



ABIDJAN 2023

21st African Water Association International Congress & Exhibition and The 7th International Faecal Sludge Management Conference

Citywide inclusive services for Faecal Sludge and Septage Management

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22nd February 2023, Abidjan, Côte d'Ivoire

Center for Water and Sanitation, CRDF, CEPT University

CWAS CENTER FOR WATER AND SANITATION

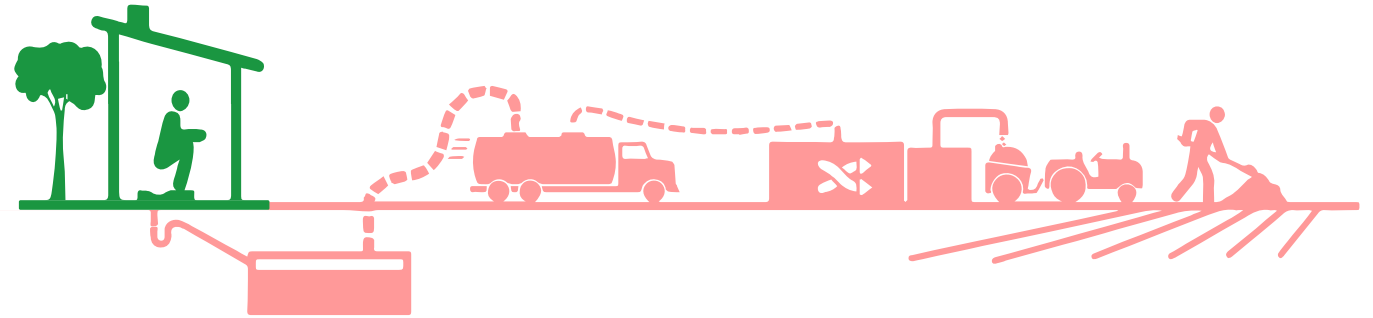
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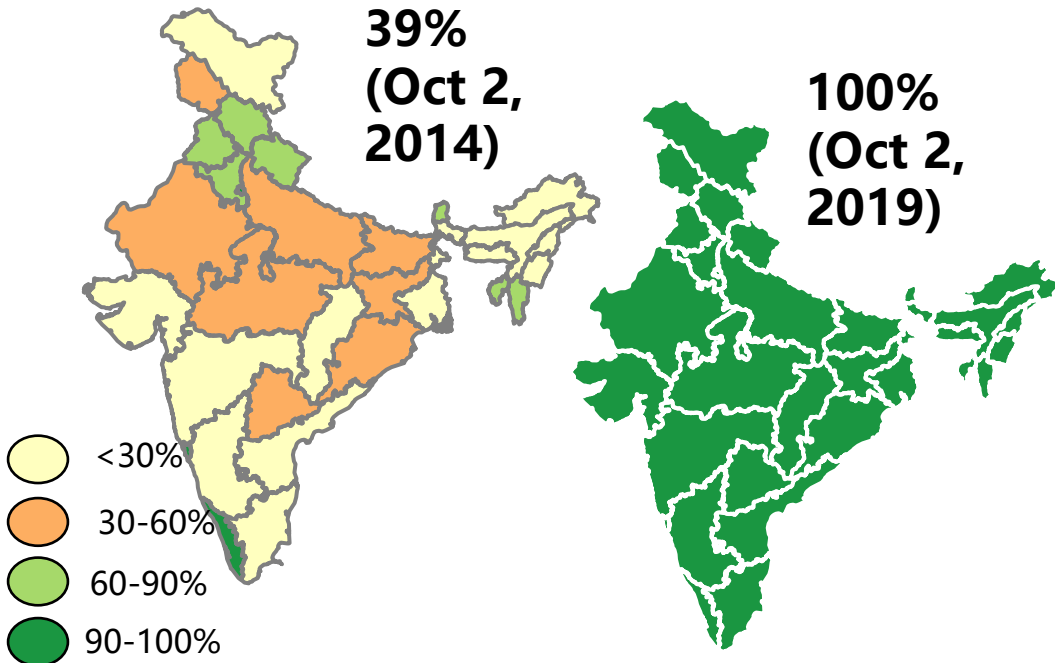


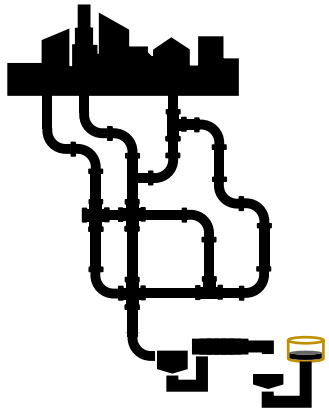


The Swachh Bharat Mission (2014-2019) achieved significant success to make India Open Defecation Free

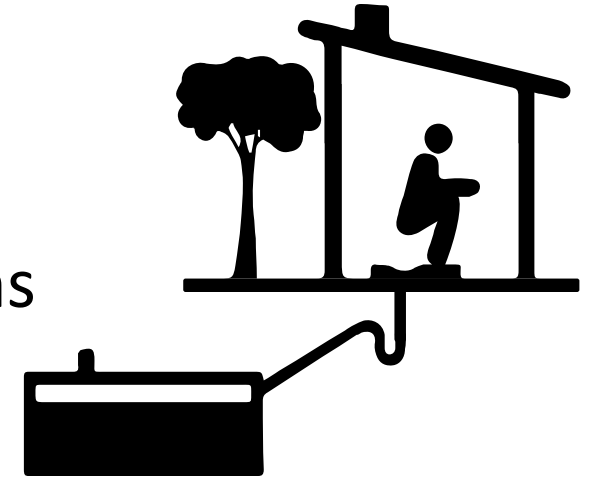


In the next stage, India is focusing on the entire sanitation value chain with safe collection, treatment and reuse – AMRUT 2.0 and SBM 2.0





While many cities do have sewer networks, most small and medium towns are dependent on onsite systems
~48% of urban households



A host of other challenges in sanitation for Indian cities!



Lack of technical know-how with Municipalities – especially in small and medium towns



Limited financial resources and infrastructure



Manual scavenging and unsafe disposal



Ensuring gender and social equity



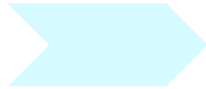
Monitoring and regulating the private sector

Ideas demonstrated in these cities have become models for FSSM in India

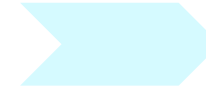


Wai, Sinnar


Comprehensive City Sanitation planning





Pioneer cities in India to implement citywide scheduled emptying of septic tanks





City Wide Inclusive Sanitation


 Scheduled emptying of septic tanks


 Involving Private sector for emptying operations


 Levying a Sanitation tax to support operations


 Faecal Sludge and Septage treatment facility (FSTP)

 Use of Own (DBO) / Philanthropy funds for FSTPs

 Reuse of treated wastewater


 Online monitoring systems for emptying and treatment

 Municipal council commitment and leadership

 Gender inclusivity in sanitation

 Involvement of SHGs

 San Workers training

 Equitable Services for Slums and Vulnerable areas



Wai and Sinnar Cities

Wai

- Known for its Ghats on the banks of River Krishna and around 250 temples.
- Holy river
- Also known as site for Bollywood shoots



Sinnar

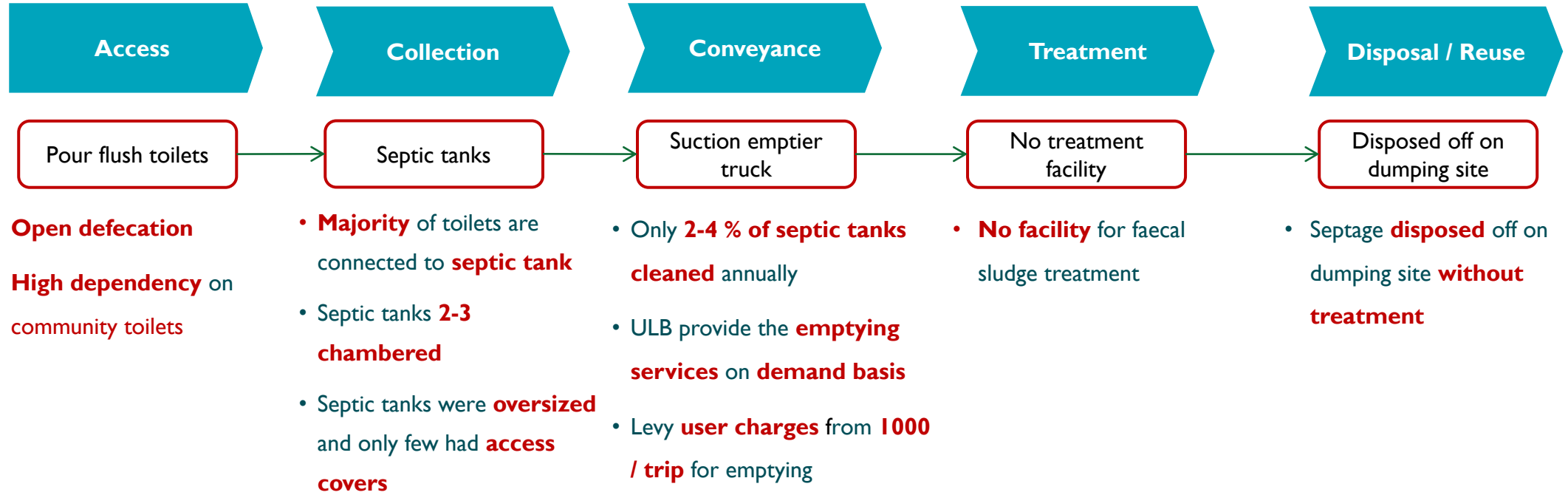
- Flourishing industrial districts
- Fast growing town

Wai – one of the 8 global cities showcasing the implementation of **CWIS principles**



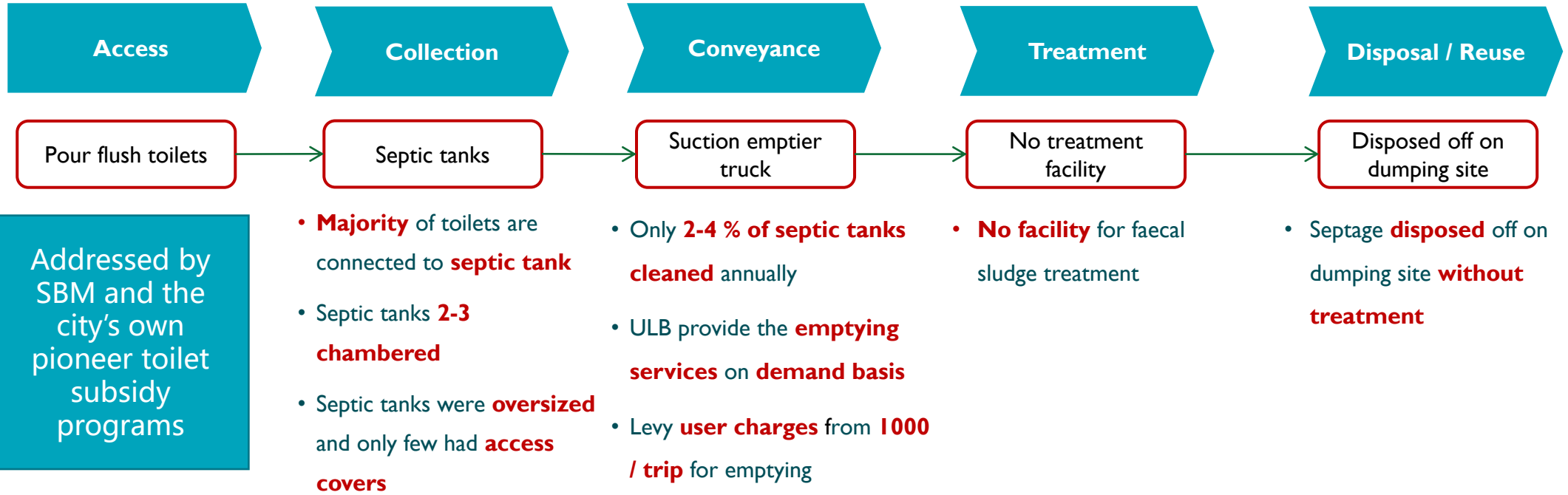
Addressing the full sanitation value chain

When work started



Addressing the full sanitation value chain

When work started



Government ownership of improvement planning

Wai and Sinnar resolved to implement FSSM plan in the city through a council resolution



The resolution covers aspects like:

- Citywide FSSM
- Involving Private sector
- Scheduled cleaning
- Land for treatment facility
- Taxes to be levied

1st Cities in INDIA
to have passed such a resolution . . .

Recognizing the need for systemic change

Current practice of desludging in Indian cities is of complaint redressal and NOT a public service the way sewerage and SWM are!

Low frequency of desludging

On-demand desludging
= only done when septic tanks overflow
= frequency of 8-10 years+

Government advisory is 2-3 years

Environmental impacts of poor quality effluent

Low desludging frequency
= poor efficiency of septic tank
= poor quality of supernatant / effluent
overflow being released in rivers

Increased chances of Manual Scavenging

Low desludging frequency
= sludge hardens in the tank
= requirement of manual labour to
remove it

High cost per desludging – not optimized

Emptiers need to achieve
economies of scale.
Cannot optimize trips or have assured
amount of business in on-demand service

High desludging charges discouraging HHs from actually using their toilets

Adversely affecting ODF sustainability

Introduced scheduled desludging

Moving from

complaint redressal on-demand system

to inclusive scheduled service

Desludging frequency



Service on receiving call by HHs, who do not see the need for regular cleaning. Usually only when septic tank overflows in 8-10 years (2% annually).

Infrastructure optimization, Efficiency, Equity and affordability



ULB has one truck for desludging individual as well as CT/PT septic tanks.



Emptying charge of Rs 1000/trip levied by the ULB to cover the cost of operations. This was a high price to pay in an emergency situation for households.



Any future treatment facility would receive septage of varying quality. Also cannot predict quantity of daily load.

Desludging done for all septic tanks on a fixed cycle of 3 years and predetermined schedule (33% annually) based on city zoning.

Private operator given contract for servicing individual tanks and using the ULB truck for CT/PTs.

A "sanitation tax" of Rs 50/year to be paid along with property tax and all provided service without emptying charge. Private operator quotes lower price per tank due to trip optimization with clustered service visits and assured business.

More predictable load quantities for treatment facility. Better quality loads once desludging completes one cycle.

Inclusive services



Includes those not connected to sewer networks



Mandatory desludging service but not linked to "user charges" – service to ALL



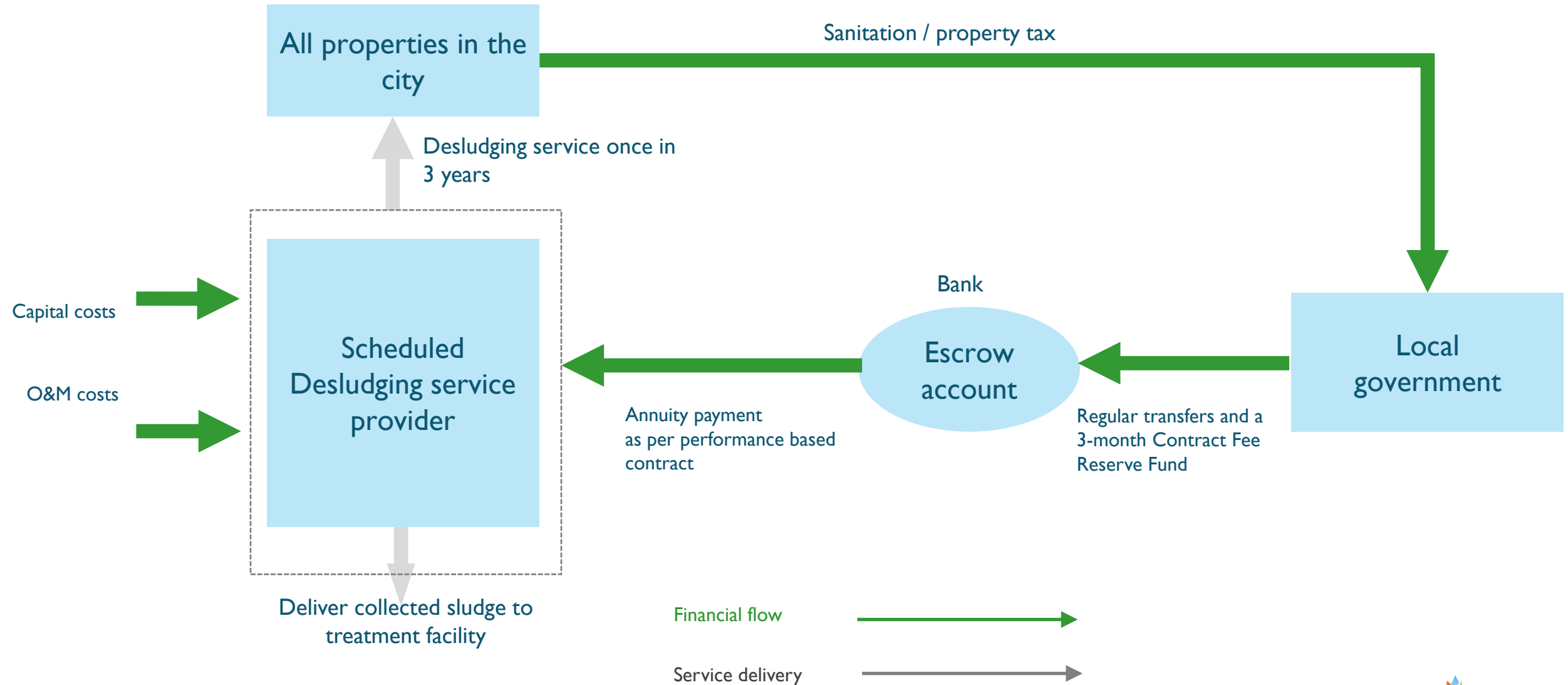
Special care to service vulnerable areas – long pipes for narrow lanes



Equitable - no charges at time of desludging - benefiting low income areas - sustainably financed through equitable "sanitation tax"



Financing model : Performance Linked Annuity Model (PLAM) for scheduled desludging



FSTPs set up to treat the septage

Wai - Funded through grant



Sinnar - Funded by city's own funds. Private enterprise contracted to Build-Operate-Transfer



Performance linked Monitoring Mechanism

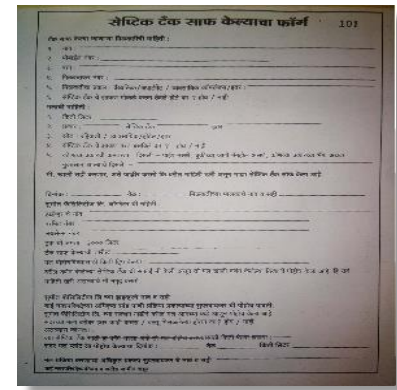
Daily report on septic tanks emptied by private emptier to council



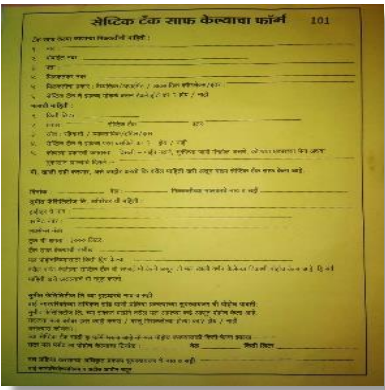
Govt's copy



Property holder's copy



Treatment plant's copy Private enterprise copy



- ✓ Payments based on achieving agreed targets of septic tanks emptied
- ✓ Clauses to ensure safety standards - use of PPE and vigilance against manual scavenging
- ✓ Fines on non-achievement of targets

Escrow mechanism to reduce payment risk

- ✓ An Escrow account is held by a third party bank.
- ✓ ULB needs to maintain a fixed balance in it = 3 months of payment
- ✓ Payments are released on approval of performance linked monitoring forms

Add-on IT enabled monitoring systems for FSSM

“Real time” monitoring
No need to process data for results



Easy to Operate,
Reduce paper work,
Minimize human error



Monitors performance of
FSSM services



Photo stamping,
Geo stamping,
Signatures



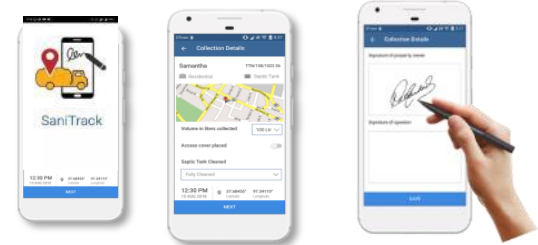
Unique database



SaniTab



SaniTrack



SanQ



Monitoring Scheduled Desludging in Wai

Logged in User: CEPT Logout

CONSOLIDATED PROGRESS REPORT

3835 Septic Tanks Remaining To Be Desludged	2165 Desludged	1974 Scheduled	191 Emergency
2318 Service Visits	184 Properties Refused	4487 Properties Covered	6552 KL Volume Desludged

SPATIAL VIEW

Property Details

- Nature of Service
- Type of properties visited
- Vulnerable areas covered

Desludging Details

- Last time ST was emptied
- Opened covers for service
- Problems faced during emptying
- Household's plan to reseat ST

Performance Metric

- PPE usage
- Two-inch septage left

Charts: Nature of Service

Awareness generation a key feature for success of high uptake of FSSM services . . .

Paintings / banners in the city by WMC



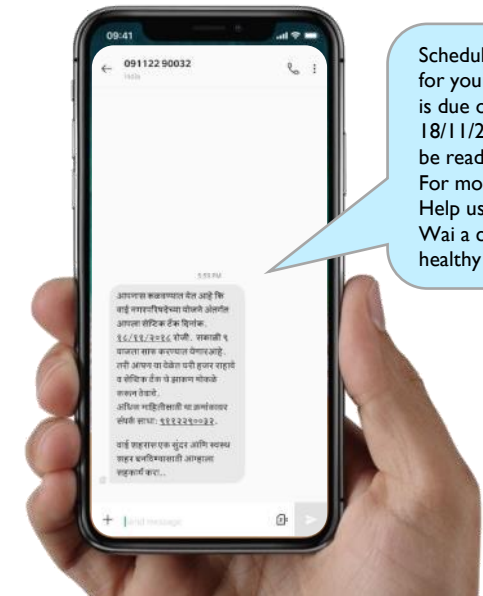
Household visits by desludger with info. leaflets



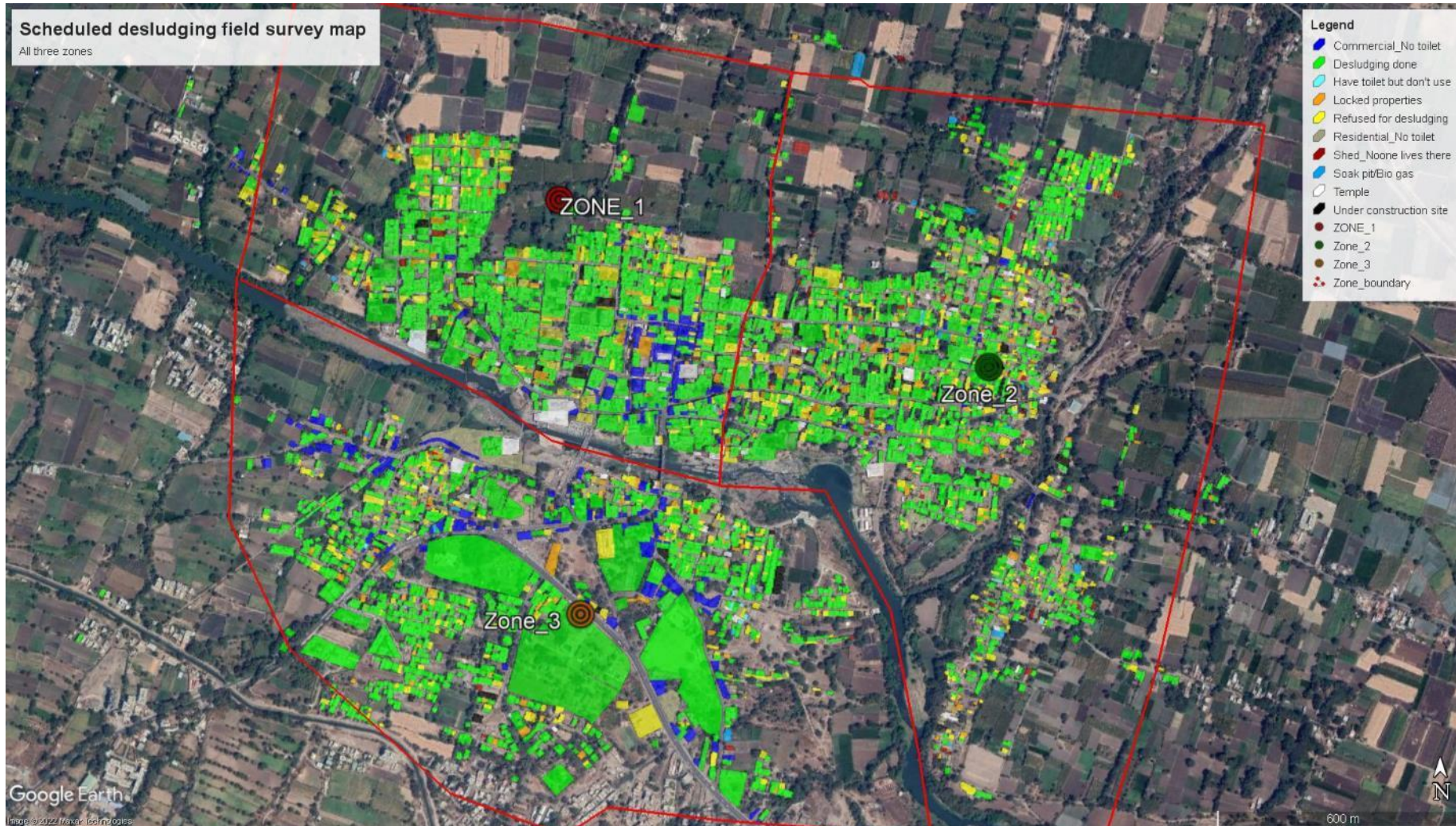
Cities circulated small videos



Intimation through SMS



In January 2022, Wai successfully completed its first 3-year cycle of scheduled desludging



3600+
Septic tanks served

6800+
Properties covered

95%
Acceptance rate of services

19 million
Liters of septage treated

Improvement in groundwater and river water quality due to scheduled desludging

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 in desludged areas
- 50-60% decrease in BOD load in drains in desludged areas



- Regular desludging services will eventually improve the quality of river water and ground water as the quality of drain water and supernatants will improve

Sinnar – Resource centre, water reuse and Urban Forest



- 70 kilo litres daily capacity
- USAB - Up flow-Anaerobic Sludge Blanket Reactor
- ABR - Anaerobic Baffled Reactor
- SDB - Sludge Drying Beds
- Carbon filters



- Resource centre for visitors
- Fully self sufficient with solar energy
- FSTP built with city's own funds



- Landscaping and urban forest
- Oasis in the midst of barren land!



- Urban forest - 8000 square metres
- FSTP end products reused here – dried sludge and treated water
- Diverse species of plants for strong ecosystem
- Thriving and attracting bird species



- Women's Self Help Group engaged by Municipality for maintenance



- Online monitoring system for treatment quality parameters

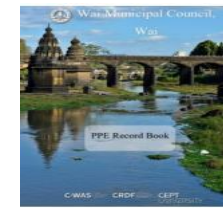
Empowering women for inclusive FSSM service delivery . . .

- **Building capacities of Elected Women Representatives (EWRs)** for effective functioning and participation in local governance focusing on FSSM.
- **Celebrating Women Sanitation champions** in the city and acknowledging their participation
- **Sensitizing women** at household level regarding the process of desludging



Sanitation workers safety

- Registers for PPE usage and replacement
- SaniTab / SaniTrack dashboard monitors the PPE usage of desludgers on daily basis.
- PPE flyer has been prepared for various sanitation activities and shared with stakeholders
- Training workshop along with a health camp was organized for all Sanitation workers. Also PPEs were distributed during this event.
- Council has introduced clauses related to provision, usage and monitoring of PPEs in all their upcoming contracts for Sanitation based on experience of this scheduled desludging contract



Name of the worker: _____							Remark	Sign
Helmet	Safety goggles	Nose Mask	Hand Gloves	Jacket	Safety Shoes	Gum-boots		
Date	Date	Date	Date	Date	Date	Date	PPE set given	Sign
			Date				Hand gloves are torn.	Sign

Sample of formats prepared for capturing replacement and distribution of PPE in the PPE record book.



Partnerships and Collaborations

BILL & MELINDA
GATES foundation



Department
for International
Development



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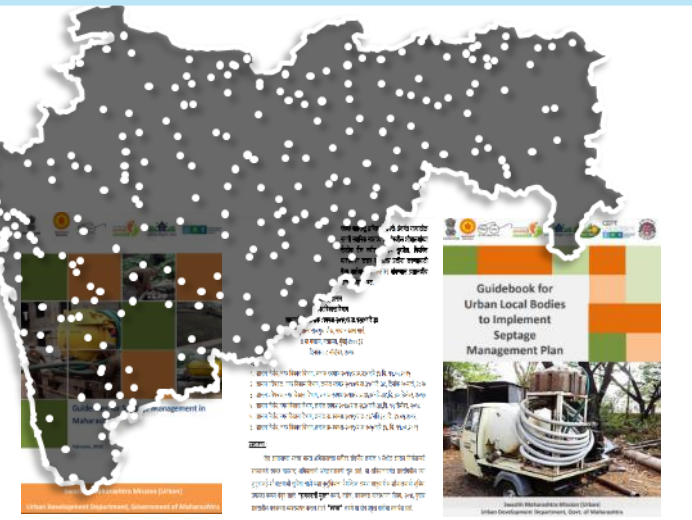
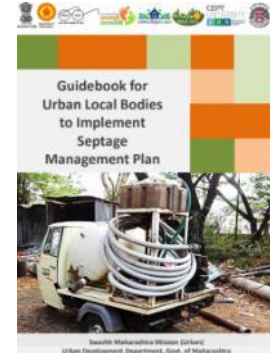
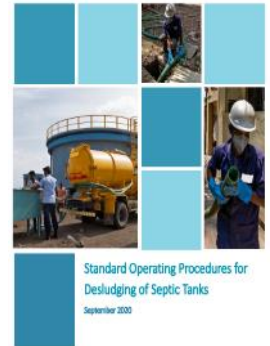
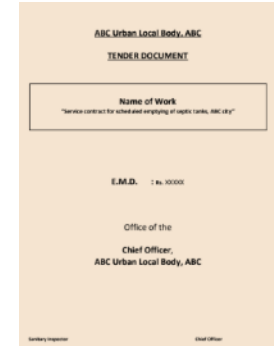
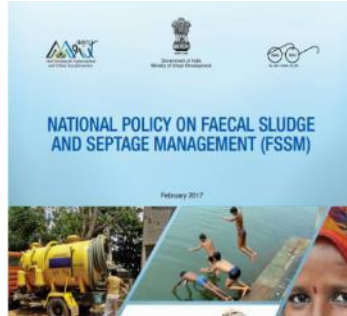
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NFSSM
Alliance

Scaling up . . . Not just one-off pilots!

Successfully demonstrating in Kolhapur and Satara cities. Exploring in more...



Scaling up lessons across Maharashtra through policies, guidelines and implementation support

Influenced National Policies and guidelines

Tools for training ULBs across India

Model Tenders and SoPs for FSSM used by ULBs

Thank you

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About us

The Center for Water and Sanitation (CWAS) at CEPT University carries out various activities – action research, training, advocacy to enable state and local governments to improve delivery of services.



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