

The Ongoing Scale-Up Process of Small-Scale Sewage Treatment and Reuse Systems in India: Taking the Lead through Effective Governance Interventions

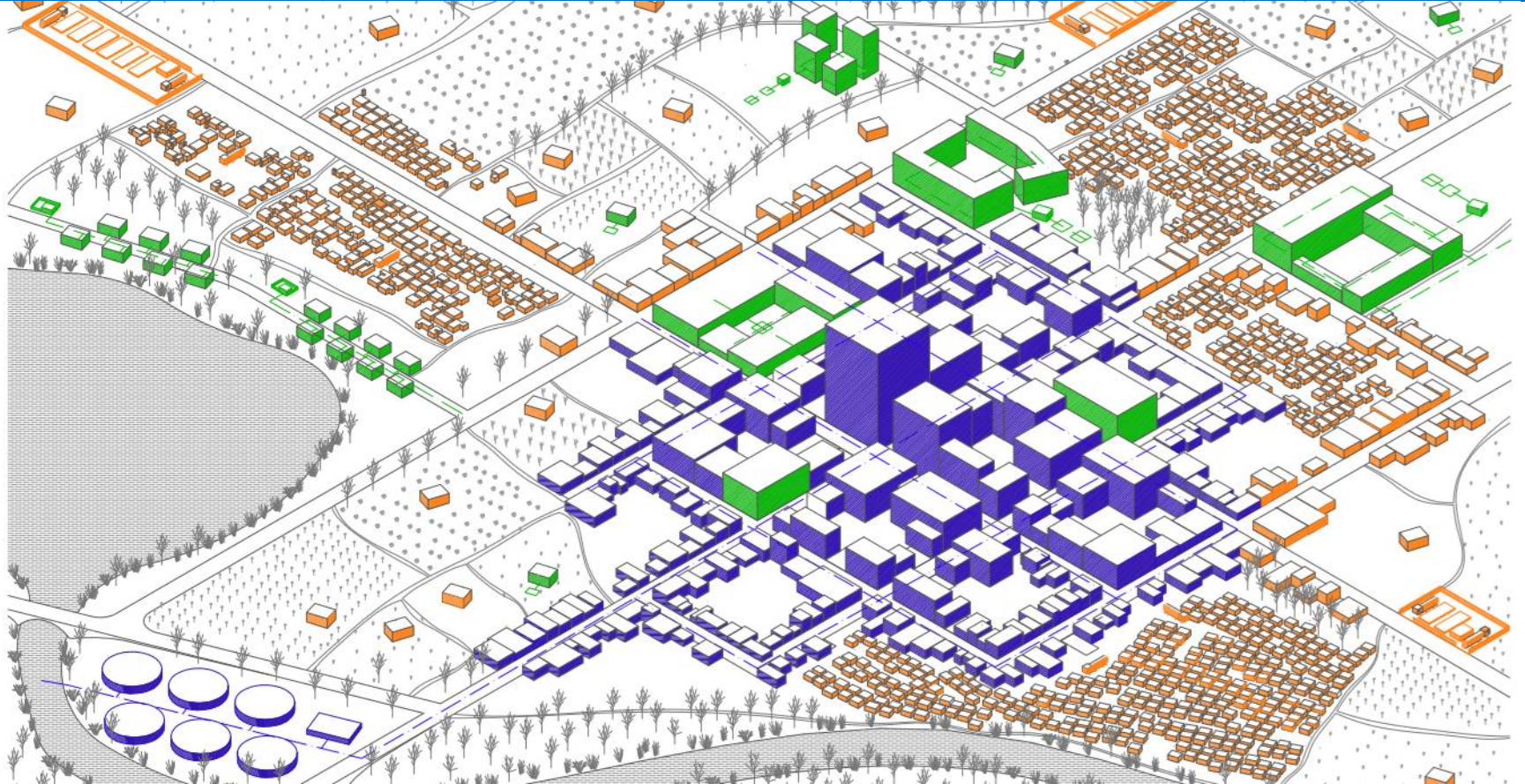
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CSE Webinar “Decentralized Wastewater Treatment and Local Reuse
for Citywide Sanitation and Improved River Health”

13 August 2020

The Role and Potential of Small-Scale Sewage Treatment and Reuse Systems



Small-Scale Sanitation Scaling-Up

The 4S Project (2016-2019)

Comprehensive field research on the **performance** of small-scale sewage treatment plants (SSTPs) in **urban India** and the **success & failure factors** for such systems.



Main Partners:



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Funding:

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Small-Scale Sanitation Scaling-Up

The 4S Project (2016-2019)

GOAL: evidence-based policy recommendations for the successful implementation and operation at scale

APPROACH: assessment of sanitation systems on the ground and analysis of governance aspects

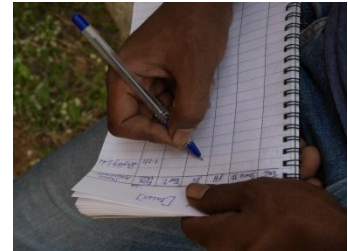


Small-Scale Sanitation Scaling-Up

The 4S Project (2016-2019)

Methods

- **Landscape study:** inventorisation of technologies, existing installations, private players and previous research
- **Evaluation of SSTPs** covering entire spectrum:
 - Basic assessment of **279 units** (inspection visits & interviews)
 - Detailed performance analysis of **35 systems**
- **Governance analysis:** study of policies, regulations, stakeholders and governance arrangements
- **Financial analysis:** study of life cycle costs of SSTPs and financial reasons for underperforming systems

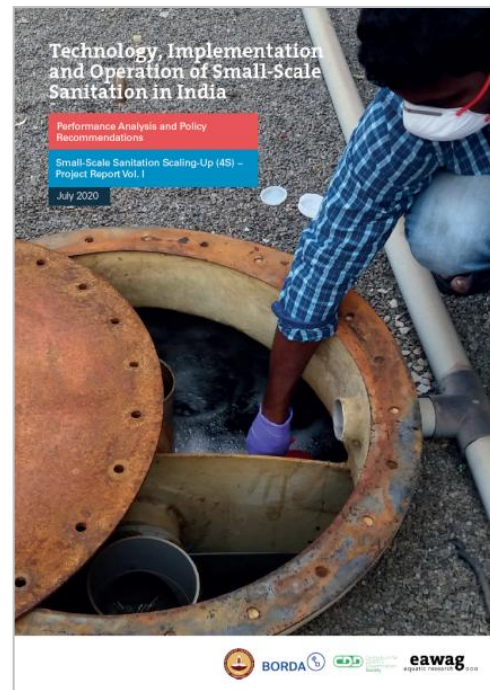


Small-Scale Sanitation Scaling-Up

The 4S Project (2016-2019)

Key Research Findings

- **> 20,000 installations** in India (estimated)
- Majority are variations of **conventional wastewater treatment** technologies
- Enormous **reuse potential** (flushing, gardening, construction and more)
- **> 300 private companies** implement a wide range of technologies
- Any of the technologies studied have the **potential to achieve quite stringent BOD, COD and TSS standards**



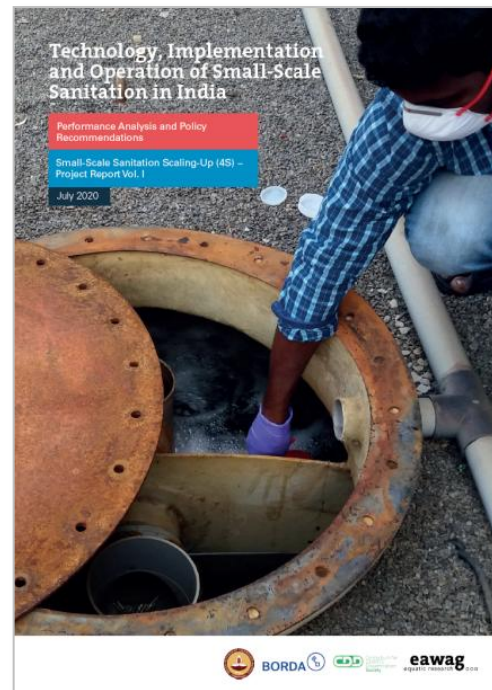
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Small-Scale Sanitation Scaling-Up

The 4S Project (2016-2019)

Key Research Findings – Challenges

- **Life cycle costs** are not considered
- Systems generally fail to meet **nutrient** and **microbial parameters**, and often struggle with **BOD**
- Lack of **sludge management**
- Most units **underperform**



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How to explain the current challenges
and
what can be done ?



Governance Arrangements for the Scaling Up of Small-Scale Wastewater Treatment and Reuse Systems – Lessons From India

Philippe Reymond^{1,2*}, Rohit Chandragiri³ and Lukas Ulrich¹

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Environmental pollution and increasing water scarcity are key features of the urban landscape of India today. The extension of centralized sewerage networks cannot keep up with city growth, and alternative sanitation systems are needed for citywide inclusive sanitation (CWIS). The government of India mandated larger buildings to be equipped with small-scale wastewater treatment plants (SSTP). This resulted in the emergence

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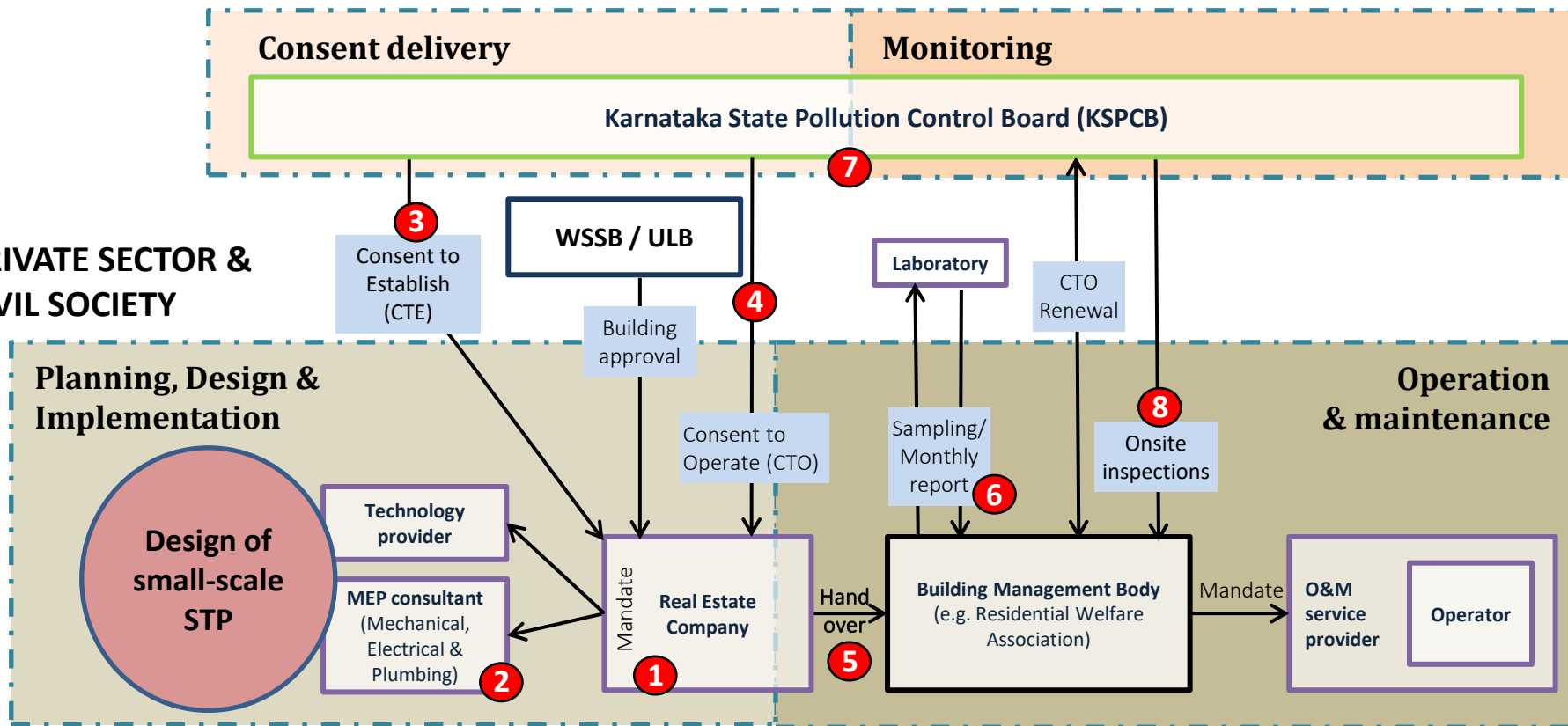
<https://doi.org/10.3389/fenvs.2020.00072>

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Identified loopholes (Karnataka)

GOVERNMENTAL AGENCIES

PRIVATE SECTOR & CIVIL SOCIETY



How to Explain the Current Shortcomings?

MoEFCC's policy very successful to foster the **development of a large SSS market** ...

... but the market developed quicker than the
necessary governance structures

... and the **integration** by MoHUA and line agencies

⇒ ***Decentralised* systems also need *centralised* structures:**

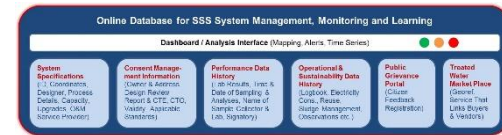
Monitoring, training, troubleshooting, guidelines, etc.

What can be done ?

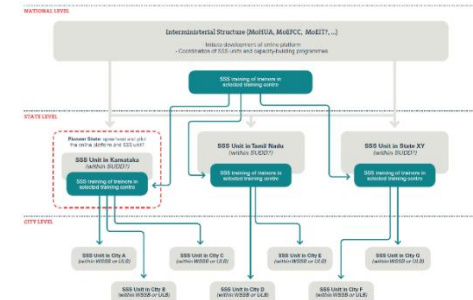
Efficient governance requires :

✓ An online platform

collating all databases, streamlining & supporting processes from establishment to monitoring



✓ Dedicated SSS units at state and city level



Online Database and Platform

➤ System management, monitoring and learning

Dashboard / Analysis Interface (Mapping, Alerts, Time Series)

System Specifications
(ID for each SSTP)

Consent Management Information

Performance Data History
(lab analyses)

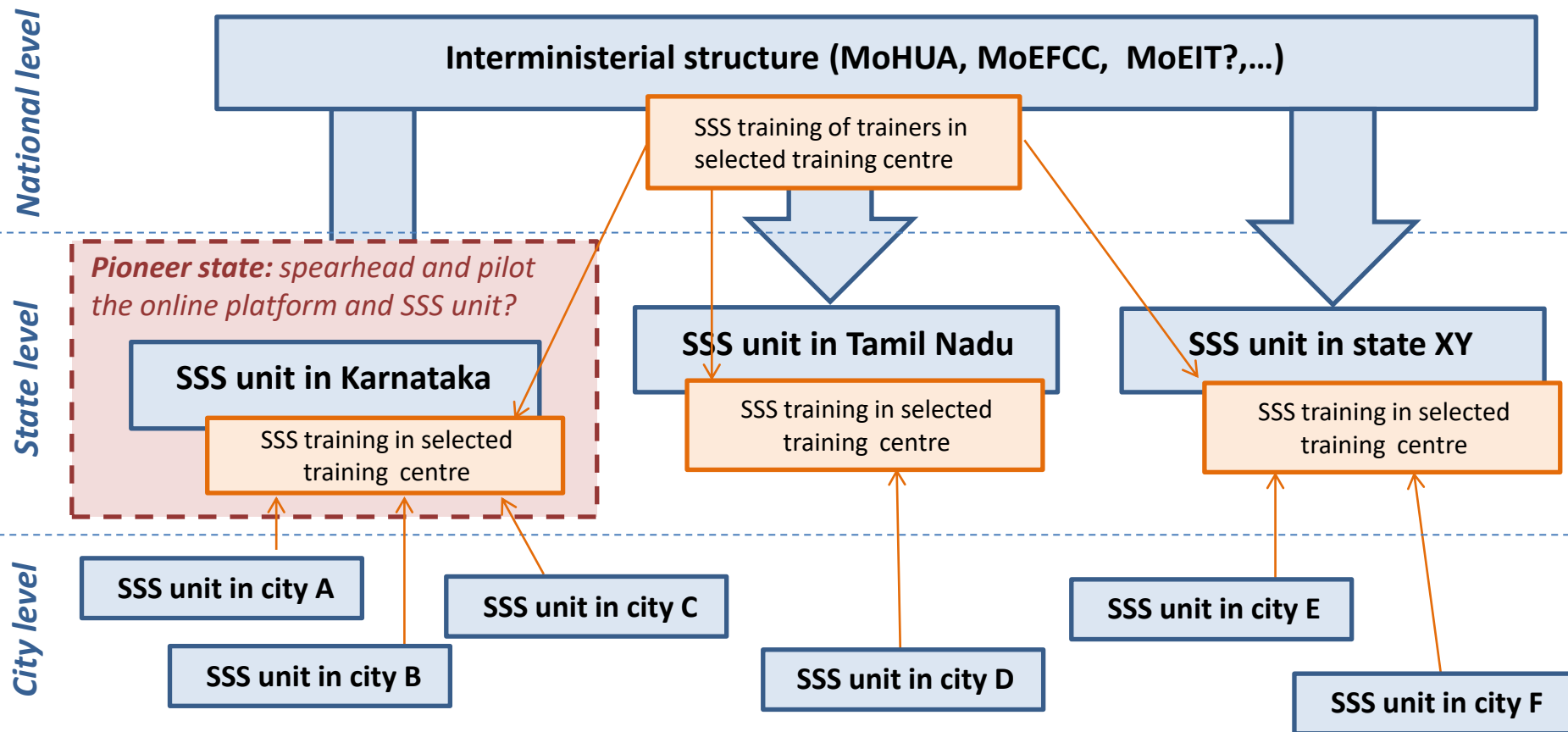
Public Interface
(information, complaints)

Treated Water Market Place



App linking supply and demand of treated wastewater ?

SSS units



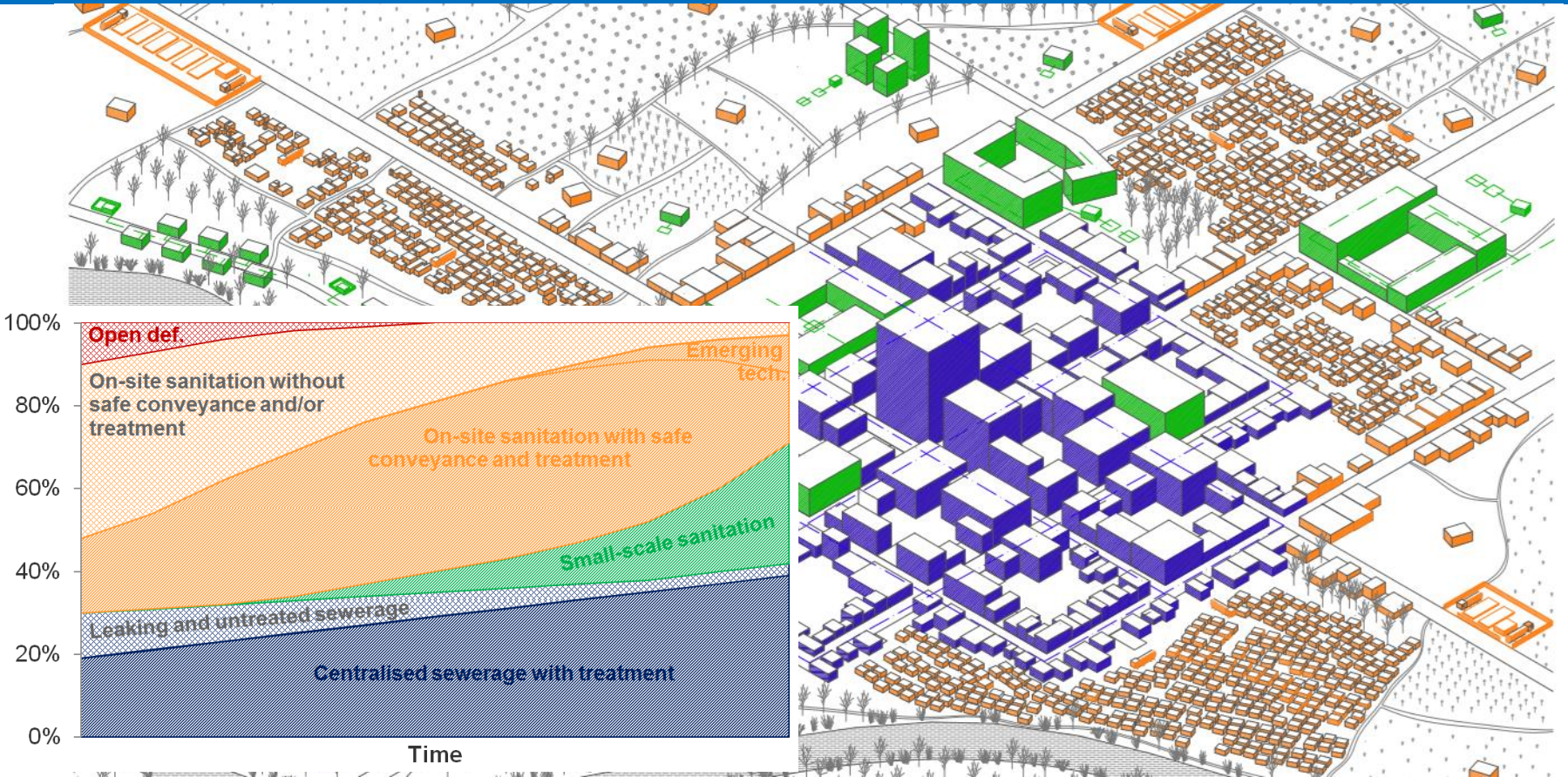
Benefits

1. Facilitating the **merging** and **completing** of existing databases.
2. Fostering **coordination** between the governmental agencies
3. **Geo-localization** and **mapping** of the SSTPs
4. Simplifying administrative procedures through **digitalization**
5. Allowing **prioritization of monitoring** visits based on **automated** verification procedures
6. Enabling **learning** through big data analysis of all existing SSTPs

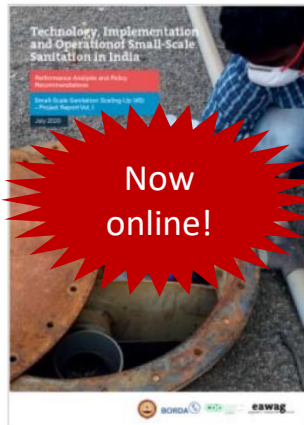
Priority Actions

- ✓ Recognise the **key role** of small-scale wastewater treatment in **urban sanitation coverage** and citywide inclusive sanitation (**CWIS**)
- ✓ Put SSS on the **urban sanitation map**, next to conventional sewerage and FSSM
- ✓ Clarify **roles and responsibilities**, esp. of **WSSBs** and **ULBs**
- ✓ Produce **technical specifications**, **guidelines** for technology selection and O&M
- ✓ Develop the **centralised online database**

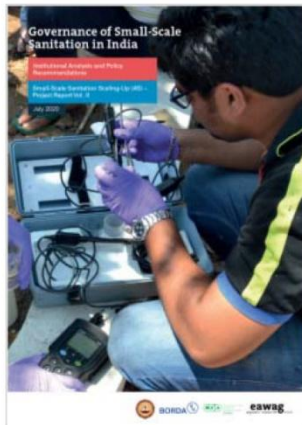
Conclusion: increasing role, high potential



Thank You for Your Attention!



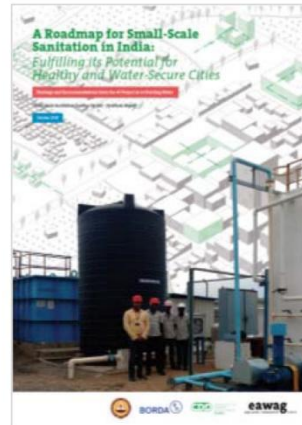
Vol. I: Technology, Implementation and Operation of Small-Scale Sanitation in India – Performance Analysis and Policy Recommendations



Vol. II: Governance of Small-Scale Sanitation in India – Institutional Analysis and Policy Recommendations



Vol. III: Financial Sustainability of Small-Scale Sanitation in India – Life Cycle Cost Analysis and Policy Recommendations



Synthesis Report: A Roadmap for Small-Scale Sanitation in India: Fulfilling its Potential for Healthy and Water-Secure Cities

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