National Workshop on Small-Scale Sanitation Systems

A Roadmap for Small-Scale STPs in India: Fulfilling their Potential for Healthy and Water-Secure Cities

Main Conclusions and Recommendations

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Main Conclusions: Technical

- Small-scale sewage treatment plants (SSTPs) serving between 10 to 1000 households

- There are an estimated **20'000** such systems built in India

- Are they a viable alternative for Centralised systems : cost effective, flexible, modular?

- What is the technical, financial and environmental performance of existing SSTPs?

- What determines the success or failure of such systems?
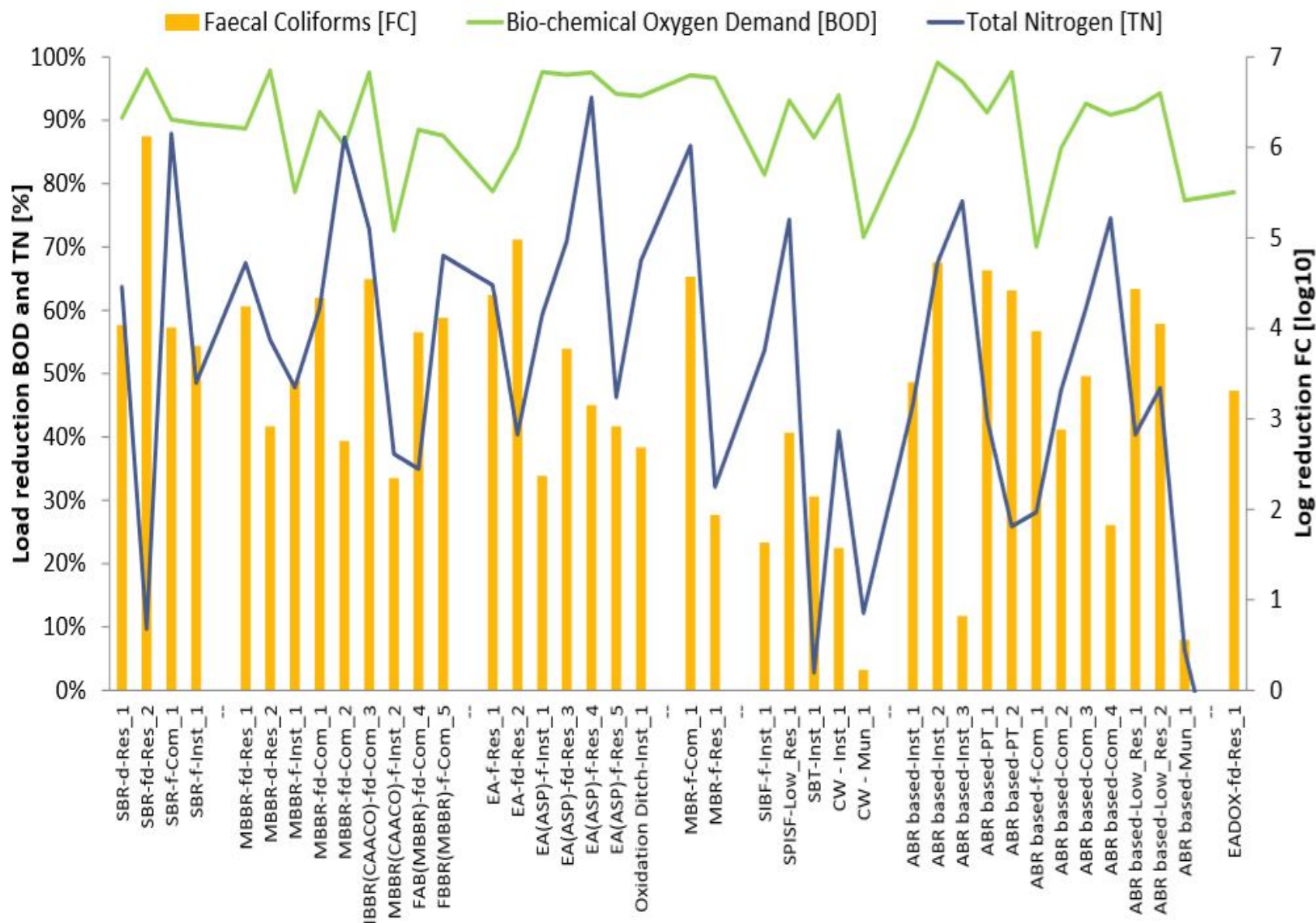
Averaged removal performance for key water quality parameters

📌 Technical Performance (i)

BOD, COD, TSS: Any technology if combined with the right tertiary treatment units and operated correctly has the potential to achieve quite stringent standards.

Nutrients: Only very few technologies: SBR, MBR.

Microbial quality of effluent is consistently not met in most systems analysed. Disinfection systems not operated properly. High organic content affect the performance.

Solids management: A major issue. Majority of the SSS systems studied do not consistently treat and safely dispose of the sludge they produce.

Water reuse practices: Good impact of the water reuse policies established over the last decade... Reclaimed water from SSS systems is commonly used for toilet flushing and gardening.

Technical Performance (ii)

- **Develop guidelines specific to SSS systems**

- **Incremental implementation of standards, to allow SSS sector to expand**

- **SSS discharge standards should be adapted for reuse application**

- **Plan for management of the produced sludge (on-site or in centralized FSTP)**

- **Systematic capacity building for system operators**

Sustainability of Systems

System start-up and hand-over: Proper knowledge transfer and support from designers and implementers is crucial to lay the foundations of long lasting and robust SSS systems.

Skills and knowledge of operation & maintenance (O&M) personnel and management entities: Operators and managers are often not sufficiently informed about the functioning . Trouble shooting skills are therefore generally weak.

Supervision of O&M activities: Operators often are not clearly instructed and supervised

Documentation of O&M activities and financial flows: The absence of systematic documentation and archiving of information leads to loss of knowledge and understanding on the system's performance and history. Such data is crucial for decision-making.

Anticipation of maintenance works: Clear responsibilities for organising spare parts as well as for planning and budgeting scheduled maintenance services are lacking.
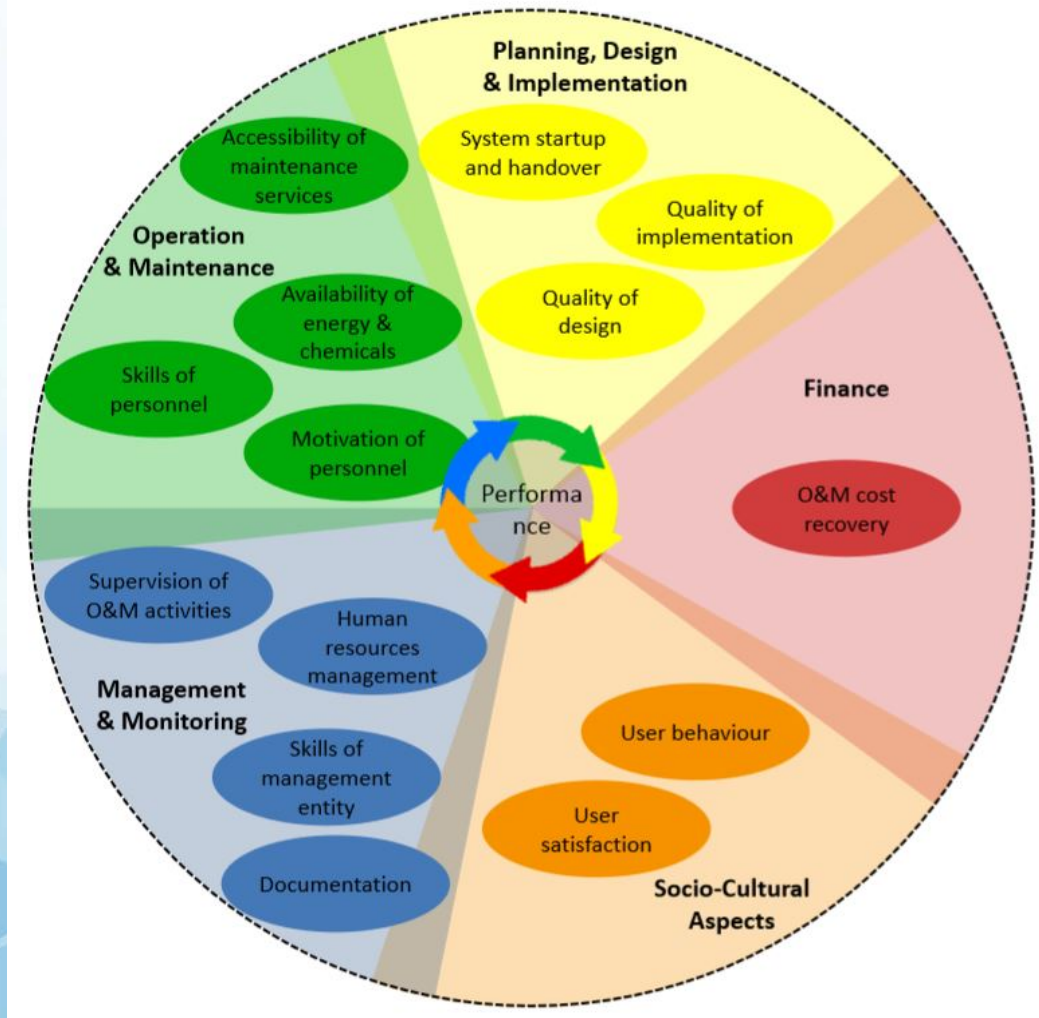
Performance assessment framework with 14 success factors

Policy Framework Challenges

- Lack of a clear **policy framework** for small scale sanitation.
- **Gaps in jurisdictions** of the concerned agencies – roles & responsibilities splintered across institutions
- **Coordination** between the planning, implementing and monitoring agencies is necessary for better overall UW mgmt.
- **Lack of human resources** of the responsible agencies
- **Mismatch between supply and demand** regarding water for reuse in urban areas.

📌 Policy Framework Recommendations

- MoHUA should clearly recognise SSS as a viable alternative and develop technical specifications for SSS;

- **Technical specifications** need to be developed, so that funds can be channelled from national level down to ULBs for SSS.

- **State Sanitation Strategies** and **City Sanitation Plans** need to include role of SSS;

- Provide financial incentives/subsidies to boost coverage

📌 Policy Framework: Stakeholder Responsibilities

Clear mandates on roles & responsibilities at National, State and ULB levels...

Level	Responsibility	Institution
National	• Policy framework & guidelines, technology specifications	MoHUA
State	• Context-specific effluent standards, define reuse standards	State PCB
ULB	• Performance monitoring, integrated wastewater planning	ULB and WSSBs
Others	• Outsourced performance monitoring, O&M	Private sector

Monitoring Challenges

Monitoring Systems

- The Pollution Control Boards (PCBs) have a clear monitoring role (+labs)

- Wastewater samples of STPs are currently tested in accredited laboratories. But samples are often taken by the system owners themselves, sent to the laboratory: unreliable results.

Monitoring Recommendations

- Creation of a **Centralised Online Data Platform** > PCBs and ULBs

- **Geo-referencing of all units** is necessary to ensure follow-up > introduce Internet-based monitoring tool

- **Standardised monitoring procedures** (standard procedures and parameters) for SSTPs. Sampling could be carried out by the concerned agencies or delegated to private monit. companies

Encourage Water Reuse

- Re-use policies must be based on urban realities, needs **realistic planning** (space, existing demand, costs...)

- **Match supply/demand** > market opportunity... target end-users (e.g. construction sites)

- Progressive introduction of **water saving technology** and closed loop systems

Dishwasher   Kitchen tap   Washing machine   Shower   Bathroom tap   Toilet

SSWTP

Greywater
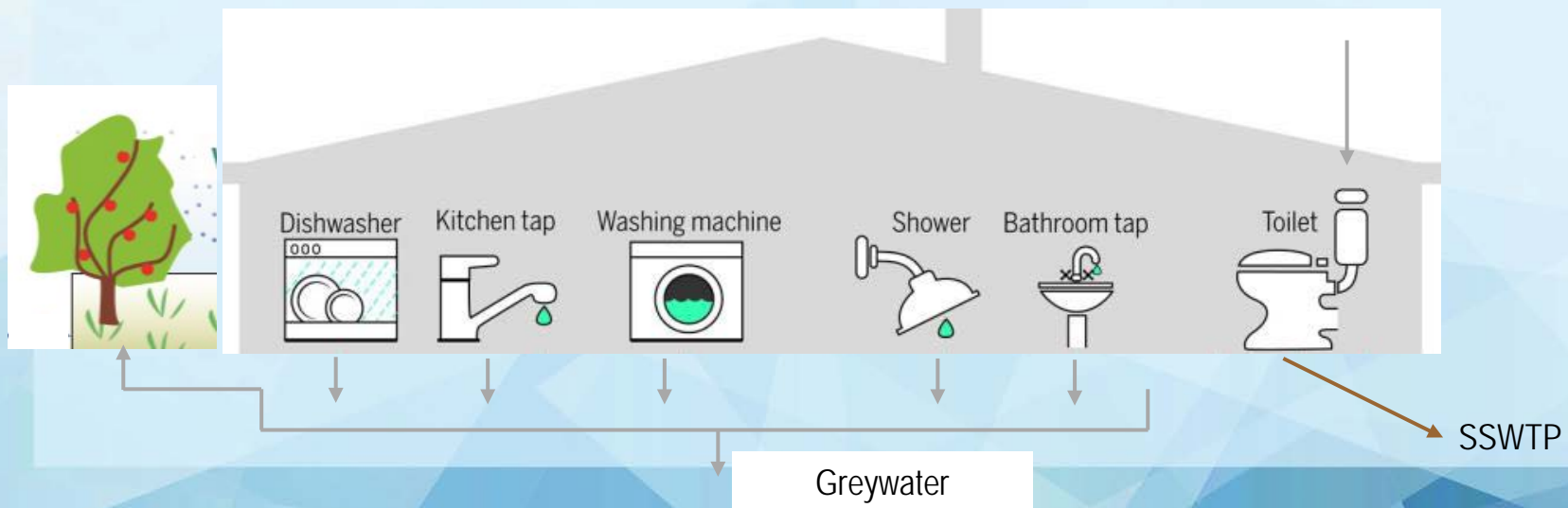
Up Next:

Discussion on how to ensure sustainable scaling of small scale sanitation…

Bangalore