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



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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BILL& MELINDA GATES foundation



Society

Federal Ministry for Economic Cooperation and Development

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





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









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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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 ?

Just Published



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

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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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Identified loopholes (Karnataka)

GOVERNMENTAL AGENCIES



Loopholes Identified



Technology selection not based on long-term sustainability and life-cycle cost

- 2
- Unqualified consultants



- Consent to Establish
- Consent to Operate



4

Handover



Sampling and reporting



Inexistence of unified, georeferenced online database of SSTPs



Lack of financial and human resources for the PCB to do sufficient onsite inspections



How to Explain the Current Shortcomings?

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

... but the market developped 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 departments in relevant state and city level government agencies





Online Database and Platform

System management, monitoring and learning



SSS departments («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 Remaining publications available soon.

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