Experience of small-scale sanitation systems from Pakistan and Bangladesh: what can we learn?

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A Road Map for Dewats in Nepal: Learning from the South Asian Experience

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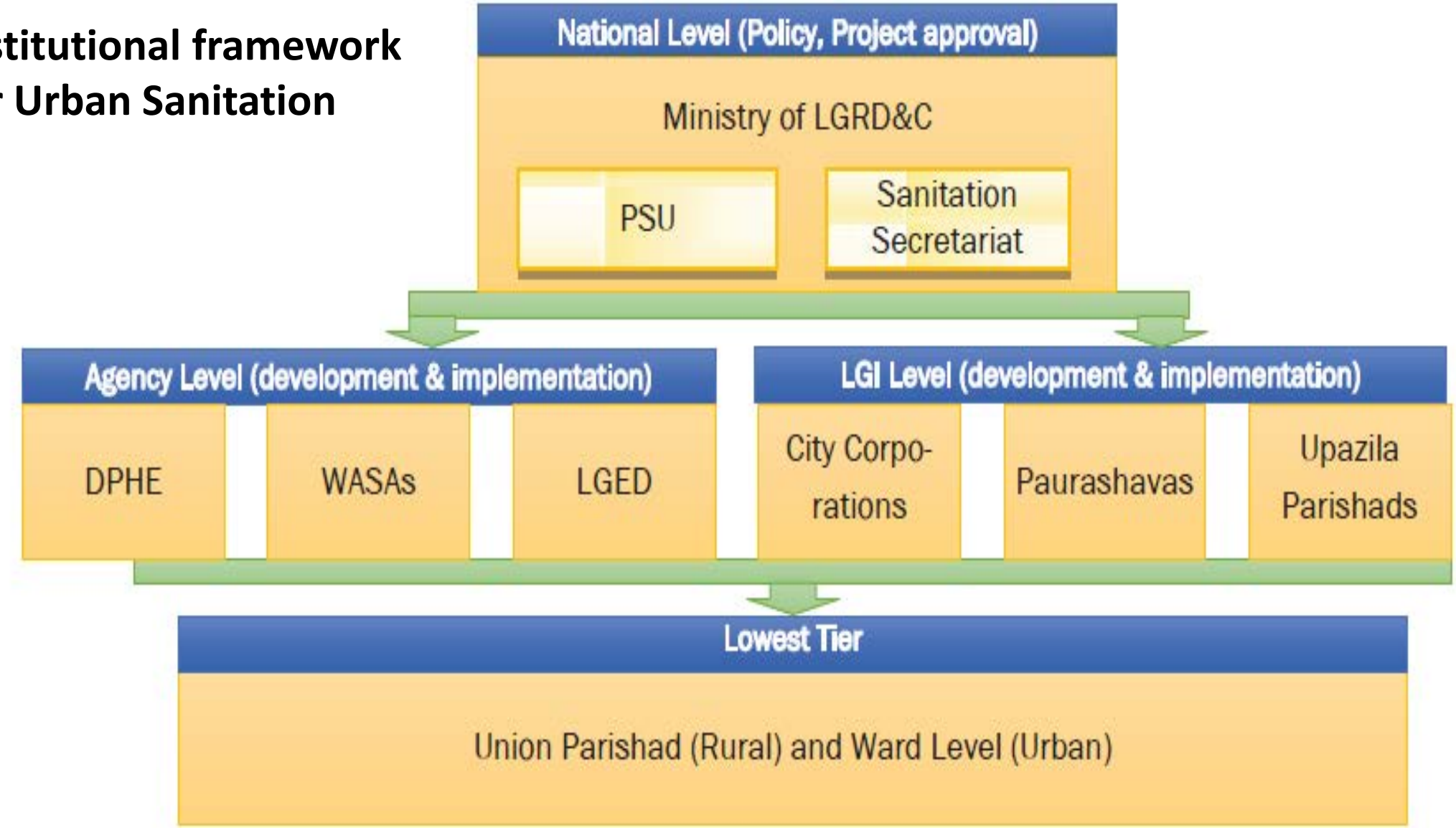
Sanitation status: Bangladesh

- Population 162 million, growth rate of about 1.6% , area of 147,570 km^2 situated between India and Myanmar.
- One of the most densely populated countries, Dhaka pop: 17 million.
- A strong political commitment and multi-stakeholder approach has made it possible for Bangladesh to reduce the open defecation from 42% in 2003 to 1% in 2015.
- Conventional sewer systems are absent in all urban areas except Dhaka. In Dhaka city, only about 20% of the total population are connected to the sewerage network. On-site sanitation system is the norm
- Inadequate system in place to manage the faecal sludge generated from these onsite facilities
- Recently approved the FSM Institutional and Regulatory Framework

Institutional framework for Urban Sanitation



Legal framework

- Existing legal framework reveals **overlaps and confusions** in the allocations of **responsibilities** for sanitation services, especially between sector agencies (e.g. DPHE) and local governments (Union Parishads and Pourashavas).

- Local Government **Acts remain to be fully enforced** so that City Corporations and Pourashavas can have full autonomy to plan and budget for sanitation services
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- The **National Policy for Safe Water Supply and Sanitation** (NPSWSS) issued in 1998 is the main policy document for the sector.
  - **Acknowledges decentralized services** (without providing specific guidance on how services should be organized) and the role of NGOs and the private sector in providing sanitation services.

- GoB prepared the 15-year Sector Development Plan in 2011, provides a road map for providing safe drinking water and sanitation for all

Small scale sanitation systems Bangladesh

- Commercial biogas for poultry farm in Faridpur in 2008
  - Over 60 such commercial establishments (producing electricity 5-50kW)
- Dewats by WaterAid
  - Rakibnagor slum, Sakhipur, Tangail (serving 80 households)
  - Panctola Colony, Khalispur, Khulna (22m3/day)
- Dewats Khulna: designed by CDD (28m3/day)
  - Designed by CDD under the ADB Coastal Towns Infrastructure Improvement Project
- Tangail, Mirzapur (1990s)
  - 4-cell facultative, lagoon system, PRISM project
  - Used duck-weed
  - Operational status not known

Sanitation status: Pakistan

- Pakistan, with an estimated **population of 184.35 million**, is the sixth most populous country in the world.
- Non-networked on-site sanitation systems are predominant form of sanitation systems in Pakistan.
- Service by **sewerage network** is high in **eight large cities** of the country. Sewerage coverage in Islamabad and Peshawar is 100% while 87% and 80% in Lahore and Karachi respectively.
- Only about 50% of the wastewater generated is actually collected, of which merely 10% is effectively treated nationally (World Bank, 2014).
- Collection and treatment of wastewater remains one of the major issues across all urban areas.
- Small-scale sanitation (SSS) systems, often referred to as decentralised wastewater treatment systems, are increasingly acknowledged as one of the solutions that can contribute towards sustainable urban sanitation services for all.

Institutional framework

- The 1973 Constitution assigned **responsibility** for the **water supply and sanitation** sector to provinces and service provision to **local governments**.
- Under the **Local Government Ordinance (LGO) 2001,** there are **three tiers** of local government in each province: Districts, TMAs and Unions. Unions (depending on size and geography) form a TMA and two or more TMAs form districts
- Administratively, **all TMAs fall under provincial local government** departments. Districts are the largest in population, followed by TMAs and Unions.
- The 2001 Local Government Ordinance (LGO) gives the responsibility of municipal services including water supply and sanitation services to the **Tehsil Municipal Administrations (TMAs)** across the districts.

Stakeholders: small-scale sanitation systems

Water Utility
Karachi Water Supply and Sewerage Board

Municipality of Tehsils
Responsible for small and medium sized towns

Defense Officers Housing Authority (DHA)
Eg. 61% of KMC falls under DHA

INGOs
UNHabitat
WWF
Plan International

Private sector
MAKES
Critical Green
ECO-STEPS Inc

Public Health Engineering Department (PHED)
-responsible for water & sanitation services in rural areas

Pakistan EPA
regulatory body for enforcing environmental standards
Provisions for IEE and EIA

NGOs
Sindhica Reform Society (SRS)
HANDS
OPP

Analysis of SSS

Over 70 installations developed (community, neighbourhood and institutional levels)

Types of systems:

- *Constructed wetland:* ABR, followed by a constructed wetland
- *Hybrid systems:* Sedimentation Tank, ABR, constructed wetland (sub surface and free flow)

CWs at Ajij Bhatti Park, Karachi
Capacity: 380 m3/day
Type: ABR+CW (main sewer line water diverted)
Developed by: SRS/MAKES

Analysis of SSS

Oxidation ponds

- These types of system were built under World Bank support in 1992 at the Ward level in different places in the country.

- External support received for five years. O&M was handed over to the community but since then the system was left abandoned.

Sand Keerio wastewater treatment facility, Sindh

Analysis of SSS

Sewage Treatment Units (STUs)

- **Uses Effective Micro (EM)**
- **Constructed for villages and small towns (10-50 households)**

- Orangi situated in periphery of Karachi, cluster of **113 low income settlements, population of 1.5 million. OPP** began work in Orangi town in 1980 as an NGO.
- The **low-cost sanitation program of OPP-RTI** enables low income families to finance, manage and maintain sanitary latrines in their homes, underground sewerage lines in the lanes and secondary sewers.
- Trunk sewer and treatment systems: Government
  Construction of latrine and secondary sewer: households
- OPP successful in establishing positive sanitation innovations at grass-roots level, self-financed, self-maintained sewers for over a million population
- OPP model was replicated across the country.

Pic: STU at Khadhar, Sindh
Implementer: OPP through partner

Conclusions and lessons

- No database
- Few private players
- Absence of a clear policy and institutional framework and financing mechanism for small scale systems
- Poor operation and maintenance leading to failure – service contracts
- Appropriate site selection crucial (disaster resilient systems)
- Need to enhance technical competence in design and operation of small scale systems
- Weak compliance and enforcement of standards

Conclusions and lessons

- Realization of the value of Dewats: water reuse and recycling perspective
- A well-established component sharing modality involving communities and external agencies could be strengthened by involving private and public sector to upscale small-scale wastewater management systems.
- Rapidly urbanizing context, within large towns, the neighborhood and fringe areas provide rooms for establishment of SSS systems (areas not accessed by central sewerage networks)