that's a better idea to empanel them. Screen could be done for quality of service.
32	What is the sustainable practice to use wastewater, extracted from fecal sludge ?	The volumes of FS are not high. So it is not the same as sewage effluent reuse. Possibly it can be used in plant within the treatment facility for process purposes or irrigation of adjacent areas.
33	What methods were used to raise awareness for the need for FSM and the necessity for the public to participate/pay?	Multiple strategies: Door-to-door, radio talk shows, leaflets, local campaigns. Using behaviour change communication to develop the right messages that will trigger action.
34	Does the co-compost produce in the Kushtia FSM plant is in use or sale?	There is some more information about the Kushtia FSM plant experiences in our recent publication on 'Treatment Technologies in Practice' UTS-SNV 2021. Yes, it is sold for agricultural use at the local market and in other districts.

35	Should desludging be subsidized by Municipal bodies; at least in the initial years to inculcate the habit of desludging?	Agree that subsidizing may be needed in initial years, though it depends if regulations can be set up with equitable tariffs and mean that costs can be recovered, as all households then pay- for instance not just as a separate payment, but integrated with property tax or other taxes.
36	Heavy metal contamination has been given focus in septage sludge? Won't it affect the quality to be used as fertilizer / manure?	Yes, that is possible but not as much an issue if solely domestic faecal waste is collected and treated. In some places in Southern Africa where there is a regulator for onsite sanitation, they have moved to start to focus on quality of sludge, not just quantity of sludge.
37	What is the scope of In-situ desludging through retrofitting of bio digester with septic tank?	It depends on the user capacity, as managing a biodigester needs more care and skill and many households may not want that burden.
38	What to do for sustainable desludging?	To get sustainable desludging, it requires a long path that starts with bringing the relevant stakeholders together to gradually build up a model of desludging that can work in the given context. It needs strong political will from city leaders to ensure priority is given. Kushtia is a great example where such leadership is there and shows that lots can be possible. They have a sanitation tax and other innovations.
39	In the initial rapid data collection, what were the variables and indicators of focus?	For the RTA, the focus is on containment systems – size & type of containment, access to emptying, previous emptying method, household willingness for containment.
40	Is there any mechanism being developed to minimise the water use or recycle the wastewater?	Most of the wastewater if treated adequately can be reused for various purposes. However, the water coming out of FSTP is usually not huge in quantity.

41	Is there any revenue generation model/ case study linked with FSSM , as pace of activities gets low with time due to lack of funds?	It is good to start with an assumption that FSM is not a profit making enterprise as a whole. The benefits are more indirect to the community in terms of improved health, productivity, economic activity etc. All these can justify top or subsidy up by the ULB or State Govt the gap in funding / financing.
42	Scheduled desludging is great idea with so many benefits but how can we overcome a challenge when there are different sizes of septic tanks in the settlements of India, where not every septic tank is designed as per standards?	Generally a profile of sizes should be used if there is wide variation in sizes of septic tanks for single premises. This can be the basis to work out the schedule of emptying. In Malaysia this is not a problem. Single premises use standard sized septic tanks. Larger septic tanks are used for multiple residences (community septic tanks or blocks of flats). The schedule for such cases is same, but charges depend on number of trips of tanker.
43	What's the revenue model for both the cities in Maharashtra?	The O&M cost of scheduled desludging services is funded by the local government through the sanitation tax system. One can read more about this here : https://pas.org.in/Portal/document/UrbanSanitation/uploads/Sanitation_tax_note.pdf
44	Is there any rule stating desludging to be done every 2 years for all the houses in municipalities of India?	As per CPHEEO guidelines and also now under SBM, they have mentioned that septic tanks need to be deslugged once in 2-3 years.
45	Does it require gap funding from local govt? Is state govt funding in FSM sector?	This has been funded by local government own funds. Both the scheduled desludging service and FSTPs
46	Among the 4,200 served septic tanks, did any of them ask to serve again in any of the two cities? If yes, how many septic tank owners?	Yes, we had a small percentage of septic tanks owners who again asked for desludging services post their schedule. These were mainly flat owners as many flats are connected to one-two septic tanks, which get full as there are many users.

47	INR 300 per septic tank is sufficient to manage the expenditure in Sinnar and Wai? or subsidies are required? if so, who pays the subsidies?	In the case of Sinnar the sanitation tax of INR 300 per year for 3 years is able to finance 100 % of the O&M cost for scheduled services.. and in case of Wai the the tax is able to finance 50% of the O&M cost and rest is borne from property tax surplus of the city government.
48	Modified septic tanks / microbial septic tanks (like DRDO MODEL biodigestors) can reduce desulding. will it be feasible enough for new installations?	If it requires additives or process augmentation additives which have to be continuously added, it may not be a good proposal.