Mapping faecal waste and mainstreaming citywide sanitation in Ganga basin - Uttar Pradesh (U.P)

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BACKGROUND: India journey - Sewage / Sewerage Focus to Sanitation

NUSP: Provided for Preparing City Sanitation Plan (CSPs)

CSE Report & SFD Promotion Initiative

2008

Policy Paper on Septage Management, prepared by CSE to assist MoUD.

2011

Advisory note on septage management, Ministry of Urban Development, GOI.

2013

Swachh Bharat Mission

Atal Mission for Rejuvenation and Urban Transformation

ODF

CSE-BMGF partnership to upscale citywide sanitation in Ganga Basin through City Sanitation Plans.

2016

National Policy on Faecal Sludge and Septage Management

2017

CSE conducts deep dive surveys in target cities of Uttar Pradesh and Bihar to develop CSPs.

FSM4 2017

SBM - ODF ++

NFSSM

CSE, CPR, CEPT, ASCI and other organisations come together to make an alliance

SANI-KIT

SANIKIT, developed by CSE

2018
Background

- In FSM 4, 2017, CSE had presented how SFDs can help in better understanding the existing sanitation scenario of cities.
- To understand the gaps in sanitation across Ganga basin, Shit Flow Diagram for 66 major cities in the state of Uttar Pradesh are developed.
- These SFDs are used to develop the state level SFD and basin level SFD.
- Aim of the study is to mobilize state level functionaries to implement FSM for achieving citywide sanitation.
In this study, CSE concentrated on the state of Uttar Pradesh (U.P).
Methodology

- State was divided into seven zones of 8-10 cities
- A team of two researchers spent 3-4 days in the city
- Data was collected using SFD PI methodology
- An SFD was developed for each city along with lite report
- Based on the population of the city, state was divided into four clusters
- Using all the collected data SFD for the state as well as basin was developed
Type of Containment Systems in select 66 cities

- 37% Septic Tank connected to open drain
- 49% Fully Lined Tank connected to open drain
- 4% Lined pit with semi-permeable walls and open bottom
- 2% Fully lined tank with no outlet
- 2% Fully lined tank connected to open ground
- 2% Pit latrine
- 2% Septic Tank connected to soak pit
- 3% Lined tank with impermeable walls and open bottom
Type of Containment Systems
Emptying practices in select 66 cities

- Break up of service providers:
  - 79% Private
  - 21% Government

- Type of vehicles prevalent:
  - 91% Tractor mounted
  - 9% Truck mounted

Type of emptiers prevalent:
- Manual emptiers: 10313
- Mechanical emptiers: 493
Type of Emptying
Transportation
Extent of Sewage and faecal sludge treatment

53% Sewage not treated
47% Sewage treated

6% FS treated
94% FS not treated
Treatment and Disposal
Assessment of Faecal Sludge and Septage Management in Uttar Pradesh

66 Cities → 4 Clusters
C1: Pop. > 1 million
C2: Pop. .5 to 1 million
C3: Pop. .12 to .5 million
C4: Pop. < .12 million
Cluster 1: Large cities (More than 1 Million)

- 47% Sewerage Coverage
- 41% connected to OSS
- 38% OSS emptying 15-20 yrs
- FS discharge at PS or STPs
- 43 STPs in the Cluster:
  - Capacity - 1952 MLD
  - Receive - 1532 MLD
Cluster 2: Medium cities (.5 - 1 million)

- 72% dependent on OSS with 60% overflowing into drains
- 38% OSS emptying 15 -20 yrs
- Majority of STPs: interception and diversion of open drains
- 11 STPs in the cluster
- Capacity - 230 MLD
- Receive - 168 MLD
Cluster 3: Small and medium cities (0.12 - 0.5 million)

- 84% depended on OSS; with 75% overflowing into drains
- 28% well designed septic tanks
- 46% OSS emptied 15-20 yrs
- 5% Open Defecation
- Total 10 STPs in the cluster: Cater to excreta of only 2% population
Cluster 4: Small cities (less than 0.12 million)

- 81% dependent on OSS; with 70% overflowing in drains
- 9% Open Defecation
- 40% pop. OSS emptied: 15 - 20 yrs
- 97% of tankers are tractor mounted
- STPs in only 3 out of 21 cities in the cluster
Cluster 5: Select cities along the River Ganga

- 40% Sewerage Coverage,
- Excreta treated 27%.
- 38% population connected to OSS; with 24% overflow into drains
- 19% directly discharging in drains
- **18 STPs in the cluster:**
- Capacity 826.5 MLD
- Receive - 655.7 MLD
Uttar Pradesh (Urban), India
SFD Level: 2 - Intermediate SFD

Containment

Offsite sanitation
- WW contained: 29%
- WW not contained: 8%
- SN not contained: 25%
- FS contained: 14%
- FS not contained: 18%

Onsite sanitation
- FS contained - not emptied: 7%
- FS contained - emptied: 7%
- FS not contained - emptied: 8%

Open Defecation
- 4% Open defecation

Emptying

- WW contained delivered to treatment: 17%

Transport

- 16% WW treated
- 2% SN treated
- 7% FS contained - not emptied
- 2% FS treated

Treatment

- 27%
- 73%

Local area Neighbourhood City

Key: WW: Wastewater, FS: Faecal sludge, SN: Supernatant
- Green: Safely managed
- Red: Un Safely managed

Note: This SFD is done based on study of 66 towns and cities, representing 60% of urban population in UP.
To know more about SFDs, visit https://sfd.susana.org
Key Observations

More than **60%** of the total population is dependent on onsite sanitation systems like septic tank and pit latrine. Out of which, the excreta of **4%** of the population is treated.

Septic tank effluent (overflow) of **50%** of the population is discharged in open drains, of which, **2%** is treated by tapping of nullahs and drains.

**29%** of the population is connected to sewerage network. Of which, sewage of **16%** of the population is treated.

More than **80%** of the sewerage network in state is found in 7 cities (out of 635).

Sanitation provision through sewer system increases with the increase in population of cities.

Excreta of **8%** of the population is discharged directly in open drains.

4% of the population still defecates in the open.

Excreta of **27%** of the total population is safely managed. 7% of which is safely stored in containment systems.

*No city is 100% sewered*

*This study is done based on data collected by CSE in October, 2018*
## Proposed action plan for cities (Cluster 1, 2 & 3)

<table>
<thead>
<tr>
<th>Category</th>
<th>Actions</th>
<th>Year 1</th>
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<tbody>
<tr>
<td><strong>CLUSTER 1 &gt; 10 Lakh population</strong></td>
<td>A1: Baseline Survey &amp; CSTF</td>
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<td>A6: Co-Treatment (existing STP)</td>
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<td>A12: Safe OSS in all HHs</td>
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<td>A13: Co-Treatment (new STPs)</td>
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<td>A14: Geo-Tagging</td>
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<td>A15: Ban manual Scavenging</td>
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<td>A16: 100% FS treatment</td>
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**Legend:**
- Green: Action in progress
- Red: Action completed
- Orange: Action not yet started
## Proposed action plan for cities (Cluster 4)

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- **A1**: Baseline Survey & CSTF
- **A2**: FSM Plan
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- **A4**: CSP Prep.
- **A5**: Trenching
- **A6**: Co-Treatment (existing STP)
- **A7**: FSTP (demand)
- **A8**: Cap. Building
- **A9**: Safe C&T of FS
- **A10**: Sch. Desludging
- **A11**: DWWTs
- **A12**: Safe OSS in all HHs
- **A13**: Co-Treatment (new STPs)
- **A14**: Geo-Tagging
- **A15**: Ban manual Scavenging
- **A16**: 100% FS treatment
Proposed FSSM approach for urban areas in Uttar Pradesh

Full FSSM:
Full FSSM with dedicated treatment facility.

Partial FSSM:
Combined FSSM and Sewerage system; Co-Treatment, DEWATS, Onsite Treatment systems, FSTP where necessary.

Gap Filling FSSM:
Complete Sewerage System; FSSM for non-sewered pockets; Treatment at Co-Treatment or FSTP
Updates as on date:

- Govt. of India launched national flagship programme AMRUT sub-mission linking Citywide Sanitation / FSM to river pollution abatement for Ganga basin town/cities.
- 33 cities have taken credible action towards citywide sanitation.
- 52 FSTPs / Co-treatment of FS at STPs – public funded projects by govt. are in tender stage.
- 4 cities declared ODF ++ in 2019 in the state.
- State task force to mainstream city wide sanitation and effective FSM set up by Uttar Pradesh.
SANi-KiT
PREPARING A CITY SANITATION PLAN

WHAT IS SANi-KiT?
Sanit-KiT is a web-based portal with a comprehensive collection of essential tools to enhance the capability of urban local bodies in India to prepare a high quality, city-owned, city sanitation plan.

WHAT IS A CITY SANITATION PLAN?
A city Sanitation Plan is a vision document on sanitation which consists of strategic planning processes in order to achieve the objectives of citywide sanitation with a 25-30 year horizon.

WHY CSP
A city Sanitation Plan is a vision document on sanitation which consists of strategic planning processes in order to achieve the objectives of citywide sanitation with a 25-30 year horizon. For more information, visit this page.

www.cseindia.org/sanikit/index.html
MOUNT is one stop shop for sustainable sanitation solutions for un-sewered areas

Background
Nearly 61% of the global population (4.5 billion people) lack safely managed sanitation services (use of a toilet or latrine that leads to treatment or safe disposal of excreta) In a country like India only 40% of urban households are connected to sewerage network, read more

About MOUNT
MOUNT is an aggregator platform for various sustainable technologies, encouraging and disseminating knowledge and good practices for wastewater management. On this platform the information you can get is on 4 categories of technologies - 19 technologies (read more)

How To Use MOUNT
Depending on your need you can search on MOUNT on the basis of technology, sub-technology or case study. In case you are confused between the meanings of the terms use the glossary, in case you are not, you can move on to search read more
Managing Septage in Cities of Uttar Pradesh

February 11, 2016

According to Census 2011, Uttar Pradesh has an urban population of 44.47 million people – which is 11.79 per cent of the total urban population of the country. The state has 653 urban local bodies (ULBs) including 17 Municipal Corporations (Nagar Nigam), 198 Nagar Panchayats and 438 Nagar Panchayats. The ULBs, with their limited local resources and state support, are responsible for provision of municipal services.

A sanitation snapshot of urban Uttar Pradesh clearly indicates that households with onsite sanitation systems (see Bro. The three pathways) like septic tanks (47 per cent) far exceed those with sewer connections (28 per cent). According to the State Annual Action Plan 2012, most cities have reported more than 80 per cent coverage of latrines, but out of the 60 AMRUT cities, 34 have reported zero efficiency regarding collection and treatment of sewage.

This study is available in two volumes. Volume 1, 2nd edition (Managing Septage in Cities of Uttar Pradesh- An analysis of the sanitation chain in 66 cities, through SDIs) briefly describes about each stage of sanitation chain, analysis through cluster SDIs and also proposes action plan. Volume 2, 2nd edition (Assessment of excreta management: Factsheets for 66 cities in Uttar Pradesh), on the other hand
The SFD Promotional Initiative

This SFD Promotion Initiative is supported by the Bill & Melinda Gates Foundation and managed by GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH) under the umbrella of the Sustainable Sanitation Alliance (SuSanA). Implementing partners of the Initiative are: the Centre for Science and Environment (CSE, India), the Swiss Federal Institute of Aquatic Science and Technology’s Department of Sanitation, Water and Solid Waste for Development (Eawag/Sandec), the University of Leeds (UofL), Loughborough University’s Water, Engineering and Development Centre (WEDC) and the former Water and Sanitation Program of the World Bank (current Global Water Practice).

https://sfd.susana.org/about/the-sfd-promotion-initiative
Thank you