

Private sector engagement in waste water and faecal sludge & septage management: A national consultation

Workshop report



New Delhi, September 22, 2017

BACKGROUND

The Faecal Sludge and Septage Management Policy 2017 envisions that 'all Indian cities and towns become totally sanitized, healthy and livable and ensure sustenance of good sanitation practices with improved onsite sanitation services (OSS) together with faecal sludge and septage management (FSSM) to achieve optimum public health status and maintain clean environment with special focus on the poor'. The Policy recognises the private sector as a key stakeholder in effective implementation of FSSM services throughout the country.

Under the National FSSM Alliance, a National Consultation with the Private Sector (companies engaged in manufacture, vending and distribution of products and technology solutions, and consulting services engaged in designing and consulting services) was convened in New Delhi on September 22, 2017. Select private players from across the country were invited to this consultation where they interfaced with NFSSM Alliance partners.

National Institute of Urban Affairs (NIUA), which anchors Sanitation Capacity Building Platform (SCBP), also anchored the consultation.

OBJECTIVES

The consultation was the first attempt to provide a platform for private sector engagement in FSSM. With the broader aim to encourage and support the private sector to work in FSSM, the workshop attempted to highlight the emerging demand and business opportunities in the urban sanitation sector for septage and waste water treatment and to identify and understand the challenges and capacity building needs of the private sector.

- The workshop aimed to support greater engagement of private sector in the emerging business opportunities in urban septage, sludge and waste water treatment space.
- It also aimed to identify FSSM capacity building needs and priorities, if any, of the private sector.

(Annexure 1: Agenda)

PARTICIPANTS

Invitations were sent out to over 70 private agencies, including all empaneled vendors and manufacturers working for Atal Mission for Rejuvenation and Urban Transformation (AMRUT). The consultation saw participation from 22 private agencies, 7 Project Management Consultants (PMC), 4 national Nodal AMRUT Training Institutes and 2 national universities. In addition, 23 NFSSM Alliance partners and members from the Bill and Melinda Gates Foundation (BMGF) team also participated.

(Annexure 2: List of participants)

In August 2013, the Ministry of Housing and Urban Affairs (MoHUA), then called Ministry of Urban Development, empanelled agencies for providing technical support to cities/towns for water supply, sewerage and drainage systems.

(Annexure 4: List of agencies empanelled by MoHUA)

PRESENTATIONS

Roshan Shreshta of BMGF commenced the proceedings with a brief introduction to the importance and objectives of the workshop. Following this, five presentations were made outlining the opportunities and demand for private sector engagement in FSSM.

| Topic | Presenter | Organisation |
|--|------------------|------------------------|
| Overview of FSSM & Capacity Building | Depinder Kapur | NIUA |
| National FSSM Policy Environment | Srinivas Chary V | ASCI Hyderabad |
| FSSM in Tamil Nadu | Kavita Wankhade | IIHS Bangalore |
| FSSM in Maharashtra | Aasim Mansuri | CEPT University |
| Operational Faecal Sludge Treatment Plant (FSTP) | Sasanka V | CDD Society, Bangalore |

(Annexures 7-10: Presentations)

DISCUSSION AND GROUP WORK

Participants from the private sector were grouped into three and discussed the following;

- Challenges faced in engaging with FSSM business opportunities
- Capacity building support in required for FSSM, if any

Groups 1 and 2 comprised vendors and technology providers. Group 3 comprised only PMCs.

Representatives of Nodal AMRUT Training Institutes were assigned to each of the three groups to understand the challenges and expectations of the private sector and provide inputs based on their experience of conducting capacity building in FSSM. NFSSM Alliance partners and BMGF team members were attached to each group to facilitate the group work. Each group presented a summary of their discussion in the plenary session.



The key takeaways from the discussions that took place in the three groups are presented below.

Key Challenges and Capacity Building expectations of Private Sector in FSSM

Absence of a nodal agency at State level for FSSM. There is no specific entity/government body dedicated to the construction and operation of FSSM.

Advocacy for FSSM promotion needed. Capacity building for creating an awareness and demand for FSSM solutions is required at all levels. Engagement, awareness raising and advocacy with elected representatives and public opinion makers is required.

Market Access. The private sector faces a host of challenges in the FSSM sector, the primary one being entry into the market. FSSM continues to be regarded as an interim sanitation solution by the government agencies. Sewerage-based, offsite sanitation solutions are seen as the ideal solution even when it is known that these cannot address the growing challenges of water scarcity and high capital cost requirement to reach all habitations.

Enabling guidance for urban local bodies (ULB) for undertaking FSSM solutions is absent, making market access difficult for the private sector. National FSSM policy needs to be translated into state level policies and operationalized with defined role of para state agencies for supporting ULBs to implement FSTPs and waste water solutions.

Data for making a business case for FSSM. Lack of reliable and adequate data on septage and waste water generation and the problem statement of unsafe disposal, makes it difficult to make a business case for FSSM to the state government and ULBs. There is a lack of data on septage and waste water collection and type of containment system at city level.

Lack of experienced FSM consultants/staff. ULBs do not have adequate staff, and new recruitments are banned. Consulting companies find it challenging to source independent consultants. A large scale capacity building will go a long way in creating a pool of qualified staff and consultants that can be engaged in the emerging FSSM business opportunities.

Technical Assistance, Capacity Building and Market Development. Currently, BMGF is supporting all the three aspects and leveraging with AMRUT and Swachh Bharat Mission (SBM) for creating an enabling policy (National FSSM Policy and Guidelines at state level) and programme (AMRUT and SBM) environment. PMCs and vendors will need this support till the market for FSTP business opportunities is built.

Empanelment. Engaging the private sector with the state and ULBs is challenging. Securing empanelment at state level will help.

Technology standardization. There are no standardised technology designs for FSTPs that the state governments and ULBs can tender out. There are many technology options for decentralised FSSM solutions, and it is difficult to standardise for the sake of Detailed Project Reports (DPR) and uptake by the ULBs.

A listing of FSTP technologies and operations and maintenance (O&M) contracts could be a helpful starting point.

DPRs for FSSM. Need for guidelines for FSM-specific DPR preparation. New technology and innovations need to be put in an implementable DPR. Dummy DPRs are not helpful and may end up misleading the sector.

Marketplace for FSSM Technologies. A mechanism or platform for presentation of innovative technologies where all stakeholders can come together will help in developing and disseminating new FSTP technologies. Ministry of Housing and Urban Affairs (MoHUA) is coming out with a portal to bridge this gap, and all technology vendors and consultants will benefit from it.

Case Studies. There is a dearth of successful FSTP business models and case studies in FSSM. Financing options/models for operations expenditure (OpEx) of FSTPs for small ULBs is a weak area. Bundled contracts are difficult for start-ups, while these are favoured by ULBs. It might be better to bundle on the basis of the capacity of the FST - bundled for small capacities (8-10 kld) but not for larger ones.

Bidding challenges. In the absence of standardisation, Standard Operation of Rates (SoRs), bidding for FSTPs will be challenging. L1 bidders providing conventional solutions are the ones that get selected mostly. No guidelines exist for procurement and tendering of FSTP projects at state and ULB levels. Life cycle cost of technologies need to be considered.

Waste water disposal standards. There are no standard norms for disposal of treated waste water and sludge. Central Pollution Control Boards (CPCB) standards for waste water apply are de facto applied for septage. It is not clear if 10BOD standard for waste water discharge applies for FSTPs.

O&M options for FSTPs. Guidelines for internal benchmark for O&M of FSTPs within the tendering and procurement processes do not exist. There are no checklists for selection of O&M operators.

Incremental steps for FSSM. Scheduled desludging needs to be made compulsory to ensure minimum flow to FSTP along with other improvements that motivate towns and cities to improve their septage and waste water management.

Reuse of treated septage (waste water and solid) should not be made part of the contract for delivering the operations and service of FSTPs. It should be the responsibility of the ULB. Experience shows that it will not be possible to recover O&M cost of an FSTP by selling by-products (treated water, organic manure etc.).

Empanelment of Laboratories. Existing empaneled laboratories do not wish to handle faecal sludge. There is a need to empanel laboratories and define parameters.

NEXT STEPS

Post lunch, a brief discussion with partners who were into training (Nodal Amrut Training Institutes and universities) and NFSSM Alliance partners was conducted on planning the way ahead to engage with the private sector and build their capacities. The key points emerging from this discussion are presented below.

- Under MoHUA, a portal on FSSM is being developed, which will connect vendors, manufacturers, technology and PMCs with ULBs and investors. The modalities of empanelment are being worked out. WASHi and National PMU will provide updates on the process of private sector engagement in this initiative.
- A large pool of PMC staff is engaged in supporting not only FSTP projects in approximately five states but also Smart City Projects and state-level PMUs/PMCs. A capacity building FSSM intervention for these PMC staff can be initiated.
- A study can be undertaken as a larger initiative on capacity building of the private sector in FSSM. An analysis of the survey conducted during this consultation would be used to develop the study further. This survey was conducted in the form of a self-administered questionnaire to understand a profile of the private agencies and their needs in terms of capacity building. A Terms of Reference (ToR) document can be prepared with inputs from NFSSM Alliance partners.

(Annexure 3: Questionnaire)

The Ministry of Environment, Forest and Climate Change, Government of India, has prescribed effluent discharge standards for STPs in the revised Environment (Protection) Amendment Rules 2017.

(Annexure 6: Government Notification)

Annexure 1

AGENDA

| TIME | SESSION | SPEAKERS |
|---------------------------------|---|---|
| 9.00-09.30 | Registration | |
| Session 1 09.30–09.45 | Overview | Depinder Kapur NIUA |
| Session 2 09.45–10.00 | Introduction & Objectives | Sakshi G, Roshan S, Gates Foundation |
| Session 3 10.00–11.00 | Opportunities and Demand in the states of: Maharashtra, Telengana Rajasthan, UP Tamil Nadu Q&A Formation of Groups for the next session | <ul style="list-style-type: none"> • Aasim Mansuri CEPT University • Srinivas Chary ASCI, Hyderabad • Sasanka V CDD Society • Kavita Wankhade Indian Institute of Human Settlements |
| 11.00-11.20 | TEA | |
| 11.20-13.00 | Group Discussion Private sector perspective on FSSM engagement : | Groups: <ul style="list-style-type: none"> • Large Vendors and Manufacturers • Medium and Small Vendors and Manufacturers • Project Management Consultants |
| | Plenary session Conclusions and Way Forward | Presentation by Groups and Discussion |
| 13.00-14.00 | LUNCH | |
| 14.00-15.00 | Meeting with Training Institutes and Experts Discuss the potential for capacity building support for private sector | |

Annexure 2

List of participants

| S.No. | Name | Affiliation |
|---|---------------------|----------------------------------|
| Vendors, Manufacturers, Technology Providers | | |
| 1. | Panse U.R. | Panse Consultants, Pune |
| 2. | Harshit Sharma | MLK Waste Management, Bhopal |
| 3. | Nisha Devar | Saraplast, Pune |
| 4. | Theophilus Gabriel | Kings Enviro Tech Pvt Ltd |
| 5. | Shriram | Tide Technocrats |
| 6. | Vishal | Shivam Water Treaters Pvt Ltd |
| 7. | Darshan | Shivam Water Treaters Pvt Ltd |
| 8. | Murtaza Lightwaala | Clean Water Soutions |
| 9. | Jatin Gupta | Parno Pro |
| 10. | Stanzin T. | Blue Water/BORDA |
| 11. | Prof. Kelly Alley | Auburn University |
| 12. | B.U.M. Reddy | Cube Bio Energy |
| 13. | Atul | EVI |
| 14. | Vinod Kala | EVI |
| 15. | Snigdha | EVI |
| 16. | Kala | EVI |
| 17. | Vinoth Rayar | Freshrooms Life Sciences |
| 18. | Chaithanya B. | TUSPL |
| 19. | Srinivas A.C. | Ozone Nano Sciences |
| 20. | Rupali Gupta | Eco Group |
| 21. | Jatin Ahuja | HES Water Engineering |
| 22. | Sai Vikas | S3 Andhra |
| Project Management Consultants | | |
| 23. | Akshita Pathak | KPMG |
| 24. | Pragyal Singh | E&Y |
| 25. | Ravi Shankar | IWMI |
| 26. | Swapnil | Sambodhi |
| 27. | Dhawal Patil | Ecosan Foundation Services, Pune |
| 28. | Sanjay Singh | PSI |
| 29. | Suraj | IPE Global |
| Training Institutions | | |
| 30. | Prof. Kaushik Ghosh | ATI West Bengal |
| 31. | Chandra Nayak | ATI Mysore |
| 32. | Prof. Anil Vyas | Manipal University |
| 33. | Prof. Srikant M. | BITS Pilani |
| NFSSM Alliance partners | | |
| 34. | Kavita Wankhade | IIHS |
| 35. | Sasanka V | CDD Society |
| 36. | Bhawana Prakash | E&Y |
| 37. | Isabel Blackett | Independent consultant |
| 38. | Anurag Chaturvedi | Dasra |
| 39. | A. Kalimuthu | WASH Institute |
| 40. | Sanjana Mohanty | International Innovation Corps |
| 41. | Aasim Mansuri | C-WAS, CEPT, Ahmedabad |
| 42. | Ramshankar | IWMI |
| 43. | Karthik Palamani | IIC |
| 44. | Venkat R.P. | ASCI |
| 45. | Srinivas Chary | ASCI |
| 46. | Sakshi Gudwani | BMGF |
| 47. | Madhu Krishna | BMGF |
| 48. | Roshan Shreshta | BMGF |
| 49. | Raminta Hanzelka | BMGF |
| 50. | Priyanka Thompson | BMGF |
| 51. | Depinder Kapur | NIUA |
| 52. | Jyoti Dash | NIUA |
| 53. | Ankita Gupta | NIUA |
| 54. | Mohit Kapoor | NIUA |
| 55. | Chandni Nair | NIUA |
| 56. | Yogesh Bhat | NIUA |

Annexure 3

Brief Survey for Indian Consulting Firms on Staff Training for Urban Sanitation

Please complete this survey on behalf of the firm you work for and consult your colleagues, as needed. We are seeking the *most effective way* to conduct at-scale training for consulting firms on non-sewered urban sanitation.

| Background and needs assessment | |
|--|---|
| 1. | How many conventional sewerage, planning, design and development contracts has the firm won and implemented in the last 5 years? None <input checked="" type="checkbox"/> 1-5 <input type="checkbox"/> 5-10 <input type="checkbox"/> 10-20 <input type="checkbox"/> More than 20 <input type="checkbox"/> |
| 2. | Has the firm ever bid for, or won a non-conventional sewerage URBAN wastewater sanitation contract – i.e. urban on-site sanitation; fecal sludge management; fecal sludge/septage treatment; container-based or non-conventional shallow or simplified sewerage? No. bid for ___ No. won ___ |
| 3. | Does your firm see itself as fully competent and experienced in non-conventional sewerage areas? Not yet <input type="checkbox"/> Somewhat <input type="checkbox"/> Pretty good <input type="checkbox"/> Expert <input type="checkbox"/> |
| 4. | To what extent do you think that Government and international funding agencies require expertise beyond conventional sewerage? e.g in fecal sludge management, sludge treatment, on-site and container based sanitation? Do you think this will change in the short to medium term? |
| Attitude to market demand and staff training | |
| 5. | To what extent are specialized individual consultants 'bought in' as needed, rather than in-house staff used? Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often/usually <input type="checkbox"/> Always <input type="checkbox"/> |
| 6. | Typically: a. How many days are allocated per staff member per year for training? __ to __ days b. What priority is given to technical staff training? None <input type="checkbox"/> Low <input type="checkbox"/> Moderate <input type="checkbox"/> High <input type="checkbox"/> c. Priority is given to non technical staff training? None <input type="checkbox"/> Low <input type="checkbox"/> Moderate <input type="checkbox"/> High <input type="checkbox"/> d. What is the approximate annual budget per staff member for training? Rs. _____ |
| 7. | Are staff actively encouraged to keep up to date on sanitation developments? And if so, how are they encouraged, and how do they keep up to date? |
| 8. | How does the firm adapt its skill base to the changing demands of Government priorities and approaches? |

Staff training preferences

9. What is your priority area of staff training? Please rank in order of priority
Municipal Norms and Regulations Technology Financing Contracting

10. Is your firm aware of the existing FSSM projects in India?
Yes Maybe No

11. Is your firm interested in learning about FSSM best practices and projects in India ?
Yes Maybe No

12. Which institutions in India would you go to for your training needs in FSSM ?
Central Govt Institutes IITs & IIMs State Training Institutes NGOs

13. Is your firm interested in learning from global sanitation experience as adapted for India?
Yes Maybe No

14. How many of the firm's professional staff have full-time internet-enabled computer access and use the internet daily basis got work?
All Most Some None

15. Is internet-based on-line learning (e.g. Massive Online Open Courses - MOOCs) encouraged?
Yes A little Not yet

16. If not, would the firm consider encouraging staff to take such courses?
Yes Maybe No

17. What would be the preferred number of days' duration for face-to-face training events:
a. For senior staff and executives? _____ days
b. For mid-level project managers? _____ days
c. For young professionals / junior entry level staff _____ days

18. Would the firm generally prefer - please mark the preferred one with :
a. In-house customized training courses?
b. Off-site courses which involve shared learning with staff from other firms, and possibly in another city (less training cost, but with travel costs)?
c. Not interested

19. Would the firm be willing to pay travel and accommodation for its staff to travel to a state or regional capital for face-to-face training?
Yes No

20. Are there times in the year when training is not feasible, due to other priorities, festivals or work load?

21. How would staff be selected for training?

22. What is the firm's willingness to pay for good quality, practical training? The proposal is that reputable Indian training institutions would deliver globally developed and recognized, locally adapted training and charge local rates for their services.
Yes we are willing to pay Maybe Not willing to pay

Training motivators

23. What would make the firm more likely to send staff for training?

24. If a certificate of having completed specialized training was a prerequisite for bidding on a contract, would your firm support staff training or would they choose not to bid?

Train staff Not bid

25. Would official Government certification of training (possibly including credit points towards an academic qualification) make it more attractive to the firm?

26. Would your firm be willing to reward or compensate staff for undertaking such professional training in their own time?

Yes No

27. What language or languages should the training be in?

Annexure 4

No.Q-11011/1/2013-PHE
Government of India
Ministry of Urban Development
(PHE Section)

Nirman Bhawan, New Delhi.

Dated the 7th August, 2013

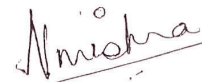
To
The Principal Secretary/Secretary (Urban Development)
Of State Governments and UT Administrations,

Subject : Empanelment of Agencies for providing technical support to the Cities/Towns of States/Urban Local Bodies (ULBs) in the field of Water Supply and Sanitation, Sewerage and Drainage systems.

Sir/Madam,

The Ministry of Urban Development (MOUD) has carried out an exercise for empanelment of Agencies/Consultancy Organisations to create a pool of capacity for providing technical support to States/ULBs to implement various projects/studies/evaluation/training etc. in the field of Water Supply and Sanitation, Sewerage and Drainage programmes effectively in cities and towns. The MOUD has empanelled 56 consultancy organisations specialized in the above areas of activity. The contact details of these agencies are given at Annexure. These details are also available on Ministry's website <http://www.moud.gov.in/>.

2. The State Governments/ULBs may consider to avail this panel of agencies for preparing DPRs under various programmes of Government of India, State Governments and EAP etc. The States/ULBs may, therefore, not be required to call for fresh technical bids, if the panel is used, and accordingly they may call for financial bid only as per their requirement and approved terms and conditions. However, the States/ULBs will verify before award of work to any of the empanelled agencies to ensure that it is not debarred by any Government/Department for award of work in the proposed sector of assignment. The empanelment of agencies will not involve any financial obligation on the part of Ministry of Urban Development.



(Nandita Mishra)
Director (PHE)

Tele No.23063661/Fax : 23062253

Agencies empanelled by Ministry of Urban Development for Providing Technical Support to the Cities/Towns for Water Supply, Sewerage and Drainage Systems

| S.No. | Name of Firms |
|-------|--|
| 1. | 1 M/s Voyants Solutions Private Limited 303, Meridian Plaza, Ameerpet, Hyderabad-500016, Tel: +91 40-66361163, Email: anandkumar@voyants.in |
| 2. | M/s N.K Buildcon Pvt. Ltd., B-62, UGANTA, University Marg, Bapu Nagar, Jaipur (Rajasthan) Tel.: 0141-2710841-44, Email Id: business@nkbuildcon.com |
| 3. | M/s MaRS Planning & Engineering Services Pvt. Ltd., 601, Sur Mount Building, Opp. ISCON Mega Mall, S.G. Highway, Ahmedabad – 380015 Tel: +91-79-26860890, Fax: +91-79-26860130 E-mail: info@marsconsultancy.com, Website: www.marsconsultancy.com |
| 4. | M/s Tata Consulting Engineers Limited 4th Floor Tower-A 247 Park LBS Marg, Vikhroli (West), Mumbai-400083. Tel.:022-66618181, Email Id: svdeshpande@tce.co.in |
| 5. | SECON Pvt. Ltd. Corporate office, Plot No. 147, 7B Road, Export Promotion Industrial Park (EPIP), White field, Bangalore- 560066 Tel: 91-80-41197778, Fax: 41194277, Email Id: feedback@secon.in |
| 6. | CIST Infrastructure 74-32/1, FF-2 Guna Residedncy, Ashok Nagar, Vijayawada – 520007, (AP) Tel.: 0866-2554768, Email Id: cist_engineers@yahoo.co.in |
| 7. | M/s OP & HS Infra, 418, Saheed Nagar, Bhubaneshwar- 751007 (Orissa) Telefax: +916742548420, Email Id: bibhas@opnhs.com/ infra@opnhs.com |
| 8. | Grant Thornton India LLP 21st Floor, DLF Square, Jacaranda Marg, DLF Phase-II Gurgaon - 122002, India Tel: +91-124-462-8000, Email Id: Vinamra.Shastrri@in.gt.com |

| S.No. | Name of Firms |
|-------|--|
| 9. | M/s SUNCON Engineers Pvt. Ltd., Infrastructure Development Consultants, P-1/9, Sai Palace, Near Lohia-Jain IT Park, Bhusari Colony (Right Side), Paud Road, Kothrud, Pune- 411038 (Maharashtra), Tel:- 020-25285432, Fax: 020-25285482/ 5, Email Id: bd@sunconengineers.com |
| 10. | M/s N.S.S. Associates H.No. 2-2-647/235/A/2, Srinivas Nagar Colony, Bagh Amberpet, Hyderabad-500013 Phone: 04027426408, Fax: 04027420646 E-mail: nss_consultant@yahoo.co.in Website: www.nssassociates.org |
| 11. | M/s LKS India Pvt. Ltd. ‘RACHNA VENTURA’ 5th Floor, CTS No. 1337/1, Survey No. 134/1, Opposite Anand Park, ITI Road, Aundh, Pune-411007. Tel./Fax. +912066864800/+912066864850 Email.: sjain@lks-global.com |
| 12. | M/s Urban Management Centre, III Floor, AUDA Building, Usmanpura, Ashram Road, Ahmedabad – 380 014 Tel.: +91-79-27546403/5303, Email Id: manvita@umcasia.org |
| 13. | M/s Ramky Enviro Engineers Ltd Door No. 6-3-1090, 4th Floor, TSR Towers, Above Standard Chartered Bank, Rajbhavan Road, Somajiguda, Hyderabad-500082 Tel: 040-44422147, Email Id: srinivas.@ramky.com |
| 14. | M/s SHAA Associates Infrastructure (India) Pvt. Ltd., #9-4-131/17/A, Akbar Bagh, Tombs Road, Toli Chowki, Hyderabad-500008, Tel: 040-23568473 Email Id: shaaassociates@gmail.com In association with M/s NCPE Infrastructure India Pvt. Ltd., 12-2-826/A/12, LIC Colony, Mehdiapatnam, Hyderabad-500028. |

| S.No. | Name of Firms |
|-------|---|
| 15. | M/s NCPCE Infrastructure India Pvt. Ltd., #12-2-826/A/12, LIC Colony, Mehdipatnam, Hyderabad-500028. Tel.:040-23517558, Email Id: ncpesms@yahoo.com In association with M/s SHAA Associates Infrastructure (India) Pvt. Ltd., 9-4-131/17/A, Akber Bagh, Tombs Road, Tollchowki, Hyderabad-500008 |
| 16. | M/s Mahindra Mahindra Consulting Engineers Ltd., Mahindra Towers, Ground Floor, No. 17/18, Pattullous Road, Chennai-600 002, Tel: +91 44 4240 4477, Email Id: narayanan.cs@mahindra.com |
| 17. | M/s Primove, Primove Infrastructure Development Consultants Pvt. Ltd., C-3, 304-B, Saudamini Complex, Bhusari Colony, Paud Road, Kothrud, Pune - 411038, Telefax: +912025280200 / 01, Email: info@primoveindia.com, Website: www.primoveindia.com |
| 18. | M/s LEA Associates South Asia Pvt. Ltd., B-1/E-27, Mohan Co-operative Industrial Estate, Mathura Road, New Delhi-110044. Tel.:011-41678150, 26973950/51/52 Fax: 011-26971062, 41678659 Email Id: anandakdas@lasaindia.com / lasa@lasaindia.com |
| 19. | M/s MWH India Pvt. Ltd., (Subsidiary of MWH Global, Inc Unit 3A, 3rd Floor, FC-24, Sector 16-A, Noida – 201301 (U.P) Tel.: +91204773600, Email Id: anil.kumar@uk.mwhglobal.com |
| 20. | M/s Tandon Urban Solution Pvt. Ltd. (TUSPL), 701, Harbhaajan Building CST Road, Kalina, Santacruz (East) Mumbai-400098, Tele-Fax: +912226655335 Email Id: tandonandassociates@gmail.com |
| 21 | M/s Excel Consultancy and Projects, Plot No.10 & 11, Natraj Nagar, (Imli Phatak), Jaipur-302015 Tel: 0141-2595321, Email: Excel.projects@rediffmail.com |
| 22. | Chaitanya Projects Consultancy Pvt Ltd. C-5, 2nd Floor, R. K. Tower, Plot No. 21 C-2, 2nd Floor, Sector-4, Vaishli, Ghaziabad– 201012 (U.P) Tel.: 0120-4120472, 3223419, Email.: chaitanya.projects@gmail.com |

| S.No. | Name of Firms |
|-------|--|
| 23. | Intercontinental Consultants & Technocrats Pvt. Ltd., A-8, Green Park, New Delhi - 110016 Tel.: 011 40863000, Email Id: eoi@ictonline.com; business@ictonline.com |
| 24. | CH2M Hill (India) Pvt. Ltd. Technopolis Building, Golf Course Road / Sector - 54, Grugaon - 122002, Tel: 0124 27 27000, Fax: +911242727022, Email Id: ashish.malik@ch2m.com |
| 25. | JPS Associates (P) Ltd. R-16, Hauz Khas Enclave, New Delhi – 110016 Tel.: 91-11-26862487/26862193/ 26854335 Fax: 91-11-26864547, Email Id: info@ips-india.com or divakar.dhaveji@ips-india.com |
| 26. | M/s MC Consulting Engineers Pvt. Ltd. C-1, 2nd Floor, Office No. I&II, Mahaluxmi square Abay Khand - II Indirapuram, Ghaziabad – 201010 (UP) Tel.: 0120-4130476, Mail Id: mcrodelhi@gmail.com |
| 27. | INRM Consultants Pvt. Ltd. C23, First Floor Front, Hauz Khas, New Delhi – 110016, Tel: 9111-20900989, Fax: 91 11 2696 4329, Email Id: sandhya.delhi@gmail.com |
| 28. | CREATIVE CIRCLE Bhaskar Prabha Apartment, 31, East Shankar Nagar, Nagpur – 440010 Tel:0712-2523520, Email : crativecircleindia1@gmail.com/info@creativecindia.com, Website:- creativecindia.com |
| 29. | IPE Global Pvt. Ltd IPE Towers, B, 84, Defence Colony Bhisma Pitamah Marg, New Delhi - 110024 Tel.: +91-11-40755900 Email Id: rchopra@ipeglobal.com |
| 30. | Mott Mac Donald 501 Sakar II, Ellisbridge, Ahmedabad 380006 / A20, Sector 2, Noida - 201 301, U.P Tel.: +91(0)7926575550, Fax: +91(0)792657 5558 E-mail ID: ramesh.kumar@mottmac.com Web: www.mottmac.in |
| 31. | Dr. K.S.S.V.V. Prasad – Vice President & HOD – EWSS Division Aarvee Associates Architects Engineers & Consultants Pvt. Ltd. 8-3-833/50, Kamalapur Colony, Srinagar Colony, Hyderabad –500082, Tel: 04023550436, Email Id: kprasad@aarvee.net; water@aarvee.net |

| S.No. | Name of Firms |
|-------|--|
| 32. | M/s Tetra Tech India Ltd. 951, 9th Floor, Agrawal Metro Height, Netaji Subhash Place, Pitampura, New Delhi – 110034, Tel: 011-45007500, Fax: 011-45064737, Email Id: ttilinfo@tetrattech.com |
| 33. | NJS Engineers India Pvt. Ltd., E-47, Saket, New Delhi - 110017 Tel: 011-45066169; Email Id: uday@njsei.com In association with ICRA Management Consulting Services Ltd. (IMaCS) |
| 34. | Fortress Infrastructure Advisory Services (A division of Fortress Financial Services Ltd.), 2nd Floor,69, Maharshi Karve Road Lines, Daryanagar House, Marine Lines, Mumbai - 400002 Tel: 022-43407947, 43407916, Email Id: pravinchavan@fortress.co.in & fortress@fortress.co.in |
| 35. | SMEC International Pty. Ltd. 5th Floor, DLF Building No. 8, Tower C, DLF Cyber City, Phase- II, Gurgaon – 122002, Haryana Tel.: 01244552800, Fax: +91 1244376018, Email: India@smec.com |
| 36. | Feedback Infra Private Lmt., 5th Floor, Tower- 9B, DLF Cyber City, phase-III, Gurgaon- 122002, Haryana, Tel: +91 124 416 9230, Fax: +91 124 462 9255, Email: hemanta.sarkar@feedbackinfra.com |
| 37. | MSV International, Inc. USA D-7, South City-I, Gurgaon - 122002 Tel: 124-4002063, Fax:- 0091-1244002605, Email Id:info@msvgroup.com |
| 38. | WAPCOS LTD. 76-C, Institutional Area, Sector -18, Gurgaon -122015 (Haryana) Tel: +91-124-2397391, Fax: +91-124-2399224, 2397392, Email Id: commercial@wapcos.gov.in |
| 39. | ALPS Engineers, 201 – IInd Floor, Sumedha Complex, Ansals Building Raj Nagar, Ghaziabad-201002 Tel.: 0120-2824528, Email.id: erlkb_69@hotmail.com, alpsengineers@hotmail.com. |
| 40. | M/s Meinhardt Singapore PTE Ltd., A-8, Sector-16, Noida – 201301 (UP) Tel: +91-120-2516165, Email Id: rajesh@meinhardtindia. com; info@meinhardtindia.com |
| 41. | M/s Confederation of India Industry 246-F, Sector 18, Udyog Vihar,Phase-IV,Gurgaon –122015, Haryana Tel.: 91 124 4014060-67, Fax: 91 124 4014080 Email: kapil.narula@cii.in, Website: www.cii.in |

| S.No. | Name of Firms |
|-------|--|
| 42. | M/s STUP Consultant Pvt. Ltd., 1112, Vishal Tower, District Centre, Janakpuri, New Delhi-110058, Tel: 011-45616353/355 Email Id: delhi.bd@stupmail.com |
| 43. | URS Scott Wilson India Private Ltd., 19th Floor, Tower-C, Building – 5, Cyber Terraces, DLF, Cyber City, Phase-III, Gurgaon – 122002, Haryana. Tel: +91 124 4682700, +91 124 4682800, Fax: +91 124 4682899, Email Id: hemant.sandu@urs.com / urs.india@urs.com, Website: www.ursglobal.com |
| 44. | M/s TARU 424 Qutab Plaza, DLF City Phase I, Gurgaon - 122 002 Tel.: +91 124 2560 424, Fax: +91 124 2560421, Email Id: bmatthew@taru.org |
| 45. | M/s Mukesh & Associates, 'Division-2', 2/6 Ranganathar Avenue, Perumal Malai Main Road, Narasothyipatty, Salem – 636004. Tamilnadu, India, Tel: +91 427 2333563 / 2330568, Email Id: bd2@mukeshassociates.com / info2@mukeshassociates.com |
| 46. | M/s Kinetix Solution Pvt. Ltd., No. 1036, Srinidhi Plaza, 2nd Floor, 14th C Main, Banashankari 2nd Stage, Bangalore-560 070, Tel: 08026715301, Fax: 080 - 26715308 Email Id: praveenb@kinetixengineering.com |
| 47. | M/s PBS Consultancy Service, H.No. 6-2-966//5//1/2, 1st Floor, Hill Colony, Opposite Lane of Hindi Prachara Sabha,Khairatabad, Hyderabad – 500004 Phone: 040-23316336, Fax - 040-23316336 Email: pbsconsultancy@rediffmail.com pbsconsultancy9@gmail.com. |
| 48. | M/s Vitya Consultants Pvt. Ltd., 4th Floor, Laxmi Plaza, Beside Shenoy Nursing Home, East Marredpally, Secunderabad-560 026, Andhra Pradesh (INDIA) Tel.: +91-40-66388551, Fax: kk@vitya.in. ed.vitya@gmail.com www.vitya.in |

| S.No. | Name of Firms |
|-------|---|
| 49. | M/s DRA Consultants Pvt. Ltd., 58, Ingole Nagar, Behind Hotel Pride, Opposite Airport, Wardha Road, Nagpur- 440 005 (M.S). Tel.: +91-712-3027575-79, 3027502 Fax: +91-712-3027527, Email Id: dra.nagapur@gmail.com |
| 50. | M/s Centre for Environment and Development Thozhuvancode, Vattiyoorkavu P.O., Thiruvananthapuram – 695013, Tel: 0471-2369721 / 2369722, Email Id: director@cedindia.org |
| 51. | M/s Enviro Care India Pvt. Ltd., 43, 2nd Street, Harvey Nagar, Madurai-625016 (Tamilnadu) Tel: +91 452 4355103, 4355203, Fax: +914522611127 Email: info@envirocareindia.com, eci@envirocareindia.com Web: www.envirocareindia.com |
| 52. | M/s Shah Technical Consultants Pvt. Ltd., 407, Raheja Centre, Nariman Point, Plot No. 214, Mumbai- 400021. Tel: 022-2287 1061 / 2282 0018, Email Id: stc@stc.co.in |
| 53. | M/s CTRAN Consulting Ltd., A1-A2, 3rd Floor, Lewis Plaza, Lewis Road, BJB Nagar,69 Bhubaneswar – 751014 (Orissa) Tel.: +91-674-2430041, Tele fax: +91-674-2432695 Email Id: ctran@ctranconsulting.cum |
| 54. | M/s ACPL Global Pvt. Ltd., M-23, Indira Nagar, Kanpur-208026 (Uttar Pradesh) Tel: 0512 2570476, Email Id: acpl.knp@gmail.com |
| 55. | M/s Regional Centre for Urban & Environmental Studies (RCUES) M.N. Roy Human Development Campus, Plot No. 6, 'F' Block, Opp. Government Colony Bldg. No. 326, TPS Road No. 12, Next of Uttar Bhartiya Sangh, Bandra(East) Mumbai-400051 Tel.: 00912226573795/96/98, Fax: 00912226573973. E-mail: rcuesaiilsg@yahoo.co.in |
| 56. | M/s Darashaw & Company Pvt. Ltd., 8/2 Unique Sterling Apartment, 3rd Cross Street, Sterling Road, Nungambakkam, Chennai-600034. Tel.: 044-28267910 / 28235951-53 Email.Id: anand-mohan@darashaw.com |

Annexure 5

PRAVEEN PRAKASH, IAS
Joint Secretary & Mission Director (SBM)
GOVERNMENT OF INDIA
MINISTRY OF URBAN DEVELOPMENT



प्रवीण प्रकाश, आई.ए.एस.
संयुक्त सचिव एवं मिशन निदेशक (एस.बी.एम.)
भारत सरकार
शहरी विकास मंत्रालय

D.O. MD-SBM/AA/95/2016



10th June, 2017

Dear Sir,

As you are well aware, MoUD's AMRUT scheme provides funding for sewerage and septage projects for 500 chosen towns/cities, in accordance with its guidelines.

2 For non-AMRUT towns and cities which have become ODF, septage management becomes a natural extension of the Swachh Bharat Mission objectives. These cities, in addition to managing solid waste, are looking towards adopting integrated waste management or incorporating liquid waste management, especially as they move towards total sanitation.

3 For this purpose, they are considering funding liquid waste management projects through different sources such as the 14th Finance Commission Funds, State grants, Donor funding etc.

4 In this context, in these ODF, non-AMRUT towns, capacity building initiatives for such septage management projects, namely, DPR preparation, TA advisory for kickstarting implementation, IEC/BCC activities etc (as described in Section 13.2 of AMRUT guidelines) can now be undertaken if a part of the SWM capacity building fund is unutilized by the city.

5 Needless to say, AMRUT towns and cities can continue to undertake septage management activities under AMRUT scheme.

I hope that these measures will be instrumental in furthering the cause of septage management.

With regards,

Yours sincerely,


(Praveen Prakash)

To,

Mission Directors (SBM)

Copy to:

Director (SBM), CPHEEO



भारत का राजपत्र The Gazette of India

असाधारण

EXTRAORDINARY

भाग II—खण्ड 3—उप-खण्ड (i)

PART II—Section 3—Sub-section (i)

प्राधिकार से प्रकाशित

PUBLISHED BY AUTHORITY

सं. 843]

नई दिल्ली, शक्रवार, अक्टूबर 13, 2017/आश्विन 21, 1939

No. 843]

NEW DELHI, FRIDAY, OCTOBER 13, 2017/ASVINA 21, 1939

पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय

अधिसूचना

नई दिल्ली, 13 अक्टूबर, 2017

सा.का.नि. 1265(अ).—केन्द्रीय सरकार, पर्यावरण (संरक्षण) अधिनियम, 1986 (1986 का 29) की धारा 6 और धारा 25 द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए, पर्यावरण (संरक्षण) नियम, 1986 का और संशोधन करने के लिए निम्नलिखित नियम बनाती है, अर्थात् :—

- संक्षिप्त नाम और प्रारम्भ :—(1) इन नियमों का संक्षिप्त नाम पर्यावरण (संरक्षण) संशोधन नियम, 2017 है।
(2) ये राजपत्र में उनके प्रकाशन की तारीख को प्रवृत्त होंगे।
- पर्यावरण (संरक्षण) नियम, 1986 की अनुसूची-1 में, क्रम संख्यांक 104 और उससे सम्बन्धित प्रविष्टियों के पश्चात्, निम्नलिखित क्रम संख्यांक और प्रविष्टियां अन्तःस्थापित की जाएगी, अर्थात् :—

| क्र. सं. | उद्योग | मानदंड | मानक |
|----------|------------------------------|--|--|
| 1 | 2 | 3 | 4 |
| | | बहिर्भाव निस्सारण मानक (निपटान के सभी ढंगों को लागू) | |
| "105 | मल उपचार संयंत्र (एसटीपी) | | अवस्थान |
| | | | सांद्र का निम्नलिखित से अधिक न होना |
| | | पीएच | (क) देश में कहीं भी (ख) 6.5-9.0 |
| | | जैव-रासायनिक ऑक्सीजन (बीओडी) | महानगर* अरुणाचल प्रदेश, असम, मणिपुर, मेघालय, मिजोरम, नागालैण्ड, त्रिपुरा, सिक्किम, हिमाचल प्रदेश, उत्तराखण्ड, जम्मू-कश्मीर राज्यों और |

| | | | | |
|--|--|--|--|-------|
| | | | अंदमान और निकोबार द्वीप, दादरा और नागर हवेली, दमण और दीव और लक्षद्वीप के सिवाय, सभी राज्यों की राजधानी। | |
| | | | ऊपर उल्लिखित से भिन्न क्षेत्र/प्रदेश | 30 |
| | कुल निलंबित ठोस पदार्थ (टीएसएस) | | महानगर* अरुणाचल प्रदेश, असम, मणिपुर, मेघालय, मिजोरम, नागालैण्ड, त्रिपुरा, सिक्किम, हिमाचल प्रदेश, उत्तराखंड, जम्मू-कश्मीर राज्यों और अंदमान और निकोबार द्वीप, दादरा और नागर हवेली, दमण और दीव और लक्षद्वीप के सिवाय, सभी राज्यों की राजधानी। | <50 |
| | | | ऊपर उल्लिखित से भिन्न क्षेत्र/प्रदेश | <100 |
| | फैकल कोलीफॉर्म (एफसी) (अतिसंभाव्य संख्या प्रति 100 मिलीलिटर एमपीएन/100 मिलीलिटर) | | देश में कहीं भी | <1000 |

*मुम्बई, दिल्ली, कोलकाता, चेन्नई, बेंगलूरु, हैदराबाद, अहमदाबाद और पुणे महानगर हैं।

टिप्पण :

- (i) पीएच और फैकल कोलीफॉर्म के सिवाय, मिलीग्राम/लिटर में सभी मूल्य।
- (ii) ये, मानक जलाशयों में निस्सारण और भूमि निपटान/अनुप्रयोगों के लिए लागू होंगे।
- (iii) फैकल कोलीफॉर्म के लिए मानक औद्योगिक प्रयोजनों के लिए उपचारित बहिर्चाव के उपयोग के सम्बन्ध में लागू नहीं होंगे।
- (iv) ये मानक 1 जून, 2019 को या उसके पश्चात् कमीशन किए जाने वाले सभी मल उपचार संयंत्रों (एसटीपी) को लागू होंगे और पुराने/विद्यमान मल उपचार संयंत्र (एसटीपी) राजपत्र में इस अधिसूचना के प्रकाशन की तारीख से पांच वर्ष की अवधि के भीतर इन मानकों को प्राप्त करेंगे।
- (v) समुद्र में उपचारित बहिर्चाव के निस्सारण के मामले में, इसे उचित समुद्री मुहाने के माध्यम से किया जाएगा और विद्यमान तट निस्सारण को समुद्री मुहानों में संपरिवर्तित किया जाएगा और उन मामलों में, जहां समुद्री मुहाना निस्सारण के बिन्दु पर 150 गुणा न्यूनतम आरम्भिक तनुकरण और निस्सारण बिन्दु से दूर 100 मीटर के किसी बिन्दु पर 1500 गुणा न्यूनतम तनुकरण प्रदान करता है, तब विद्यमान सन्नियम साधारण निस्सारण मानकों में विनिर्दिष्ट किए गए अनुसार लागू होंगे।
- (vi) उपचारित बहिर्चाव का पुनःउपयोग/पुनःचक्रण तथा उन मामलों में, जहां उपचारित बहिर्चाव के भाग का पुनःउपयोग और पुनःचक्रण किया जाता है जिसमें मानवीय सम्पर्क की सम्भावना अन्तर्वलित है, ऊपर यथा विनिर्दिष्ट मानक लागू होंगे।
- (vii) केन्द्रीय प्रदूषण नियंत्रण बोर्ड/राज्य प्रदूषण नियंत्रण बोर्ड/प्रदूषण नियंत्रण समितियां, पर्यावरण (संरक्षण) अधिनियम, 1986 की धारा 5 के अधीन स्थानीय परिवेश को ध्यान में रखते हुए, अधिक कठोर सन्नियम जारी कर सकेगा/कर सकेंगी।

[फा. सं. क्यू-15017/2/2008/-सीपीडब्ल्यू]

अरुण कुमार मेहता, अपर सचिव

टिप्पण : मूल नियम भारत के राजपत्र, असाधारण, भाग II, खंड 3, उप-खंड (i) में का.आ. सं. 844(अ), तारीख 19 नवम्बर, 1986 द्वारा प्रकाशित किए गए थे और तत्पश्चात् उनमें निम्नलिखित अधिसूचनाओं द्वारा संशोधन किए गए थे, अर्थात् :—
 का.आ. 433(अ), तारीख 18 अप्रैल, 1987; सा.का.नि. 176(अ), तारीख 2 अप्रैल, 1996; सा.का.नि. 97(अ), तारीख 18 फरवरी, 2009; सा.का.नि. 149(अ), तारीख 4 मार्च, 2009; सा.का.नि. 543(अ), तारीख 22 जुलाई, 2009; सा.का.नि. 739(अ), तारीख 9 सितम्बर, 2010; सा.का.नि. 809(अ), तारीख 4 अक्टूबर, 2010; सा.का.नि. 215(अ), तारीख 15 मार्च, 2011; सा.का.नि. 221(अ), तारीख 18 मार्च, 2011; सा.का.नि. 354(अ), तारीख 2 मई, 2011; सा.का.नि. 424(अ), तारीख 1 जून, 2011; सा.का.नि. 446(अ), तारीख 13 जून, 2011; सा.का.नि. 152(अ), तारीख 16 मार्च, 2012; सा.का.नि. 266(अ), तारीख 30 मार्च, 2012; सा.का.नि. 277(अ), तारीख 31 मार्च, 2012; सा.का.नि. 820(अ), तारीख 9 नवम्बर, 2012; सा.का.नि. 176(अ), तारीख 18 मार्च, 2013; सा.का.नि. 535(अ), तारीख 7 अगस्त, 2013; सा.का.नि. 771(अ), तारीख 11 दिसम्बर, 2013; सा.का.नि. 2(अ), तारीख 2 जनवरी, 2014; सा.का.नि. 229(अ), तारीख 28 मार्च, 2014; सा.का.नि. 232(अ), तारीख 31 मार्च, 2014; सा.का.नि. 325(अ), तारीख 7 मई, 2014; सा.का.नि. 612(अ), तारीख 25 अगस्त, 2014; सा.का.नि. 789(अ), तारीख 11 नवम्बर, 2014; का.आ. 3305(अ), तारीख 7 दिसम्बर, 2015; का.आ. 4(अ), तारीख 1 जनवरी, 2016; सा.का.नि. 35(अ), तारीख 14 जनवरी, 2016; सा.का.नि. 281(अ), तारीख 7 मार्च, 2016; सा.का.नि. 496(अ), तारीख 9 मई, 2016; सा.का.नि. 497(अ), तारीख 10 मई, 2016; सा.का.नि. 978(अ), तारीख 10 अक्टूबर, 2016; और अंतिम बार अधिसूचना संख्यांक सा.का.नि. 1016(अ), तारीख 28 अक्टूबर, 2016 द्वारा संशोधित किए गए थे।

**MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE
NOTIFICATION**

New Delhi, the 13th October, 2017

G.S.R. 1265(E).—In exercise of the powers conferred by sections 6 and 25 of the Environment (Protection) Act, 1986 (29 of 1986), the Central Government hereby makes the following rules further to amend the Environment (Protection) Rules, 1986, namely:—

1. **Short title and commencement.**—(1) These rules may be called the Environment (Protection) Amendment Rules, 2017.

(2) They shall come into force on the date of their publication in the Official Gazette.

2. In the Environment (Protection) Rules, 1986, in Schedule – I, after serial number 104 and the entries relating thereto, the following serial number and entries shall be inserted, namely:—

| Sl. No. | Industry | Parameters | Standards | |
|---------|--------------------------------|---|---|---------------------------------|
| 1 | 2 | 3 | 4 | |
| | | Effluent discharge standards (applicable to all mode of disposal) | | |
| “105 | Sewage Treatment Plants (STPs) | | Location | |
| | | | (a) | Concentration not to exceed (b) |
| | | pH | Anywhere in the country | |
| | | Bio-Chemical Oxygen Demand (BOD) | Metro Cities*, all State Capitals except in the State of Arunachal Pradesh, Assam, Manipur, Meghalaya Mizoram, Nagaland, Tripura Sikkim, Himachal Pradesh, Uttarakhand, Jammu and Kashmir, and Union territory of | |
| | | | 6.5-9.0 | |
| | | | 20 | |

| | | | | |
|--|--|--|--|-------|
| | | | Andaman and Nicobar Islands, Dadar and Nagar Haveli Daman and Diu and Lakshadweep | |
| | | | Areas/regions other than mentioned above | 30 |
| | Total Suspended Solids (TSS) | | Metro Cities*, all State Capitals except in the State of Arunachal Pradesh, Assam, Manipur, Meghalaya Mizoram, Nagaland, Tripura Sikkim, Himachal Pradesh, Uttarakhand, Jammu and Kashmir and Union territory of Andaman and Nicobar Islands, Dadar and Nagar Haveli Daman and Diu and Lakshadweep | <50 |
| | | | Areas/regions other than mentioned above | <100 |
| | Fecal Coliform (FC) (Most Probable Number per 100 milliliter, MPN/100ml) | | Anywhere in the country | <1000 |
| <p>*Metro Cities are Mumbai, Delhi, Kolkata, Chennai, Bengaluru, Hyderabad, Ahmedabad and Pune.</p> <p>Note :</p> <p>(i) All values in mg/l except for pH and Fecal Coliform.</p> <p>(ii) These standards shall be applicable for discharge into water bodies as well as for land disposal/applications.</p> <p>(iii) The standards for Fecal Coliform shall not apply in respect of use of treated effluent for industrial purposes.</p> <p>(iv) These Standards shall apply to all STPs to be commissioned on or after the 1st June, 2019 and the old/existing STPs shall achieve these standards within a period of five years from date of publication of this notification in the Official Gazette.</p> <p>(v) In case of discharge of treated effluent into sea, it shall be through proper marine outfall and the existing shore discharge shall be converted to marine outfalls, and in cases where the marine outfall provides a minimum initial dilution of 150 times at the point of discharge and a minimum dilution of 1500 times at a point 100 meters away from discharge point, then, the existing norms shall apply as specified in the general discharge standards.</p> <p>(vi) Reuse/Recycling of treated effluent shall be encouraged and in cases where part of the treated effluent is reused and recycled involving possibility of human contact, standards as specified above shall apply.</p> <p>(vii) Central Pollution Control Board/State Pollution Control Boards/Pollution Control Committees may issue more stringent norms taking account to local condition under section 5 of the Environment (Protection) Act, 1986".</p> | | | | |

[F. No. Q-15017/2/2008-CPW]

ARUN KUMAR MEHTA, Addl. Secy.

Note : The principal rules were published in the Gazette of India, Extraordinary, Part II, Section 3, Sub-section (i) *vide* number S.O. 844 (E), dated the 19th November, 1986 and subsequently amended *vide* the following notifications, namely:—

S.O. 433 (E), dated the 18th April 1987; G.S.R. 176(E) dated the 2nd April, 1996; G.S.R. 97 (E), dated the 18th February, 2009; G.S.R. 149 (E), dated the 4th March , 2009; G.S.R. 543(E), dated the 22nd July, 2009; G.S.R. 739 (E), dated the 9th September, 2010; G.S.R. 809(E), dated the 4th October, 2010, G.S.R.

215 (E), dated the 15th March, 2011; G.S.R. 221(E), dated the 18th March, 2011; G.S.R. 354 (E), dated the 2nd May, 2011; G.S.R. 424 (E), dated the 1st June, 2011; G.S.R. 446 (E), dated the 13th June, 2011; G.S.R. 152 (E), dated the 16th March, 2012; G.S.R. 266(E), dated the 30th March, 2012; and G.S.R. 277 (E), dated the 31st March, 2012; and G.S.R. 820(E), dated the 9th November, 2012; G.S.R. 176 (E), dated the 18th March, 2013; G.S.R. 535(E), dated the 7th August, 2013; G.S.R. 771(E), dated the 11th December, 2013; G.S.R. 2(E), dated the 2nd January, 2014; G.S.R. 229 (E), dated the 28th March, 2014; G.S.R. 232(E), dated the 31st March, 2014; G.S.R. 325(E), dated the 7th May, 2014; G.S.R. 612, (E), dated the 25th August 2014; G.S.R. 789(E), dated the 11th November 2014; S.O. 3305(E), dated the 7th December, 2015; S.O.4(E), dated the 1st January 2016; G.S.R. 35(E), dated the 14th January 2016; G.S.R. 281 (E), dated the 7th March, 2016; G.S.R. 496(E), dated the 9th May, 2016; G.S.R.497(E), dated the 10th May, 2016; G.S.R.978(E), dated the 10th October, 2016; and lastly amended vide notification G.S.R. 1016(E), dated the 28th October, 2016.

Overview of Faecal Sludge and Septage Management(FSSM)

National Consultation

Private Sector Engagement in FSSM
22nd Sept, 2017



Partners of the Platform

- 10 Institutes
- 7 Nodal National AMRUT Training Institutes
- Experts and Researchers, Universities
- Capacity Building on all aspects of FSSM



Urbanisation

Urbanization trends in India

- Urban Population - 377 million (31.16 %)
- Total number of urban centers: 7935
- Statutory Towns (4041 nos.) are administered by Urban Local Bodies
- Census towns have trebled over a decade. Increase in Statutory Towns has been much slower.

| Type of Urban Units | 2011 Census | 2001 Census |
|-------------------------|-------------|-------------|
| 1. Towns: | 7,935 | 5,161 |
| (a) Statutory Towns | 4,041 | 3,799 |
| (b) Census Towns | 3,894 | 1,362 |
| 2. Urban Agglomerations | 475 | 384 |

Census Towns are administered via rural administration – provision of urban services not mandatory in these areas

What is Faecal Sludge ...

"Faecal sludge is the solid or settled contents of pit latrines and septic tanks.

Faecal sludge (FS) comes from onsite sanitation system such as pit latrines, non-sewered public ablution blocks, septic tanks, aqua privies, and dry toilets."

Source : http://amrut.gov.in/writereaddata/FSSM_Policy_Report_23Feb.pdf

What is Septage ...

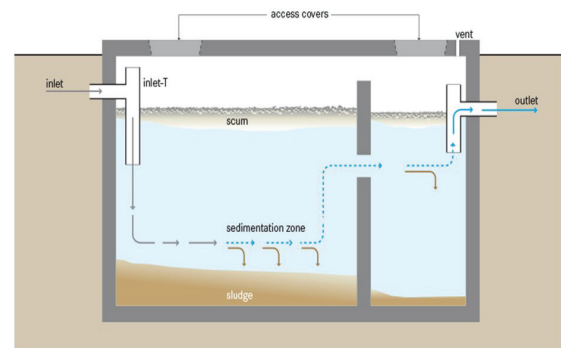
"It is the liquid and solid material that is pumped from a septic tank, cesspool, or such onsite treatment facility after it has accumulated over a period of time.

Septage is the combination of scum, sludge, and liquid that accumulates in septic tanks".

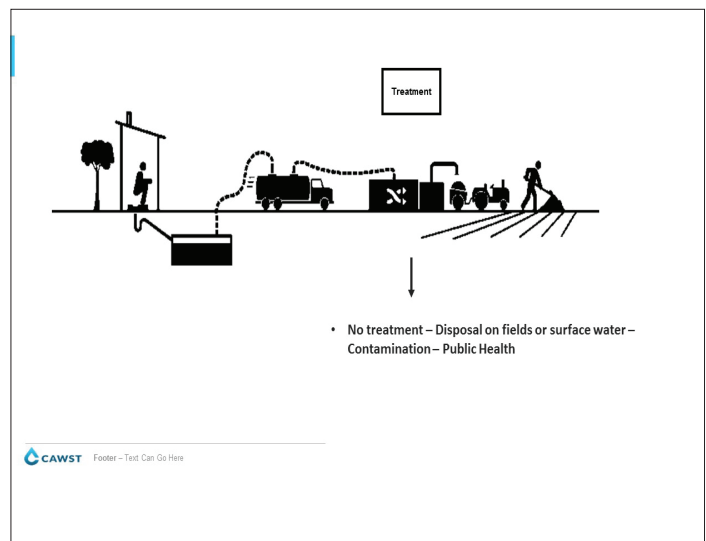
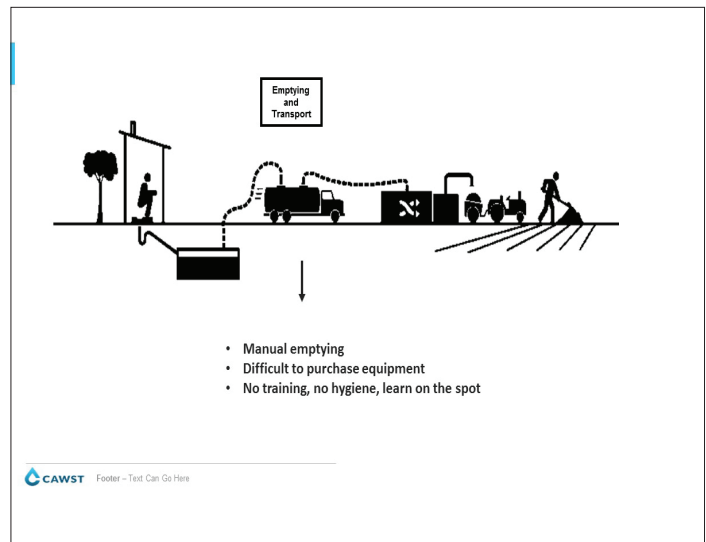
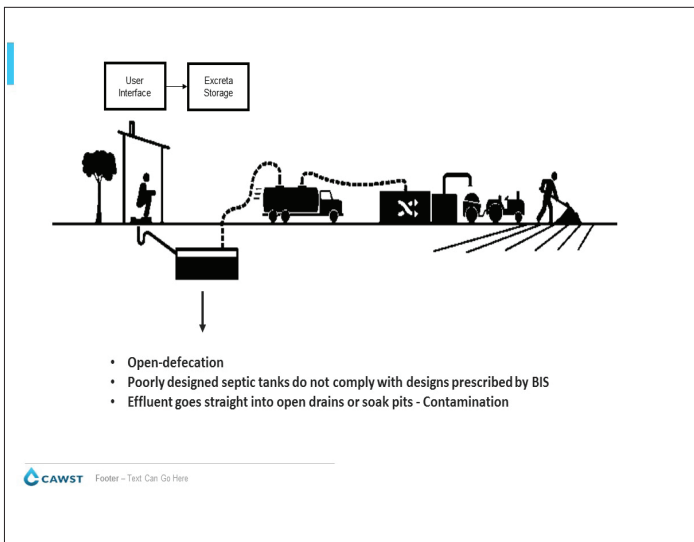
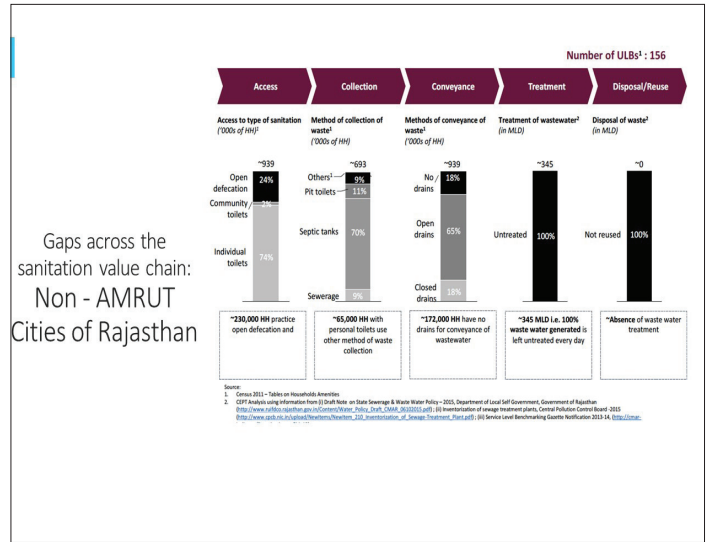
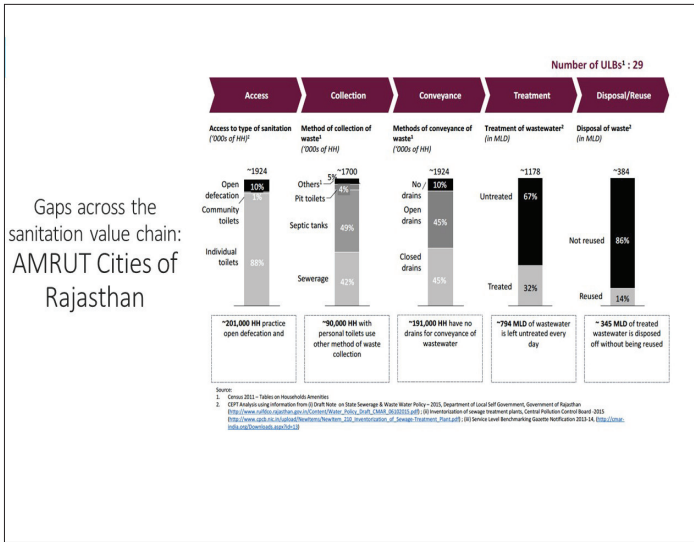


Source : http://amrut.gov.in/writereaddata/FSSM_Policy_Report_23Feb.pdf

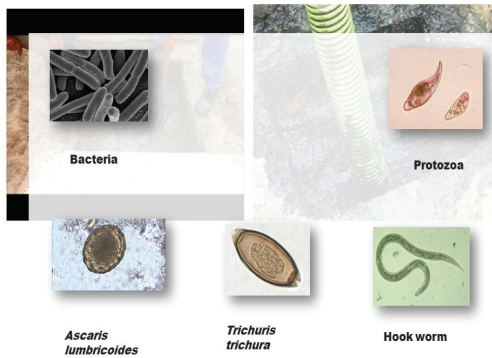
Septic Tank



CAWST Footer – Text Can Go Here



THIS is what is in SEPTAGE



Recognition of FSSM

- D **National Policy on FSSM** by MoHUA, Gol
- D **National declaration on Septage Management** by MoHUA, Gol
- D One of the major **thrust areas of AMRUT**
- D **Primer on septage Management and Rapid Assessment tool** for estimating **budget requirements for FSSM**
- D **Septage Management Advisory** of Government of India provides references to CPHEEO guidelines, BIS standards, and other resources for preparing SMP / FSSM plan.



Swachh Bharat Mission (SBM) - Urban

Mission Objectives

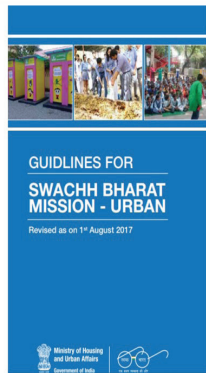
- Elimination of open defecation
- Eradication of Manual Scavenging

SBM (Urban) aims to ensure that

- a. No households engage in the practice of open defecation;
- b. No new insanitary toilets are constructed during the mission period, and
- c. Pit latrines are converted to sanitary latrines.

Mission Components

- Household toilets, including conversion of insanitary latrines into pour-flush latrines
- Community toilets
- Public toilets and urinals
- Solid Waste management



Source: http://www.swachhbharatmission.in/8080/sbm/content/writer/readdata/SBM_Guideline.pdf

Centre and States : Facilitative FSSM climate



Eight states have adopted state level policy/guidelines in line with the National Policy on Faecal Sludge and Septage Management (FSSM)

- Maharashtra
- Odisha
- Rajasthan
- Tamil Nadu
- Gujarat
- Jharkhand
- Andhra Pradesh
- Himachal Pradesh

FSSM in AMRUT SAAPs

- Of the 36 submitted SAAPs, 26 states/UTs have explicitly identified FSSM related projects
- Five marks allocated to State FSSM policy under AMRUT reforms evaluation
- Coordinating and tracking states for issuance of policy guidelines at the state level

Proposals received for Funding from States/Cities

| Septage Component | States | Cities | Total Project Cost (Rs. crores) |
|--|--------|--------|---------------------------------|
| Transportation from septic tanks (With link to Sewerage Systems or Septic Systems) | 17 | 67 | 5,878.6 |
| Decentralized or Integrated Septage Management Systems | 18 | 27 | 496 |

| Year | States | Total Project Cost (Rs. Crore) |
|--|--------|--------------------------------|
| 2014-15 (Septage Projects before AMRUT Mission) | 3 | 912.5 |
| 2015-18 (Septage projects after launch of AMRUT Mission) | 26 | 7,299.7 |

Annexure 8

FECAL SLUDGE MANAGEMENT IN TAMIL NADU

TECHNICAL SUPPORT UNIT: **iihs**™
INDIAN INSTITUTE FOR HUMAN SETTLEMENTS

IN ASSOCIATION WITH: **Keystone** Consortium for Sustainable Sanitation & Resource Recovery Society

URBANISATION IN TAMIL NADU

| No. | Type of ULBs | Numbers | Population | Households |
|-----|----------------|------------|-------------------|------------------|
| 1 | Corporation | 12 | 13,461,184 | 3,457,130 |
| 2 | Municipality | 124 | 10,048,944 | 2,568,088 |
| 3 | Town Panchayat | 528 | 8,090,847 | 2,109,317 |
| | Total | 664 | 31,600,975 | 8,134,535 |

Scale: 1:2,300,000

TAMIL NADU'S TOTAL SANITATION MISSION : MUZHU SUGADHARA TAMIZHAGAM

Strong Commitment at State Level
First State to issue **Operative Guidelines** (Sept, 2014)

- Design & Construction of Septic Tanks
- Septic Tank Pumping & De-Sludging
- Septage Transportation
- Treatment & Septage Disposal
- Fees/Charges for Collection, Transportation & Treatment
- Information Education & Communication
- Record Keeping & Reporting (MIS)

POTENTIAL SITE FOR CO-TREATMENT FACILITIES

| S.no. | Potential Sites for Co-Treatment | Numbers |
|-------|--|-----------|
| 1 | Sewage Treatment Plants site (existing + under construction) | 80 |
| 2 | Decanting Facilities away from STP | 8 |
| | Total | 88 |

Scale: 1:2,300,000

CLUSTER APPROACH SERVICE AREA ANALYSIS

Feasibility of transport of FS from surrounding area

Scale: 1:2,300,000

SCALE OF MARKET IN TAMIL NADU

| S.no. | Type of ULBs | STP Cluster | SWM/RRP Cluster | Individual |
|-------|-----------------|-------------|-----------------|------------|
| 1 | Corporation | 12 | 0 | 0 |
| 2 | Municipalities | 56 | 68 | 0 |
| 3 | Town Panchayats | 103 | 91 | 334 |
| | Total | 171 | 159 | 334 |

Scale: 1:2,300,000

Existing FSTPs in Tamil Nadu



Karungizhi

21 KLD

Trichy

30 KLD



Near Coimbatore

25 KLD



SUPPORTING POLICY ENVIRONMENT

- GoTN committed to sanitation and FSM
- Three FSTPs under construction- one by GoTN initiative
- Initial approvals for govt. / multilateral funding
- Govt. keen to enable private sector –open, competitive process
- Experience of various financing mechanisms e.g. pooled funds

Annexure 9

Faecal Sludge and Septage Management Scale in Maharashtra

performance assessment system
C-WAS, CEPT University, Ahmedabad

FSSM requirements in India's 3rd of the most urbanized state . . .

384 Cities with 31 million population requiring FSSM

| Category | Number of Cities | Population |
|-------------------------------|------------------|----------------------------------|
| Large city partial | 22 | 16.6 Mn |
| Medium-small cities near STPs | 36 | 3.1 Mn |
| Small city partial | 19 | 1.2 Mn |
| Citywide FSSM - medium | 56 | >50,000 Pop. (5.8 Mn population) |
| Citywide FSSM - small | 251 | <50,000 Pop. (4.4 Mn population) |

Holistic framework ... Beyond toilets !!!

| Category | Sanitation Coverage | FSSM Focus |
|----------------------|---------------------|---------------|
| ODF | 100% | None |
| ODF+ | >80% / <20% | High priority |
| State to be ODF soon | >95% / <5% | Next focus |

Conducive environment for FSSM . . .

Financial allocations for moving towards ODF+ . . .

| Class | ODF Cities (Rs.) | Swachh Cities (Rs.) | Linked to Sustainability |
|---------|------------------|---------------------|--|
| A Class | 2 Cr. | 2 Cr. | 30% released on first validation, if positive |
| B Class | 1.5 Cr. | 1.5 Cr. | 70% released on 2nd validation after a six months, if positive |
| C Class | 1 Cr. | 1 Cr. | |

Incentive Grants ranging from 1 Cr to 2 Cr small and medium towns . . .

Utilisation of funds for Sustainability and moving towards ODF+ and ODF++

50% of 14th FC funds to be utilized for sanitation . . .

Scheduled desludging services in towns provided by private sector, financed through differential taxation and paid to contractor through escrow mechanism . . .

2-3 trucks to desludge ~ 4000 septic tanks annually

Moving from a consumer complaint system to regular service oriented system

2 trucks to desludge ~ 2000 septic tanks annually

Private sector involved in setting up septage treatment plant in cities . . .

Exploring Package septage treatment technologies . . .

- Cities had floated EoI for package septage treatment plants
- Various technology providers are there, who provide PACKAGE treatment plants for treating of septage
- Technology used - MBBR, Master bio-tank (DRDO), RMBR and various others patented technologies.

Both cities are setting up 70 cum/day septage treatment plant


Annexure 10



Fecal Sludge Management




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CONSORTIUM OF DEWATS DESSIMINATION SOCIETY (CDD)

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Policy Goals of Sanitation

Advantage & Disadvantage of Toilets & Pits

1. **Public Health** : Especially Children
2. **Environment** : Especially lakes
3. **Inconvenience** : Visual and smell
4. **Safety** : Especially for women


One gram of feces has:
1 cr viruses
10, Lac Bacteria

↓

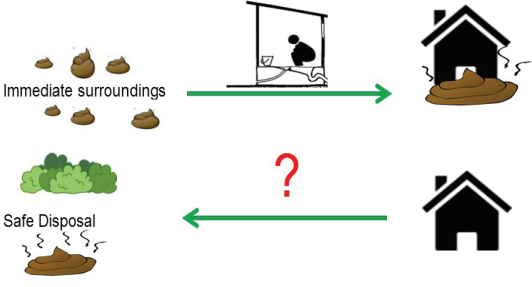
250 children die every day in India due to disease caused by improper fecal disposal

- Toilet (without treatment) addresses successfully the last two problems **but unintentionally** increases the first two
- Sanitation problem doesn't end, but starts after building toilets + (urbanization)

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Introduction



Immediate surroundings → House → Safe Disposal

Toilets without proper collection/treatment system will **INCREASE** sanitation problem

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Save our children




250 children die from unsanitary defecation practices, every day

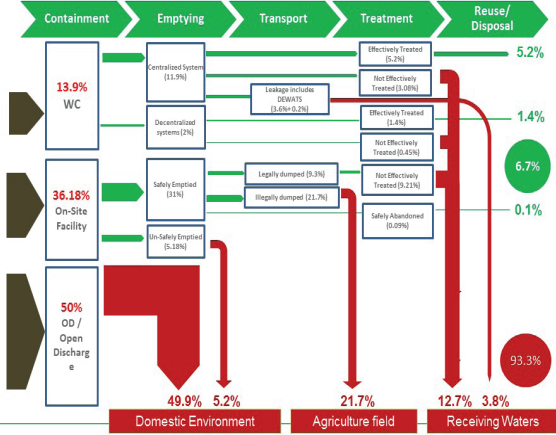
Proof of toilet alone increasing the sanitation problem
Study by Christian Medical College Vellore

Children in households with poor FSM had 3.78-10 times higher prevalence of diseases (enteric infection) when compared with children in other households, **even those without toilets.**

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Shit Flow Diagram : India



| Stage | Method | Percentage |
|----------------|-------------------------|------------|
| Containment | WC | 13.9% |
| | On-Site Facility | 36.18% |
| | OD / Open Discharge | 50% |
| Emptying | Centralized System | 11.9% |
| | Decentralized systems | 2% |
| Transport | Leakage includes SEWATS | 13.8% |
| | Legally dumped | 9.3% |
| Treatment | Effectively Treated | 5.2% |
| | Not Effectively Treated | 10.6% |
| | Safety Abandoned | 30.9% |
| Reuse/Disposal | Domestic Environment | 49.9% |
| | Receiving Waters | 12.7% |

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The Problem?



Disposal of Fecal Sludge is done
 55% in Agriculture Farms
 25% in Water Bodies
 20% in Open Land

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Under Ground Drainage & Centralised Sewage
 Treatment Plant is the best –
BUT

The money for building and running the system is
 scarce

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8



What is FSM (Faecal Sludge Management)

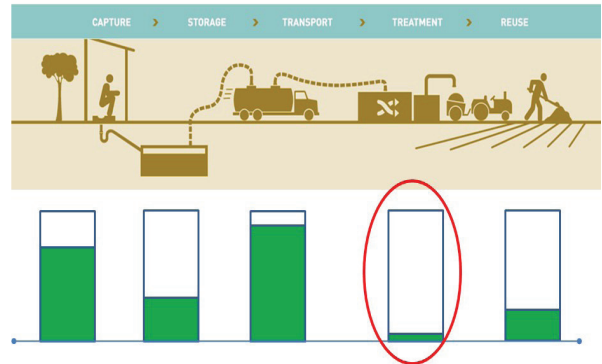
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9



FSM

By 2020, 70% of urban toilets will have on-site storage (tanks, pits)



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Our FSM Initiative in Devanhalli Has achieved



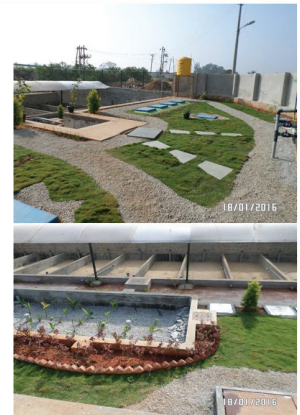
Odourless | Almost zero Electricity* | Safe | 100% Re-use

* Only for Maintenance

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The Fecal Sludge Treatment Plant At Devanhalli



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Before FSM initiative and After FSM initiative

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Path breaking project

- We can make India's first *end to end – Fecal Sludge Management System* in one of the chosen towns.
- It will cost – Capex: INR 1000 per person – for town of 50,000 people ~ Rs. 5 Cr
- Opex would be around Rs. 200 per household/Year
- We can complete project in 6 months
- It will be India's first-town having
 - Schedule Desludging
 - Septic/tank maps/GIS
 - Service contract
 - Cheapest sanitation project in India

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Support Required from ULB

- Land and clearance for setting up FSTP
- Resolutions from ULB
- Service contract for O & M
- Access to ULB data
- PCB & Town Planning : Consent for establishment

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CDD : Introduction

- Treating Wastewater
- Health, Environ, BoP QoL
- Robust, Simple Technology:
 - Near-Zero Electricity
 - Low O&M Cost

| | |
|-------------------------------|-----------------------------------|
| 1. Technical Training: | 5,000+, MDW&S Resource Centre |
| 2. Advisory / R&D: | CSP, Nexus, Policy |
| 3. FSTP and FSM : | 400+ DEWATS, 10+ FSTPs (incl WIP) |

What cannot be maintained, should not be built

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Our Services

| | | |
|--|--|--|
| DPR : FSTP & Pre-Feasibility | Truck operations : Cesspool Vehicle service Contract | Construction & Post construction support |
| Policy Support : ULB level Resolutions | Contract Management : Bid Support | Solid waste Management : End-to-end design |
| Town Scale Planning : CSP | Capacity Building : Engineers & Lawmakers | Waste water, Grey water & Lake Management |

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