DEBANS - Sanitation
FOR SMALL & MEDIUM TOWNS
– CASE STUDY KOLHAPUR –

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Non-for-profit organization from Bremen, Germany; founded 1977

BORDA facilitates programs for rural and urban poor in the field of basic need oriented services
Consortium for DEWATS Dissemination

Established in 2002

NGOs
SMEs
Government Depts.
Educational Institutions
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<th>Decentralized Basic Needs Services (DBNS)</th>
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<td>• Decentralized Wastewater Treatment</td>
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<td>• Quality and Knowledge Management</td>
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<td>• CBS</td>
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<td>• DEWATS</td>
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<td>• DESWAM</td>
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<td>• DEWASS</td>
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<td>• DERES</td>
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<td>• City-DBNS</td>
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Motivation

• MDG’s on sanitation targets will not be met !!!

• 70% of wastewater is “treated” “on-site”

• On-site and decentralized WWTS will be the dominant technical sanitation & WWT options worldwide over the next decades

• Community sanitation improvements in urban/peri-urban areas depend on effective infrastructure
Motivation

- By 2050, half the population of India would reside in urban settlements

  reason to focus on

- Integrated **Urban** Basic Need Services
Motivation

377 million people in India suffer from water borne diseases

leading to

loss of Rs 12 billion /year
loss of 4.5 lakhs children lives to diarrhea/year

Sanitation brings the single greatest return on investment of any development intervention
(Rs 9 for every Rs 1 spent)
DEWATS + CBS suits to limited budgets and technical capacities found in most communities, SMEs and small/medium towns.

DEWATS + CBS is compatible with all other sanitation/WWTS options.
Community Based Sanitation (CBS)

- Improvement of **public health** and reduction of water source **contamination** specially in low income areas.

- **Cooperation** decision makers at different levels and with local self-help groups, NGOs

- **Holistic** approach -
  - Establishment of self-help groups (SHG)
  - Participatory service provider models
  - Provision of health and hygiene behavioral change measures
  - Provision of customized, environmentally sound sanitation infrastructure
Informed Choice: Selection Tree

Community Based Sanitation System

- O & M Management
  - Options
  - Disposal/Re-use Components
  - Options
  - Collection Component
  - Options

- Health & Hygiene Education
- Options
- Construction Management
- Options
- Treatment Components
- Options
- Toilet Components
- Options
CBS Options

- Shared Septic Tank
- Simplified Community Sewerage
- Community Sanitation Centre
Decentralized Wastewater Treatment System

**DEWATS** is an innovative, partly standardized synthesis of well-known wastewater treatment modules.

It is based on mechanical & biological wastewater treatment components, especially suitable for tropical conditions.

Key feature of DEWATS is its low level of **O&M** requirement.
is led by some principles, being the guide frame for designing

- Decentralization
  responsibility, technology, capacity, …

- Simplification
  process, technology, O&M, …

- Conservation / Recycling
  resources – water, nutrients, energy
Some of the DEWATS modules

- Septic tank
- Anaerobic Filter
- Biogas settler
- Planted Gravel Filter
- Anaerobic Baffled Reactor
- Pond Systems
Byproducts of the process & re-use

**Treated Water**
- Irrigation
- Gardening
- Flushing

**Biogas**
- Cooking
- Heating
- Lighting

**Sludge**
- Soil conditioner
- Horticulture
DNBS filling the gap

„Perfect“ solutions high investment, facilitation & maintenance costs

Efficient & effective, low-maintenance „high impact“ solutions

Inefficient & ineffective „0–impact“ solutions

Kolhapur Municipal Corporation
## Comparison

### Centralized system

- **Planning**
  - Wastewater is collected from large parts of the city and conveyed to a single location for treatment.

- **Design**
  - Design for large areas and complex systems.
  - System expansion requires lumpy investments.

- **Construction**
  - Huge upfront investment (sewer lines, pumping stations, STP).
  - Large scale construction.

- **O & M**
  - System failure affects the whole system.
  - High operation and maintenance cost.
  - Requires skilled manpower.

### Decentralized system

- **Planning**
  - Wastewater is collected from a cluster and treated and disposed/reused near the source.

- **Design**
  - Design is for small area and simple.
  - Incremental modular expansion of system with small investment.

- **Construction**
  - Initial investment flexible.
  - Total investment 50%.

- **O & M**
  - System failure affects only cluster.
  - Low operation and maintenance cost.
  - Doesn’t require skilled manpower.
City wide DBNS - (CSP)

Planning for Sanitation

- Aims at strategic sanitation interventions that lead to changes at city/town level... rather than the creation of isolated pockets of best practices

- The strategy must concern itself, with the way in which the desired outcome is to be achieved

- ....as much as with the outcome it self

- A practical tool leading to implementation
How to include DBNS in Urban Planning?

1. Mapping sanitation status
2. Filtering un-served areas
3. Assessing different options for each site

E.g. for Sanitation

A. Areas with no sanitation infrastructure
   Assess potential for CBS / DEWATS
B. Areas not served but centralized services planned
   Assess CBS / DEWATS as Interim solution
C. Areas served by centralized systems
Conclusion

Decentralized basic need services are critical to the sustainability of rapidly urbanizing cities.

The potential of Decentralized services is yet to reflect in the planning of cities.
Areas where service is not provided

Smart integration of decentralized Basic Need Services into existing Centralised Urban Services

No sewer connection
The Kolhapur Experience
Kolhapur City – An Over View

- **Location:** South west Maharashtra,
- **Economy:** Agro-based Industry
- **Area of city:** 67 sq km
- **Population:** 6 lakhs

<table>
<thead>
<tr>
<th>Year</th>
<th>Water Supply</th>
<th>Treatment</th>
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<tr>
<td>1991</td>
<td>4.06</td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td>4.84</td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>5.45</td>
<td>1 STP (45 MLD)</td>
</tr>
<tr>
<td>2010</td>
<td>5.78</td>
<td>1 STP (45 MLD)</td>
</tr>
<tr>
<td>2025</td>
<td>7.68</td>
<td>4 STP (162 MLD)</td>
</tr>
<tr>
<td>2040</td>
<td>10.1</td>
<td></td>
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</table>

- **Water Supply:** 135 MLD
- **Treatment:** 4 STP (162 MLD)

- **Slums:** 54
- **Slum population:** 56,000
- **Sewage Generation:** 80 MLD
- **Treatment:** 1 STP (45 MLD)
- **Coverage:** 30%
Dissemination of Decentralised Sanitation Solutions

1. State level Seminar  (UDD)
2. District level Seminar  (UDD)
3. City level
4. City demonstration Projects
5. City level seminar
6. City plan for decentralised sanitation solutions
7. Sanitized Cities ??
Dissemination of Decentralised Sanitation Solutions

1. State level Seminar (UDD)

2. District level seminars (UDD)

3. City level seminars (KMC)

Training at KMC
4. **1st Demo Unit: DEWATS for Institution**

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<th>Deteriorated</th>
<th>DEWATS</th>
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<td>sewerage network &amp; septic tanks at staff quarters of Hospital</td>
<td>8000 l/day water recovered. Landscape developed. Community hygiene improved (renewal of sewage network).</td>
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4.

2st + 3rd DEMO Unit: Community Based Sanitation

Slum development program carried out in Rajendra nagar and Salonkhe park. Public toilets were redeveloped in these areas.

Decentralized solid waste management
Components of a customized integrated CBS

1. Community Organization (participatory approach)
   Community Sanitation committees

2. Sanitation Center
   (toilet, child friendly toilets, garden)

3. Decentralised Wastewater Treatment
   (wastewater recycling and reuse)

4. Decentralised Solid Waste Management
   (segregation at source, composting recycling)

5. Establishing O&M frame work and capacity
   (contracts, MoU,

6. Heath & Hygiene education
   (community, household and personal hygiene)
Kolhapur Municipal Corporation

INFORMATION

PLANNING

CAPACITY BUILDING

ORGANISATION
5. City wide plan for DBNS

- Master plan to help Gov. to identify areas not served by centralized system and find appropriate solutions.

- Decentralized approach can be integrated within the centralized system.

- Master planning allows
  - for holistic approach
  - gives short term solutions e.g. one site treatment and
  - long term solutions such as policy initiatives for new developments.
SOME CHALLENGES IN SCALING-UP

Decentralised Sanitation Solution

A - CAPACITY BUILDING AT MUNICIPAL LEVEL
Train staff for construction, O&M, social support measures

B - INTEGRATED PACKAGES
E.g. Sanitation and SWM as Integrated activities.

C - CREATING ENABLING ENVIRONMENT for participation
in service delivery......is a challenge
CHALLENGES IN SCALING-UP

Decentralised Sanitation Solution

D- FINANCING
- Align budget with other budgeting process
- Align sanitation programs with other infrastructure programs and with broader government initiatives such as poverty alleviation and skills delivery etc.

E- COMMUNITY FOCUS
- GOV – NGO – CBO partnership improves communication with communities
What made it work in Kolhapur?

1. Well informed Decision Maker
2. Identification of the right solution packages (local technology)
3. KMC leading
4. Association GOV – NGO – CBO (facilitation of PPP models)
5. Participatory approach (Community ownership)
Let us commit ourselves...
Thank you.

Presentation by –
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Commissioner
Kolhapur Municipal Corporation
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Thanks for your attention!

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