FAECAL SLUDGE AND SEPTAGE MANAGEMENT (FSSM) in Jhansi (U.P.)

April 25 - 27, 2023
Structure of Presentation

Contents...

• An Overview & City Profile
• Challenges and IEC
• Highlights of FSTP
• Timeline and details
• Recycle and Reuse
• Up-scaling
• Way forward

Working towards a paradigm shift in the global south…
Jhansi lies on the plateau of central India, an area that is dominated by rocky strata with some slope. The geographical conditions make it difficult to lay an underground sewerage network.

<table>
<thead>
<tr>
<th>Population (As per - 2011 Census)</th>
<th>505693 (current 660000 approx.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Area</td>
<td>159 Sq. Km.</td>
</tr>
<tr>
<td>Total Ward</td>
<td>60</td>
</tr>
<tr>
<td>Literacy Rate</td>
<td>75.05</td>
</tr>
<tr>
<td>No Of Household</td>
<td>1,24,359 Approx.</td>
</tr>
<tr>
<td>No of Household Toilets</td>
<td>1,05,706 Approx.</td>
</tr>
<tr>
<td>No. of CT/PT Toilet</td>
<td>57</td>
</tr>
</tbody>
</table>
Once the construction started, the contractor faced protests from the local residents. The residents had a concern that the plant could create an unhealthy, foul-smelling and unlivable environment in their area. To address this issue, Jhansi Nagar Nigam (JNN) officials, together with the contractor, started a massive door-to-door Information, Education and Communication (IEC) campaign to raise awareness about the plant, presenting the example of the successful Devanahalli FSTP, Bengaluru Rural. Nagar Nigam officials did a series of group meetings with society members and elected representatives.

18 KLD Faecal Sludge Treatment Plant, Jhansi
With a park for citizens
## Faecal Sludge Generated in Jhansi

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Household in Jhansi City</th>
<th>per Year Per capita Faecal Sludge Generated</th>
<th>Total Faecal Sludge Generated in 1 Year</th>
<th>Total Faecal Sludge Generated per day</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1,24,359</td>
<td>0.273 KL</td>
<td>136173 KL</td>
<td>124.359 KLD</td>
</tr>
</tbody>
</table>

Note – Average 0.250 LTS per day per capita generated  
Household size 04 Members

### Last Three Month - FSTP Data

<table>
<thead>
<tr>
<th>Month</th>
<th>Household Septic Tank</th>
<th>No.s of Trip</th>
<th>Capacity of Vehicle</th>
<th>Total Faecal Sludge Collected &amp; Treated</th>
<th>Waste Water Treated</th>
<th>Compost Generation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan’ 23</td>
<td>67</td>
<td>57</td>
<td>8000 LTS</td>
<td>370000 LTS</td>
<td>333000 LTS</td>
<td>3891 KG</td>
</tr>
<tr>
<td>Feb’ 22</td>
<td>88</td>
<td>97</td>
<td>8000 LTS</td>
<td>470000 LTS</td>
<td>423000 LTS</td>
<td>4794 KG</td>
</tr>
<tr>
<td>Mar’ 22</td>
<td>83</td>
<td>93</td>
<td>8000 LTS</td>
<td>446000 LTS</td>
<td>401400 LTS</td>
<td>4678 KG</td>
</tr>
</tbody>
</table>

Note – 2 faecal sludge collecting vehicles currently operational with total capacity of 8000 L
Challenges

- **Limited public awareness** as well as those masons to design and construct septic tanks as per standard guidelines.
- Lack of public awareness for *emptying septic tank at every 3 years*,
- During installation of plant, the people of the area protested due to *concern of stink* around.
- General practice of public to *get septic tank emptied by sanitary workers* who used to drain septage into the drains which cause serious hazardous issues.
- Lack of adequate number of vehicles which could enter *narrow streets of the city*.
- **Resistance to pay** fees as per norms for cleaning of septic tank.
Working towards a paradigm shift in the global south…
• This **plant is India’s 3rd and Uttar Pradesh’s 1st FSTP**, which **works by biological method** (priority given to nature based systems) in which electricity, fresh water, chemical is not used for treatment, which can **operate continuously for 24 hours**.

• 63.60 Lakh Lts. Of Faecal Sludge treated Per Year.

• Total FS Treated : 198.5 Lakh Liters FS Treated till Date.

• 100 Metric Tones of nutrient rich bio solids being generated per year.

• Recycling more than 3 million liters of water every year.

• India’s one of the few FSTP plants where co-compost unit has been installed.

• Re-use: The purified water and manure on the plant is used into corporation's garden and plantation on the divider.

• Plant has received ISO 9001:2015 Certification.
Highlights of FSTP

• Bill & Melinda Gates Foundation has made a video documentary on this plant with the help of CSE New Delhi
• National Institute of Urban Affairs (NIUA) Government of India and TERI has done 3 day training of engineers of various local bodies of Uttar Pradesh at the plant.
• Testing of treated water and manure is monitored by CSE New Delhi
• In March 2019, the plant was given the “Best Innovation Award in Swachh Survekshan 2019”.
• Helped to get Jhansi city ODF ++ ULB and secured 3rd Position in Swachh Survekshan 2018 in Uttar Pradesh.
• Till date more than 5000 civil body officials have visited the plant including, Shri Durga Shankar Mishra, Chief Secretary, Uttar Pradesh, U.P. Urban Development Principal Secretary Shri Manoj Kumar sir who also praised the working of the plant during his visit.
• In Feb’2017, Municipal Commissioner of Jhansi participated in training program of FSSM in Bangalore

• Preparation and finalization of DPR by CDD Bangalore and RCEUS, Lucknow in 2017 and identification of land.

• Consequently, In Oct’2017, Drafting of FSSM Bye-laws and construction of FSTP.

• In April 2018, the plant is operational (6 KLD)

• In March 2021, another plant is operational (12 KLD)

• On 11th March 2023 Jhansi Municipal Corporation published FSSM Bye-laws.
1. Collection
2. Transportation
3. Planted Drying Beds
4. Dewats
5. Planted Gravel Filter
6. Polishing Pond

JHANSI: FSTP Plant

Working towards a paradigm shift in the global south…
“dry sludge is further processed with culture in composting machines to make it feasible for usage”
“28-30 KLts of reused water is being used from FSTP and STP for watering plants, misting dust and road cleaning purposes”
No. of Faecal Sludge Treatment Plant in Jhansi

<table>
<thead>
<tr>
<th>S.N.</th>
<th>FSTP Name &amp; Location</th>
<th>Capacity</th>
<th>Technology</th>
<th>Capex</th>
<th>Opex</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>FSTP Bijoli</td>
<td>6 KLD</td>
<td>Biological System DEWATS</td>
<td>200 Lacs</td>
<td>24.0 Lacs</td>
<td>Operational</td>
</tr>
<tr>
<td>2</td>
<td>FSTP Bijoli</td>
<td>12 KLD</td>
<td>Biological System DEWATS</td>
<td>307 Lacs</td>
<td>24.0 Lacs</td>
<td>Operational</td>
</tr>
<tr>
<td>3</td>
<td>FSTP Meri Village, Kanpur Road.</td>
<td>32 KLD</td>
<td>Secondary treatment ABR (Anaerobic baffled reactor) and tertiary treatment</td>
<td>521 lacs</td>
<td>125.0 Lacs</td>
<td>Operational</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>wet land</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>50 KLD</td>
<td></td>
<td>1028 Lacs</td>
<td>180.2 Lacs</td>
<td></td>
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</tbody>
</table>
From the above situation analysis, gaps across the sanitation value chain as well as in the management framework can be highlighted as mentioned in the table:

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</thead>
<tbody>
<tr>
<td>Toilets connected to pits/septic tanks or in some instances directly to open drains</td>
<td>The Containment systems a mostly septic tanks</td>
<td>The ULB doesn’t own a desludging truck, the people mostly depend on private desludging operators. High time requirement for desludging. No protocols or regulation on O&amp;M or safety regulation</td>
<td>Partial digestion in septic tank. Direct disposal in the open.</td>
<td>No usage of raw faecal sludge</td>
<td></td>
</tr>
</tbody>
</table>

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</thead>
<tbody>
<tr>
<td>Toilets have to be connected to scientifically designed septic tanks/pits</td>
<td>Training of masons for scientific construction of Septic tanks. Build a awareness regarding improper design and operational procedures</td>
<td>ULB to provide desludging services by buying appropriate desludging vehicle to access majority of the lanes in the town. Training for desludging service providers to scientifically empty septic tanks. Post construction of treatment plant, ensure disposal only happens in the treatment Plant.</td>
<td>Build a faecal sludge treatment plant to effectively treat all the Faecal sludge collected in the town</td>
<td>Spread awareness on us age of end product and elimination of stigma regarding usage of treated faecal sludge. Trainings for farmers using wastewater for safer reuse of treated wastewater and discourage use of raw wastewater</td>
<td></td>
</tr>
</tbody>
</table>
- **32 KLD** project approved cost Rs. 521.33 lakh is being implemented in Meri village near Sanfran City on Kanpur Road.

- Started in **March 2023** FSTP is based on Secondary treatment ABR (Anaerobic baffled reactor)

- **Publishing of by-laws along with IEC activities** to ensure emptying of septic tanks of households at every **03 years**.

- Provision of **heavy penalties on act of improper septage disposal/Draining-off septage in to open area or drains.**

- Finding scope of **making FSSM self sustainable / profitable.**

- Procuring vehicles which could lead to **collection of septage from narrow streets as well.**
बिजौली स्थित फीकल स्ल्ज प्लांट में तीन साल में बन चुकी है 10 टन खाद

पत्रकारों का पहले फीकल स्ल्ज प्लांट की खाद का नहीं हो रहा उपयोग
खाद की गुणवत्ता का बढ़ाने के लिए कार्यवाही संभाली चुरू की पटरी

पत्रकारों में हो सकता है प्रयोग
प्लांट का संचालन कर रही कंपनी के तकनीकी अधिकारी नवीन गुपा बताते हैं कि फीकल स्ल्ज से स्नातकोत्तर खाद में पेशेवरता होता है। जोकी जहाँलाई होता है। जिसमें रूप करने के लिए खाद को प्लांट में सुचारुता होता है। केवल वह मानने से अंकुर समय तक सुचारु में स्नातकोत्तर खाद का प्रयोग का पु 2 से बढ़े पटरी के लिए किया जा सकता है। उन्होंने बताया कि प्लांट में हो सकता है नेपाल की खाद का प्रयोग कर उत्पाद कर सकता है। अपने तक 10 टन खाद बनाई जा चुकी है। साथ ही स्तर के पास की फिल्टर कर पटरी में प्रयोग किया जा सकता है।

राष्ट्रपति और सीएम दे चुके हैं पुरस्कार
राष्ट्रपति ने हाल ही में फीकल स्ल्ज प्लांट की प्रतिष्ठा का पुरस्कार प्रदान कर सकता है। उन्होंने नारा निगम को सम्मान और सीएम दे चुके हैं। इसके बाद भी प्लांट में हो सकते हैं उन्नति के प्रयोग के पीछे निगम की सेवा नहीं हो सकती है।

एनसीटी की महत्वपूर्ण का बड़ी सक्ता है खाद की गुणवत्ता
एनसीटी ने हाल ही में फीकल स्ल्ज पानी को दूर करने के लिए गहराई जारी किया है। उन्होंने तत्कालीन फीकल स्ल्ज का खाद को प्लांट की बढ़ी गुणवत्ता से पुरस्कार प्रदान कर दिया है। इसके लिए नाम निगम को सम्मान और सीएम पुरस्कार दे दिया है। इसके बाद भी प्लांट में हो सकते हैं उन्नति के प्रयोग के पीछे निगम की सेवा नहीं हो सकती है।
Way forward

- Setting up in house test laboratory for diagnose and monitoring of treated water and sludge.
- Provision of heavy penalties on improper septage disposal/Draining-off septage in to open area or drains.
- Finding scope of making FSSM self sustainable / profitable.
- Training of masons for construction of standard septic tanks as per IS 2470.
- Optimizing fleet for collection of septage from narrow streets as well with capacity of 600-800 Lts.
- Enforcing bye-laws and efficient operations to make Faecal Sludge and Septage Management functional, sustainable and inclusive.
Workshops & Visits

Shri Durga Shanker Mishra, Chief Secretary, Government of Uttar Pradesh

Shri Manoj Kumar, Principal Secretary, Uttar Pradesh

Shri Mritunjay Singh, Additional Director, SBM, Uttar Pradesh

Commissioner of Gwalior Municipal Corporation

TERI Team Visit & Training at FSTP Jhansi

Workshop by National Institute of Urban Affairs

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Achievements

ISO Certification

Certificate of Registration

This is to Certify that
Quality Management System of

NAGAR NIGAM JHANSI
FALGAL SLUDGE TREATMENT PLANT AT BIHOLI, JHANSI,
UTTAR PRADESH, INDIA

has been assessed and found to conform to the requirements of
ISO 9001:2015
for the following scope:

Providing services in the field of Fecal Sludge & Septage Management.

Certificate No: 22EQCR6
Initial Registration Date: 16/01/2023
Date of Expiry: 15/01/2026
1st Issue Date: 16/12/2023
2nd Issue Date: 16/12/2024

Award - Best Innovative Technology from Hon. C.M. Shri Yogi Adityanath Ji On 25.12.2018

Best city in Innovation & Best Practices Award in Swachh Survekshan 2019

Working towards a paradigm shift in the global south...
A note of appreciated by Sh. Amrit Abhijat Principal Secretary Urban Development, Uttar Pradesh, Smt. Neha Sharma, Director SBM Uttar Pradesh.
Thank you!

Pulkit Garg (I.A.S.)
Municipal Commissioner
Jhansi Municipal Commissioner
jnnjhansi@gmail.com