Faecal Sludge Management – The Pathway to 'Clean India'?

A Thematic Discussion Series hosted by India Sanitation Coalition and SuSanA

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Running for three weeks from **9th-30th January 2017**on the SuSanA online discussion forum, the discussion looked at **three key topics**.

The discussion started with **"FSM beyond awareness and tools"** led by Antoinette Kome of SNV.

"Getting the bigger picture - Creating sanitation systems for whole cities City-wide planning and the role of FSM in the case of India" was moderated by Dirk Walther of SNUSP Project from GIZ. Lastly, India Sanitation Coalition lead the discussion around "**Engaging the private sector in FSM.**""

The **Sustainable Sanitation Alliance (SuSanA)** is an open international alliance with members who share a common vision on sustainable sanitation and are dedicated to understanding viable and sustainable sanitation solutions.

It links on the ground experiences with an engaged community made up of practitioners, policy makers, researchers, and academics from different levels with the aim of promoting innovation and best practices in policy, programming and implementation.

1 Discussion Introduction

While decades of sustained economic growth has made India the seventh-largest economy in the world today, the provision of public services such as water, sanitation, solid waste management, and drainage continue to be a challenge. National programs take a piece-meal approach.

As India strives for a "Swachh Bharat" (clean India), Faecal Sludge Management (FSM) has become a common term, although no fixed definition is in place. In urban India, septic tanks are common in non-sewered areas. It is estimated about 38% households in urban centers are connected to a septic tank. In rural areas, about 14.7% are. Additionally, pit toilets with a designed life of 7-8 years need regular emptying and these are being built at a fast pace under SBM. Thus, the problem of FSM will only grow in the future necessitating creative and new solutions.

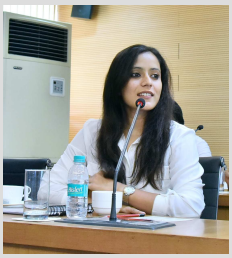
Under the umbrella of the SuSanA Indian Chapter, the three-week long discussion about the role of FSM in India went online on the SuSanA Forum. The aim was to provide an opportunity for establishing a broader understanding of FaecalSludge Management in the Indian Context and on the progress of FSM in general. The discussion serves as input for the up-coming FSM4 Conference in Chennai (19-23 February 2017).

Experts

Antoinette Kome, Global Sector Coordinator WASH for SNV. SNV is an international development organization founded in the Netherlands over 50 years ago. Antoinette has extensive experience in water management and sustainable development. SNV shares expertise in Agriculture, Energy, and Water, Sanitation & Hygiene and therefore contributes to solving some of the leading problems facing the world today – helping to find local solutions to global challenges.

Dirk Walther, the project director of 'Support to National Urban Sanitation Policy' project of GIZ is an expert in water and sanitation. He has been working in the sector for more than twenty five years at regional, national and international level. Support to National Urban Sanitation Policy (SNUSP) – II, seeks to support Indian government in implementation of its sanitation improvement schemes and missions such as National Urban Sanitation Policy (NUSP), Swachh Bharat Mission (Clean India Mission) and Atal Mission for Rejuvenation and Urban Transformation (AMRUT).

Shipra Saxena, Team Leader ISC, has over 18 years of multi-dimensional work experience, in Program Management, Capacity Building, Advocacy, partnership, fund raising, Research and Analysis, Monitoring and Evaluation, in the Water, Sanitation and Hygiene (WASH) sector.



Vandana Nath, Program Manager for Task Force on Identification and Dissemination of Best Practices at the India Sanitation Coalition.

Aligning with the objectives of learning, sharing and disseminating, she is currently involved in devising strategies for an efficient learning and sharing practices across the realm of Sanitation.

2 FSM beyond awareness and tools

Posts: 18
Running from 9th-16th January 2017

The awareness for FSSM has increased during the last years. There was strong support from the forum participants to integrate FSSM in the sanitation cycle and frame it as a mainstream option rather than transitional makeshift. With SDG 6.3 a first focus on the management of the entire value chain has been made, national efforts or even a trickling down to smaller entities has yet to be awaited. Of course the trade-off is that within a very broad agenda the topic gets lost. The challenge is thus to see the broader agenda, but to keep focus in implementation.

Question 1: What should be done to place FSSM in the wider local development agenda, without negating the importance of other issues?

Problems detected were the socio-cultural understanding of faeces, unattractive and very unhealthy working conditions for tanks cleaners, lack of quality data on FSSM to establish variables, unsafe systems like pit latrines or septic tanks due to flooding and population growth in cities which cannot be kept up with infrastructure wise. Planning on national level is hard and might not even be useful because of the vast variety in Indian topography.

The suggestion aimed for state-level or even more localised planning for faecal sludge. While looking at the problem from many angles such as collection, transport, economics, health and environmental safety, local data and decisions would be a preferred option. Even though there are plenty of manuals by the Government of India they remain hard to use in the field because every situation is different. There is a lack of capacity on FSSM to translate those manuals to each specific ground situation - densely populated towns and villages, geographical distances from source to disposal points, the relatively high cost of capital and the general lack of awareness of what to do with faecal sludge. Importantly, many pointed out faecal sludge management is not a problem distinct from holistic town planning. It needs to be integrated into the way urban sanitation and sewage systems are designed. There can be no single solution to sanitation problems, so the bridge between creating concrete policy guidelines and ensuring an informed choice among the variety of manageable technology is one balancing act.

Question 2: What's a clever way to move forward on best practices, tools, development of rules of thumb?

It has been pointed out by few discussion participants, that many tools already have been established. Some tools might not provide the necessary accuracy or are used insufficiently. Some are meant for rural areas, but most tools have been designed for urban areas.
More coordination would help to work out better solutions and speed up the process of validating tools.
An integrated use of available tools has to be established. One suggestion was to hold a world café for existing experts, where different tools can be showcased and their overlapping research areas examined. CSTEP is now working on an integrated toolbox program with Eawag, NUSP (India), SSWM and AIT to make it easier for public and private actors to find out about tools and which ones of them to use in which circumstances. Building a network of knowledge and exchanging existing ideas is crucial for proper work towards a common goal like SBM´s 'Clean India' campaign. Of course tools cannot be implemented successfully without capacity and knowledge of FSSM.

Question 3: How do we mainstream FSSM in urban development without losing expertise and focus?

In urban settlements, population growth is a big challenge for city-planner and infrastructure projects. Oftentimes, sanitation is not yet considered in city-planning and responsibilities are shunted out of one´s way. Therefore, a stronger advocacy for integrating sanitation and especially FSSM in city-planning has to happen. When establishing guidelines, the aspect of affordability is crucial for cities. Pilot studies and distribution of information about the links between waste water and morbidity, health and child care can be highlighted. Clear tasks and responsibilities have to be carefully worded in order to unleash the potential of different actors working together. Some suggest that not lose track of the bigger picture, solid and faecal sludge can be worked on together.

3 Getting the bigger picture – City-wide planning and the role of FSM

Posts: 14
Running from 16th-23rd January 2017

Universal goals and policy frame for working towards the "sustainable sanitation" have been established over the last decade through various national mission mode programs and state wide variants. Recently especially Faecal Sludge Management (FSM) has been made the center of attention to address India's sanitation crisis. The leading question **"Getting the bigger picture - Creating sanitation systems for whole cities. City-wide planning and the role of FSM in the case of India"** was therefore designed to further discuss the current state, the process from planning to implementation as well as current field observations. For this purpose three questions were posed by Dirk Walther, lead of the second week's discussion:

Question 1: Cities are striving for a clean and healthy city sanitation environment – where did we reach?

So far there exist only few examples for FSM larger scaled solutions but none on city-wide scale. India still remains the

world champion of small sanitation pilots and yet is awaiting its transformation from household or institution scaled driven sanitation to a public driven city-wide sanitation system.
The discussion on FSM may continue to remaining a niche in the larger sanitation discourse, but could also help to mainstream the upscaling of on-site sanitation systems. On-site sanitation is currently the most prevalent option for providing urban sanitation even as cities moving towards sewered systems. On-site systems are quicker to make, cheaper and put the control in the hands of the house-owner. Among these systems, septic tanks remain the only legally approved technology and the main solution as shown in the Census 2011. However, toilets and similar options are still remaining but considered to be a phased out technology in the urban sector.

Collection of acts and guidelines:

- IS 2470: Construction of septic tanks (National Building Code Act)
- National Urban Sanitation Policy
- Manual Scavenging Act (2013)
- Manual on sewerage and sewage treatment

The quality of constructed septic tanks is often insufficient. Observations in a few states have been very disappointing. Tanks are built as a single, twin or multiple tanks with no baffle wall, improper inlet and outlet arrangements, unlined sides and bottom, outlet discharging to the drain and 9 times out 10 no soak aways. Often grey wastewater is discharged directly to the drains or connected to the septic tank against the regulation.

The willingness of people to invest in sanitation infrastructure in India is high. If the house owners and construction companies would be better educated and the building approval mechanism closer monitored the problem of substandard septic tanks could be easily eradicated. Nevertheless solutions for the overflowing septage effluent and greywater is yet to be found.

Question 2: What are instruments for a consistent process from planning to implementation city sanitation infrastructure?

Planning processes however still continue to follow time tested steps (CPHEEO 2013 Manual providing the backbone), though some skewness have been observed on certain steps resulting in delays during implementation. This emerges from a planning legacy where water supply and water resource planning has been one of the strong points and consequently influencing planning for wastewater management.

A more recent approach is to look at an integrated wastewater & faecal sludge management aiming for customized local conditions & management closer to the source of wastewater generation.

The corner stones for current city-wide planning is centred on **spatial planning, temporal planning and technology centric solution planning**. Hence, accounting for these dynamic city systems places significant stress on implementation, hugely hinging on complex checks & balances; institutional capacities; ease of finances access. This consequently, necessitates the need for carefully crafted tools and instruments that accompany planning steps for reducing project failure risks and timely project implementation.

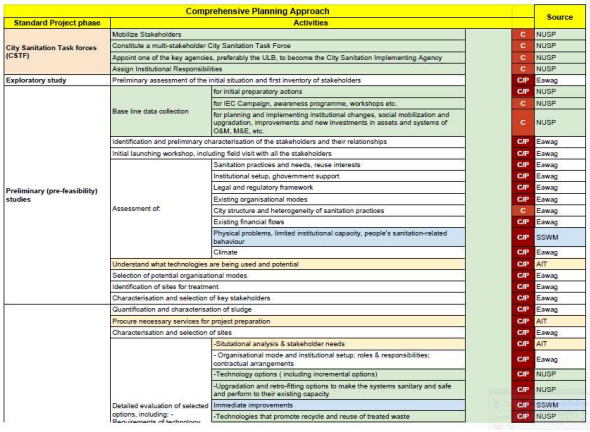
A typical planning to implementation process can be summed up in the table below with resultant outputs serving as instruments to ensure comprehensiveness, inclusiveness and sustainability. It is envisaged that step by step process of planning will flip the current discourse of "technology" fronted planning to an outcome based planning. This would in a way help redefining the role of cities from implementing agencies to managers for services.

Steps	Key activities & scope
PRE-PLANNING (INITIAL FINDINGS)	Identification of design objectives
	Decision on the planning unit
	Baseline studies, information
	Functional & economic assessment of existing infrastructure & proposed projects
INITIAL PLANNING	Pre-Feasibility on project different project alternatives – technical options and their financial, social, environmental, institutional, legal aspects
	Fund mobilization, scheme alignment requirements, role definition
BASIC DESIGN & CONCESSIONAIRE PLANNING	Feasibility for selected technical option(s) and their financial, social, environmental, institutional, legal aspects
	Clearances from regulatory agencies, land acquisition, development of Project structure, concessionaire type
	Decision on implementation approach – conventional / PPP based
DETAILED PLANNING & DESIGN	Project Phasing, implementation & operational plan, success control, nomination of operational entities OR Identification of private sector operators, formation of operational entities
	Detailed engineering designs, cost estimations, project financial plan, for efficient & timely implementation
PROCUREMENT	RFP preparation
	Tendering & procurement
CONSTRUCTION & OPERATION	Implementation related contracts (where applicable for stepwise implementation)
	Operation related contracts (where applicable for stepwise implementation)

Steps	Key activities & scope
MONITORING	Success control monitoring

Focus on mere septage management / faecal sludge management does not address the wastewater management issue in entirety. Environment Protection Act, 1986 requires that cities effectively capture the entire wastewater (grey water + black water) generated from all sources within the city limits and scientifically treat the entire quantum such that downstream ecosystem degradation, and the flows of human waste into waterways/ environment is circumvented to the largest extent possible. This is to ensure protected public and environmental health. On-site systems though regulated through National Building Code Act 2005 cannot tackle alone urban sanitation

effectively and sustainable FSM requires the concerted efforts of several critical stakeholders besides the city managers along the entire value chain; cities/ towns are indeed planning, strategizing the outreach to foster ownership and efficiency at various levels of stakeholder engagement along the entire value chain – households for a better design and O&M of on-site sanitation, local masons for better construction and development of infrastructure, local emptiers for safe & hygienic collection, transportation and disposal of fecal sludge, private sector for efficient treatment to enable reuse and recycle in the localized context.



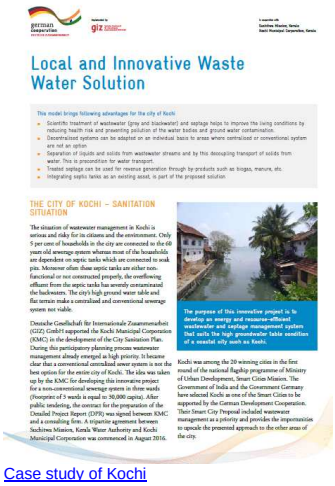
Comprehensive Planning Approach				Source
Standard Project phase	Activities			
City Sanitation Task forces (CSTF)	Mobilize Stakeholders		C	NUSP
	Constitute a multi-stakeholder City Sanitation Task Force		C	NUSP
	Appoint one of the key agencies, preferably the ULB, to become the City Sanitation Implementing Agency		C	NUSP
	Assign Institutional Responsibilities		C	NUSP
Exploratory study	Preliminary assessment of the initial situation and first inventory of stakeholders		C/P	Eawag
Preliminary (pre-feasibility) studies	Base line data collection	for initial preparatory actions	C/P	NUSP
		for IEC Campaign, awareness programme, workshops etc.	C	NUSP
		for planning and implementing institutional changes, social mobilization and upgradation, improvements and new investments in assets and systems of O&M, M&E, etc.	C	NUSP
	Identification and preliminary characterisation of the stakeholders and their relationships		C/P	Eawag
	Initial launching workshop, including field visit with all the stakeholders		C/P	Eawag
	Assessment of:	Sanitation practices and needs, reuse interests	C/P	Eawag
		Institutional setup, ghovernment support	C/P	Eawag
		Legal and regulatory framework	C/P	Eawag
		Existing organisational modes	C/P	Eawag
		City structure and heterogeneity of sanitation practices	C	Eawag
		Existing financial flows	C/P	Eawag
		Physical problems, limited institutional capacity, people's sanitation-related behaviour	C/P	SSWM
		Climate	C/P	Eawag
	Understand what technologies are being used and potential		C/P	AIT
	Selection of potential organisational modes		C/P	Eawag
	Identification of sites for treatment		C/P	Eawag
	Characterisation and selection of key stakeholders		C/P	Eawag
	Quantification and characterisation of sludge		C/P	Eawag
	Procure necessary services for project preparation		C/P	AIT
	Characterisation and selection of sites		C/P	Eawag
	Detailed evaluation of selected options, including: -	-Situational analysis & stakeholder needs	C/P	AIT
		- Organisational mode and institutional setup; roles & responsibilities; contractual arrangements	C/P	Eawag
		-Technology options (including incremental options)	C/P	NUSP
		-Upgradation and retro-fitting options to make the systems sanitary and safe and perfom to their existing capacity	C/P	NUSP
		Immediate improvements	C/P	SSWM
		-Technologies that promote recycle and reuse of treated waste	C/P	NUSP

Publication from CSTEP on integrated planning

Question 3: Examples for integrated planning: How is FSM playing a role here?

The critical part is to ensure that whenever FSM solutions are provided, for a part of the city, it should not be dealt in isolation with other parts of the city. To ensure FSM is dealt with as an integral part of city planning is a major challenge.

To begin, FSM should be thought about while preparing Master Plans to Zonal Plans. In Indian context, it is difficult to find a city which is able to address all its sanitation needs with the right mix of solutions. That is where everyone needs to work together to spread the need for the integrated solutions for water and waste water across the cities. E.g. GIZ India (SNUSP) is supporting the city of Kochi in preparing local and innovative waste solutions in selected wards of the city. The purpose of this innovative project is to develop an energy and resource-efficient wastewater and septage management system that suits the high groundwater table condition of a coastal city such as Kochi.



Case study of Kochi

Interesting links:

- Full summary on DGroup Online Discussion on "Taking stock on FSM progress": http://forum.susana.org/media/kunena/attachments/1609/FullDgroupsummaryTakingstockofFSMprogresOct-Nov2016.pdf
- Official website of the Support to the National Urban Sanitation Policy Program: www.urbansanitation.org
- Collection of publications from SNUSP: http://www.susana.org/en/resources/library/search=SNUSP
- Basic information on decentralized wastewater systmes: https://sites.google.com/site/decentralizedwastewatersystems/
- FSM tool curation spreadsheet: https://docs.google.com/spreadsheets/d/1933Pw-aaT589Tv8ViGFzkVDlary8VO8dd_hQD255FsM/edit#gid=1818976532
- SuSanA discussion on sanitation market development in India: http://forum.susana.org/component/kunena/167-market-development-in-action/18970-discussion-paper-regarding-a-framework-model-for-sanitation-markets-inputs-and-comments-wanted

4 Engaging private actors in FSM

Posts: 14
Running from 24th – 30 January 2017

Based on the previous Insights Event on FSSM the main challenges for corporate engagement in FSM found where **capacity building**, **decisions for technologies**, **financing** and **sustainability issues. Marijn Zandee,** WASH Consultant in Nepal, stressed that Public-Private- Partnerships could not just work anywhere, e.g. when talking about conveyance, which is not attractive for corporates. To incentivize corporates in spending for FSM, they have to be willing to invest over a long-term, as treatment plants and other sanitation systems like all infrastructure projects take a long time. Corporates must see profitable opportunities in this segment. Furthermore, lots of work is already done by the informal sector and manual scavenging – although legally forbidden – is still practiced. One sustainable solution would be to integrate and skill workers from the informal sector to achieve healthier and environmental friendly outcomes. To transform the sector and integrate informal workers, the importance of measurement and control has to be stressed. It provides a development of responsibility for citizens and public bodies to take care for sanitation and clean water. **Ravi Varanasi** from Kohler suggested to start implementing systems which use less water.

> "*Processing FS on site and turning it into a usage by-product is something we should accept and adopt. If you look at the real use of water in FSM, it is nothing but a transporter of human solid waste, and we spend about 90% of energy and resources in recovering this water to the initial state it was in."*

The awareness for the value of clean water in itself and consequences of polluting it in many different ways has to be much greater in India. But without people and government leadership, progress will be hard.
Marianathan Silvester from Sanitation Technologies Madagascar shared a technology for FS with a U-Tube as a sustainable, low-cost product, which could be interesting in the Indian context of FS and water supply.

> "*At one stage the soluble contents of nitrogen, mucus etc. are filtered off to enable enhanced bacterial digestion. In the final stages the FS reaches the vermin zone from there it is ejected out and periodically collected as completely composted mass. This U-Tube septic tank has simple mechanisms that enable the channeling of FS which work as and when every time the toilet is used. It is affordable even to the poorest of the poor since this toilet system costs only less than 25 USD".*

The Senegal example was discussed and introduced by Vandana as a good case practice from corporate engagement and government cooperation to achieve a steady water supply. In Senegal, sewerage and waste water management is looked after from a national sanitation company, a result of a well-functioning PPP implemented in the 1990ies.

Recommendations

1 Avoid national level planning: Aim for state-level or even more localised planning for faecal sludge instead. Local data and decisions can serve as ideal options.

2 Integrate Faecal Sludge Management into the urban context of sewage system design and urban planning.

3 Integration and coordination between all stakeholders e.g. to develop tools, exchange knowledge and therefore prevent similar, parallel projects

4 Establish a common baseline that all project participants involved can work on with a similar understanding of tasks, responsibilities and possible synergies

5 Design solutions (technologies, jobs etc.) that address the entire sanitation chain

6 Integrate and skill workers from the informal sector to achieve healthier and environmental friendly outcomes

7 Create more awareness for clean water and pollution amongst India trough government led programs

7 Contributors & Bibliography

The following contributors made one or more posts on the forum during the current TDS. The contributors are listed in alphabetical order.

NAME OF CONTRIBUTOR	ORGANIZATION	COUNTRY	BIBLIOGRAPHY
Anja von Falkenhausen	SuSanA India Chapter (GIZ)	India	• **DGroup 2016:** Taking stock of FSM progress: Full summary of the DGroup discussion. http://forum.susana.org/media/kunena/attachments/1609/FullDgroupsummaryTakingstockofFSMprogressOct-Nov2016.pdf • **Parkinson J., Lüthi C., Walther D. (2014):** Sanitation 21. A planning framework for improving city-wide sanitation services. http://www.susana.org/en/resources/library/details/2712 • **MoUD 2014:** National Urban Sanitation Policy. http://www.susana.org/en/resources/library/details/2711 • **Nath, V.; Bauer M. (2016):** FSSM matters. http://www.susana.org/en/resources/library/details/2730
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SuSanA Forum Discussion Corporate Engagement in Sanitation

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