



# Eco-sensitive Inclusive Sanitation :

## Scaling from cities to State and National level

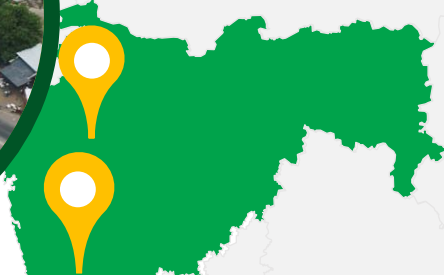
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# Wai and Sinnar... From **URBAN LABORATORIES** to **LIGHT HOUSE** cities

- Wai and Sinnar are cities in Maharashtra having 52,000 and 100,000 population respectively.
- **These cities are representative of 4000+ small and medium cities of India.**



**Sinnar**



**Wai**



**FSSM activities undertaken from 2014. . .**

	Scheduled emptying of septic tanks		Faecal Sludge and Septage treatment facility (FSTP)
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Levying a Sanitation tax to support operations

**& many more...**

	Municipal council commitment and leadership
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	Equitable Services for Slums and Vulnerable areas
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# Improvement in groundwater and river water quality due to scheduled desludging . . .

## Citywide Scheduled Desludging



## Key highlights

- **Inclusive service** – all slum / non slum households covered
- **Sustainable finance** through sanitation tax
- **Performance linked annuity model** for engagement with private sector
- **Digital monitoring** systems

## Improved performance of septic tanks after desludging resulting in improved drain water quality flowing into river



Reduction in Nitrogen, Total Suspended solids and Organic loads in septic tanks effluent after desludging them



Reduced concentration from septic tank effluent helped in reducing the discharge of nitrogen and TSS into the open drains

50-60% decrease in the value of TSS and BOD load in desludged areas



Eventually improving the quality of river water and ground water as the quality of drain water and supernatants are improving

## In 2022, Wai City successfully completed its first 3-year cycle of Citywide Inclusive scheduled desludging

<b>3600+</b> Septic tanks served	<b>6800+</b> Properties covered	<b>95%</b> Acceptance rate of services	<b>19 million</b> Liters of septage treated
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# Eco-sensitive FSTPs setup at Wai and Sinnar. . .

Wai, India



Capacity: 70 KLD

Commissioned - 2018

24 Million litres of FS treated\*



\*FS treated from 2018 to 2023



Sinnar, India



Capacity: 70 KLD

Commissioned: 2019

30 Million litres of FS treated\*\*



\*\*FS treated from 2019 to 2023





# FSTPs powered by **Solar Energy** . . . **Energy +ve**

## Wai, India

- Operational since : April 2021
- Consumption of electricity: **1396** Units/month
- Estimated generation of electricity: **3208** Units/month
- CO2 emissions mitigated: **15949 Kg**

Electricity generated from the date of installation : **41 MWh**



## Sinnar, India

- Operational since : September 2020
- Consumption of electricity: **1184** Units/month
- Estimated generation of electricity: **1258** Units/month
- CO2 emissions mitigated: **8864 Kg**

Electricity generated from the date of installation : **23 MWh**



# 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

~ **54 Million Litres of fresh water has been saved as a result of reusing treated wastewater from the FSTP till now!!!**



# Sinnar FSTP and Urban Forest. . . Like Oasis in a Desert. . .

- **8000 square** meters of urban forest and landscaped area in midst of barren land
- **1400 trees of 16+ species** planted
- Treated **water** is used for **watering the plants** through a **drip irrigation system**
- **Sludge used as fertilizers at the urban forest or taken away by farmers.**
- The **quality** of the treated products are **regularly monitored** through testing the samples.
- **SMC engaged a SHG** for maintenance of garden and urban forest through a contract and paid on a monthly basis.
- **Attracting 10+ bird species and butterflies** – previously not seen

Before



After

**30 million+ litres**

water reused

**25,000 kg CO2**

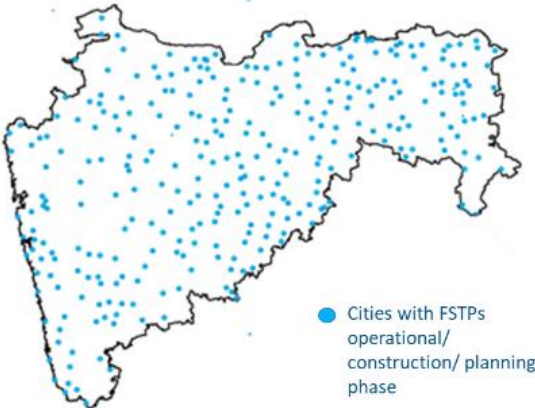
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Not just one-off pilots... **Learnings from these cities is being scaled up**

**Zooming out to Maharashtra : Eco-Sensitive Inclusive Sanitation taken up in a big way!**

CWAS - Partner to the state government for implementing the SWACHH MAHARASHTRA MISSION URBAN – 400 cities



Infrastructural efforts for treatment in Maharashtra

Independent FSTP - **311 cities**  
Cotreatment @STP- **70 cities**



Scaling up scheduled desludging across cities of Maharashtra and India

CWAS – Partnering with state government for Majhi Vasundhara ( My EARTH) Mission for URBAN



Scaling up use of renewable source of energy for WASH operations and creating carbon sinks



**All this done through policy , guidelines and training support at both state and national level. . .**



# Partnership and Collaboration to attain scale...

BILL & MELINDA  
GATES *foundation*

HSBC 



Government of  
Maharashtra



**CWAS** CENTER  
FOR WATER  
AND SANITATION

**CRDF** CEPT RESEARCH  
AND DEVELOPMENT  
FOUNDATION

CEPT  
UNIVERSITY

  
**NFSSM**  
Alliance

# THANK YOU



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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** CENTER FOR WATER AND SANITATION

**CRDF** CEPT RESEARCH AND DEVELOPMENT FOUNDATION

**CEPT UNIVERSITY**

