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Asia Water Forum 2022

8–11 August 2022 • Online



Focus Area: Productive water in agriculture and the economy

Session Title: Reuse of treated wastewater and sludge from Faecal Sludge Treatment Plants (FSTPs) in Maharashtra, India: Existing and potential practices

Schedule: [10 August 2022 (Wed), 11:00 a.m. - 12:30 p.m. (GMT+08)]

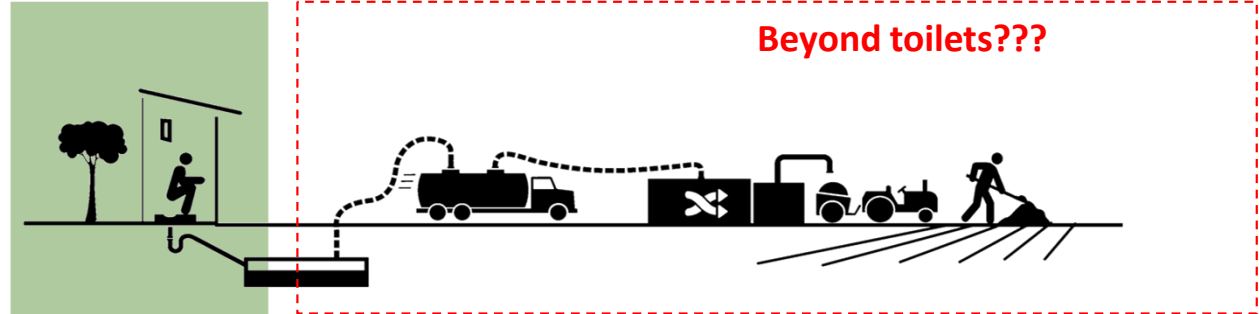
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Need to focus on Onsite Sanitation in India

Access to toilets addressed
by Swachh Bharat Mission
(Clean India Mission)



Only **40%** of urban
population in India is
serviced **with sewerage
systems**.

60% dependent **on-site
sanitation
systems** like septic tanks

Only **30%** of the
waste water
generated in urban
areas currently
treated

Sewerage and STP projects being funded
and initiated but they take **long periods**
to become functional. **Not financially
viable** for smaller towns.

**Meanwhile, Faecal Sludge and Septage
Management (FSSM)** more pragmatic
solution



Septic tank desludging and faecal sludge treatment plants





200 plus Faecal Sludge Treatment Plants (FSTPs) have become operational across various cities of Maharashtra

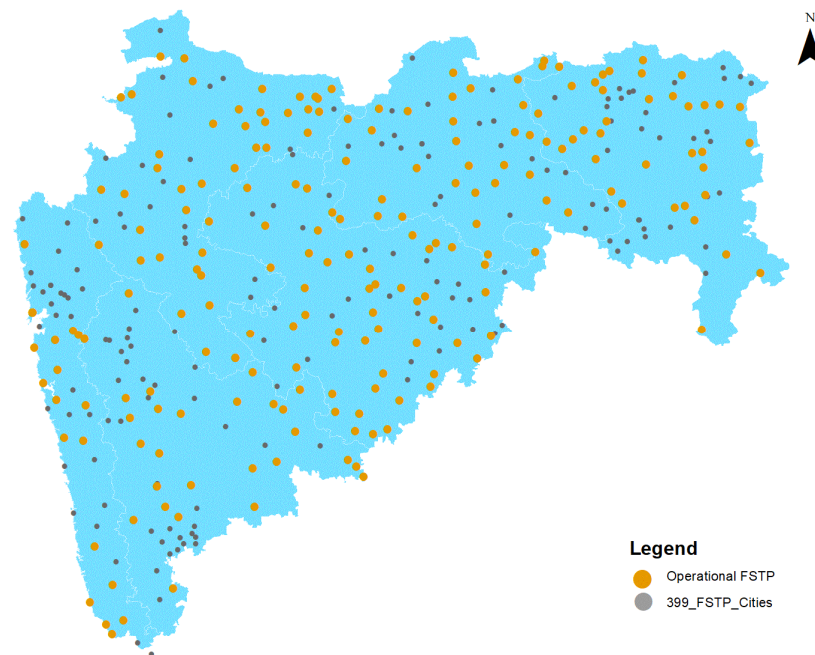
- Maharashtra is one of the most urbanised states in the country

49%
Urban population

414
Cities

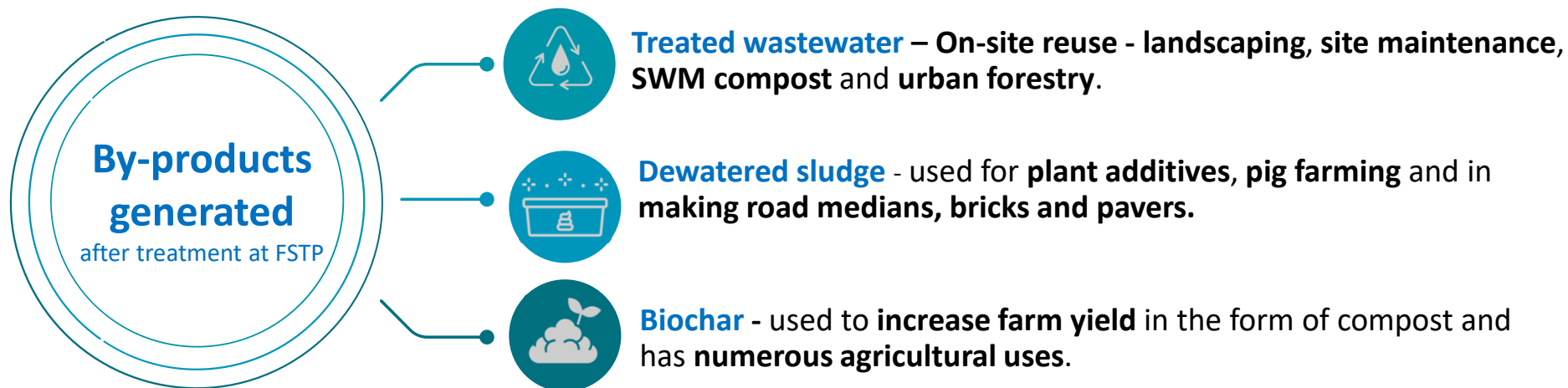
> 50% population
uses on-site sanitation in
small and medium cities

- After becoming ODF in 2017, the state issued a 7-point ODF-Sustainability charter that mentions FSSM as an area of focus.
- As part of FSSM strategy to achieve safe sanitation, the state has **planned 311 FSTPs**.
- With 208 operational FSTPs in the state , there is a high potential for treating wastewater and reusing it for sustainable practices.





Feasible by-products generated and factors affecting reuse selection parameters



* Biochar generation is specific to areas where pyrolysis of septage is possible

Deciding on reuse practices is dependent on the following parameters

Physical		Finance		User Perspective	
 Land Availability	 Quantity of TWW	 Capital Cost	 Human Contact		
 Quality of TWW	 Distance of reuse from FSTP	 O&M Cost	 Demand		



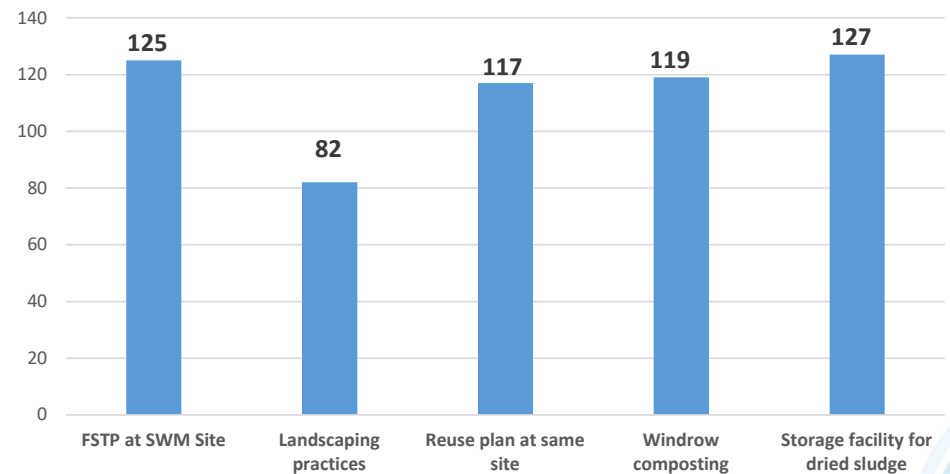


FSTPs use treated by-products mainly in its vicinity

- The FSTPs produce less quantity of treated wastewater in comparison to the Sewage Treatment Plant, so in most of the cities the treated wastewater is utilized in proximity of the FSTPs
- The treated wastewater is used for landscaping and plantation around the FSTP campus.
- The treated sludge is also reused as a compost and is being given to farmers for their use. Mostly the reuse of dried sludge is carried out for non-food crops.



Implementation of sustainable activities at operational FSTPs in Maharashtra



Many cities in Maharashtra have taken up reuse practices

- More than **15 cities** in Maharashtra use the treated wastewater and dried sludge for landscaping and plantation purposes.
- **10 plus cities** have started using the by-product in the form of **compost** and **fertilizer for gardening purposes**.
- The onsite aesthetic developments in the form of landscape and plantations have added great value to the FSTP infrastructure.



- To maintain the **quality of the treated product**, regular monitoring of the treated wastewater samples is being conducted.
- The treated WW quality results are observed to be within or **near to the given standards/limits**.



Sinnar city has reused treated wastewater to build an urban forest

- The FSTP at Sinnar has been innovatively utilized for plantations and landscaping which help in creating green spaces towards environment conservation.
- A landscaping plan which reuses the entire treated wastewater that is generated by the FSTP on-site has been implemented.
- The treated wastewater from the FSTP is used for regularly watering these plants through drip irrigation system.



3530 sq.m Landscaped
around FSTP

50 Persons capacity
Resource center

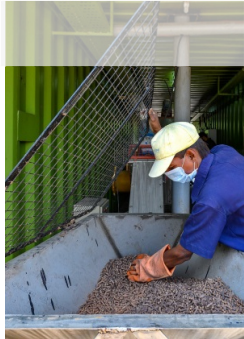
1,050 Saplings planted in
the urban forest

100% Energy efficient
resource center





Closing the loop through Resource recovery



Wai, India



- **Treated water:** Gardening and Landscaping at FSTP and SWM site
- **Biochar:** Exploring uses as a soil enricher for agriculture
- **Thermal Energy:** Being used internally for pasteurization / Drying / Power generation



Sinnar, India



- **Treated water:** Gardening and greening of the FSTP site; Treated water is being used for adjoining urban forest.
- **Biogas:** Exploring uses in the pantry of the resource centre
- **Treated dry solids:** Used for landscaping

~ 35 Million Litres of fresh water has been saved as a result of reusing treated wastewater from the FSTP till now



Wai and Sinnar FSTPs have also become net energy positive

- Wai and Sinnar have solar panels installed and have been connected to the grid. Now, both FSTPs are en-route to becoming “net energy positive

Wai, India

- Consumption of electricity: **1396 Units/month**
- Estimated generation of electricity: **3208 Units/month**
- CO2 emissions mitigated: **16.06 Metric ton/annum**

Potentially **16.06 carbon credits** can be generated

Solar Power generation capacity: 30 KW



Sinnar, India

- Consumption of electricity: **1184 Units/month**
- Estimated generation of electricity: **1258 Units/month**
- CO2 emissions mitigated: **6.3 Metric ton/annum**

Potentially **6.3 carbon credits** can be generated

Solar Power generation capacity: 7.5 KW





Creating Urban Forests to reuse treated water and sequester carbon at Wai and Sinnar

- **44 million liters** of treated waste water reused from the FSTPs at Wai and Sinnar



2500+ trees with **15+ species** are planted and maintained



18,000kg CO₂ eq is sequestered



Learnings from these cities is being scaled up across 300+ FSTPs coming up in Maharashtra with a potential of 2.02 MLD of treated wastewater reused everyday.





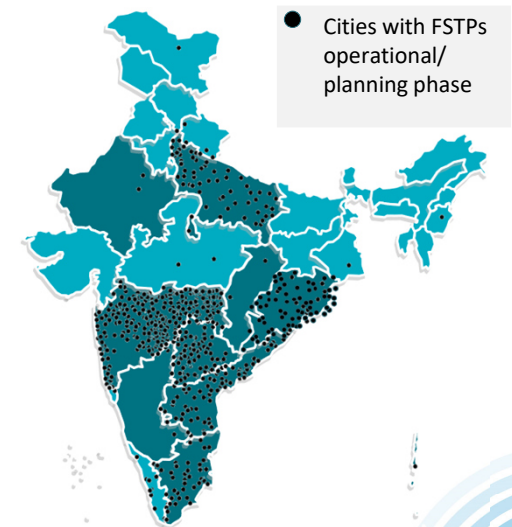
Great potential of replicating the systematic approach wastewater reuse efforts in various cities in India

54% of India faces high to extremely high water stress¹

Only **30%** of the **waste water** generated in urban areas is currently **treated**²

Great potential for reusing treated wastewater as an alternative solution to water shortage

Benefits of treating wastewater from FSTPs and its reuse potentials contributing to SDG 6



THANK YOU

<https://cwas.org.in/>

Swapnika.vadali@cept.ac.in

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FOR WATER
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About us

The Center for Water and Sanitation (CWAS) is a part of CEPT Research and Development Foundation (CRDF) at CEPT University. CWAS undertakes action-research, implementation support, capacity building and advocacy in the field of urban water and sanitation. Acting as a thought catalyst and facilitator, CWAS works closely with all levels of governments - national, state and local to support them in delivering water and sanitation services in an efficient, effective and equitable manner.



cwas.org.in
pas.org.in



cwas@cept.ac.in
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