



**Kolhapur
Municipal
Corporation**



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

Bangalore, April 16th, 2010

Pedro Kraemer
BORDA South Asia, Program Coordinator



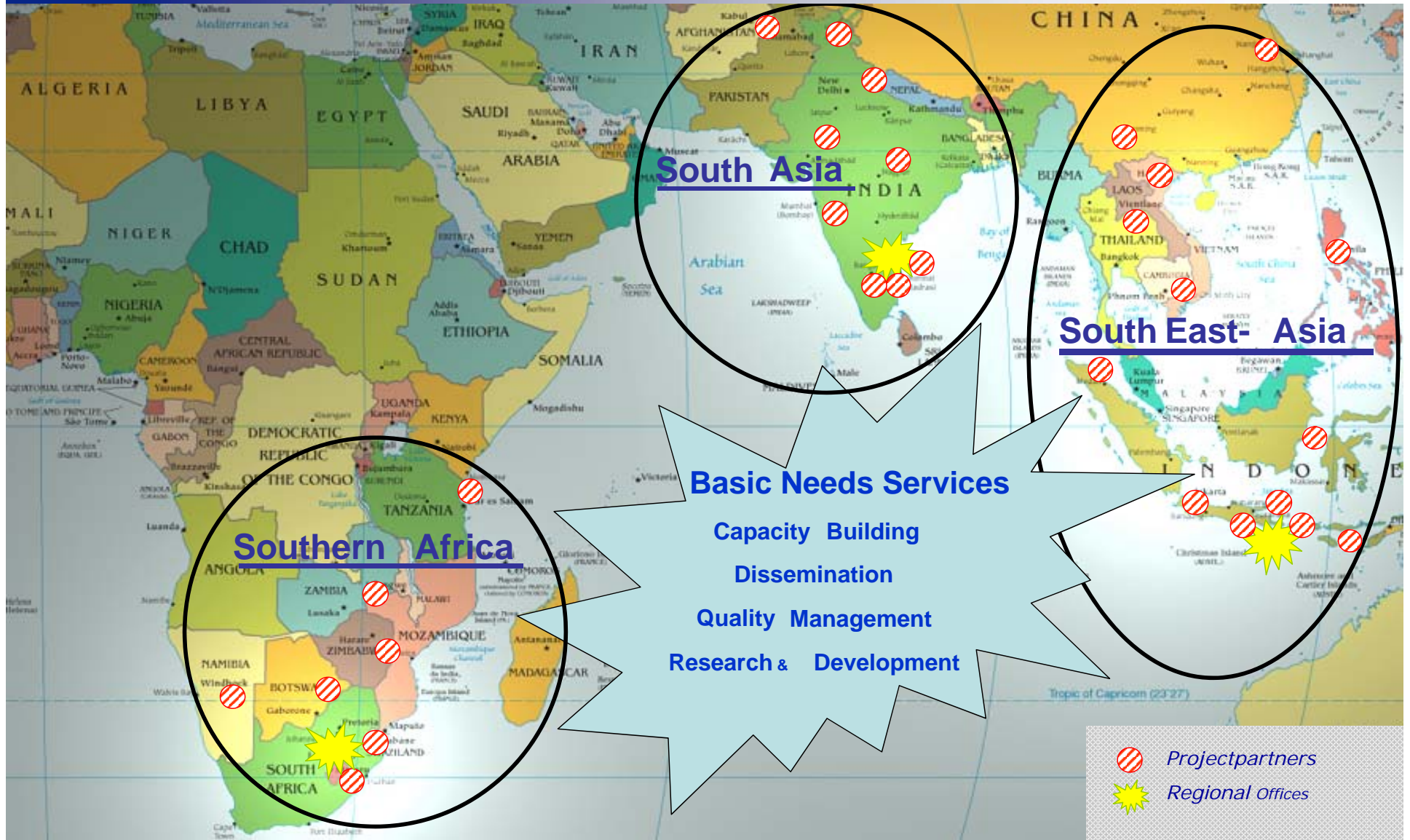
Bremen Overseas Research and Development Association (BORDA)



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

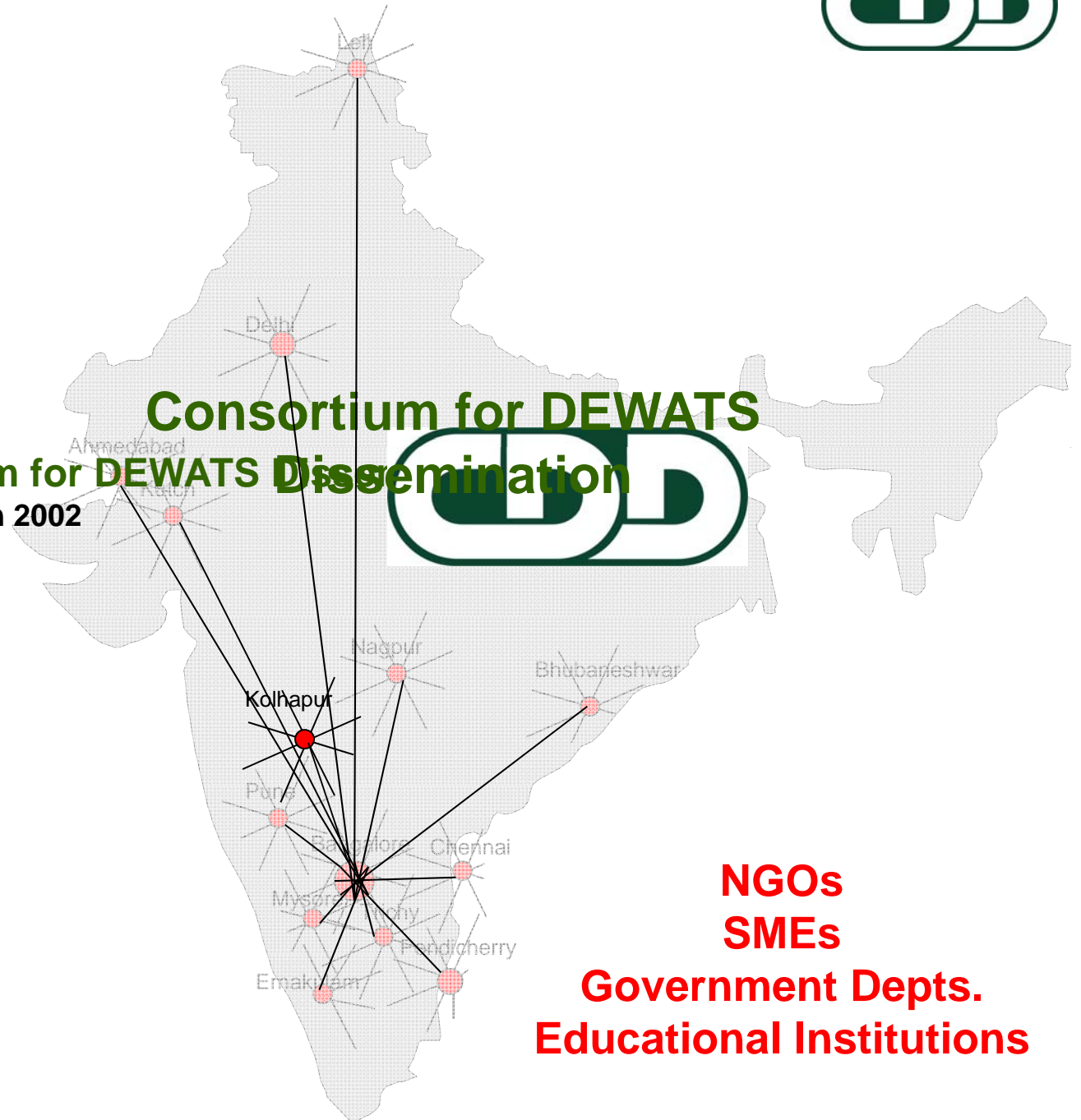




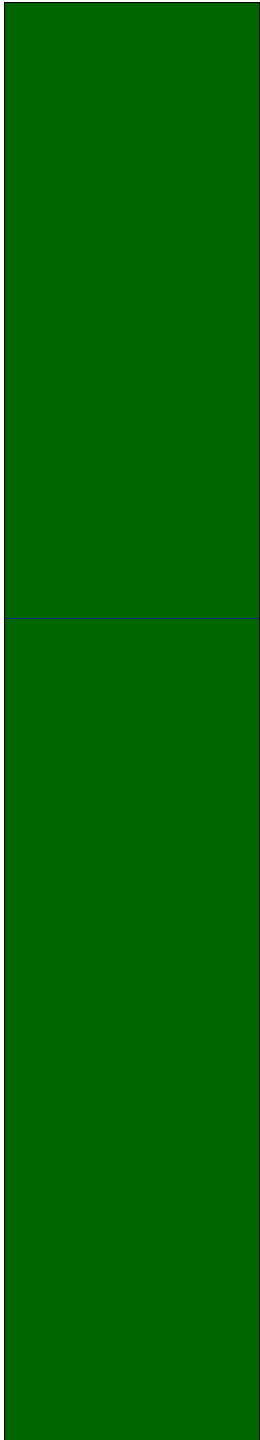
Consortium for DEWATS

Consortium for DEWATS Dissemination

Established in 2002



NGOs
SMEs
Government Depts.
Educational Institutions





Services



Kolhapur
Municipal
Corporation



Decentralized Basic Needs Services (DBNS)

- | | |
|--|--|
| <ul style="list-style-type: none">• Community-Based Sanitation• Decentralized Wastewater Treatment• Decentralized Solid Waste Management• Decentralized Water Supply• Decentralized Energy Supply | <p>CBS
DEWATS
DESWAM
DEWASS
DERES</p> |
| <ul style="list-style-type: none">• City wide DBNS Planning | <p>City-DBNS</p> |
| <ul style="list-style-type: none">• Quality and Knowledge Management | |



Motivation



Kolhapur
Municipal
Corporation



- 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 world wide over the next decades
- Community sanitation improvements in urban/peri-urban areas depend on effective infrastructure



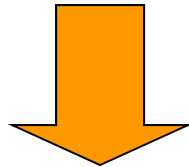
Motivation



Kolhapur
Municipal
Corporation



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



reason to focus on

- Integrated **Urban** Basic Need Services



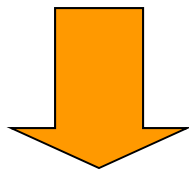
Motivation



Kolhapur
Municipal
Corporation



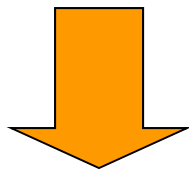
377 million people in India suffer from water borne diseases



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)



Motivation



Kolhapur
Municipal
Corporation



- 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



Kolhapur
Municipal
Corporation



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



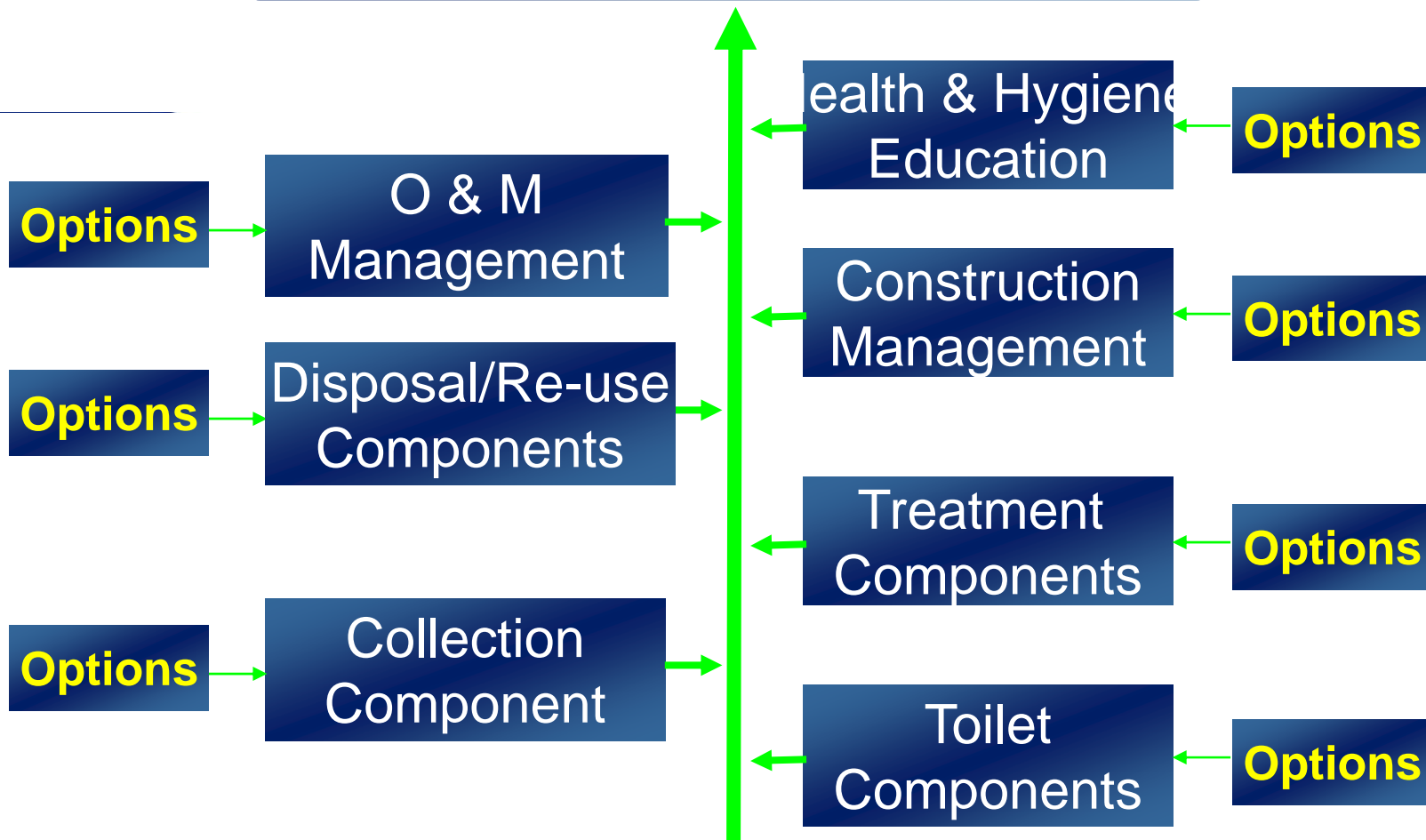


Kolhapur
Municipal
Corporation



Informed Choice: Selection Tree

Community Based Sanitation System

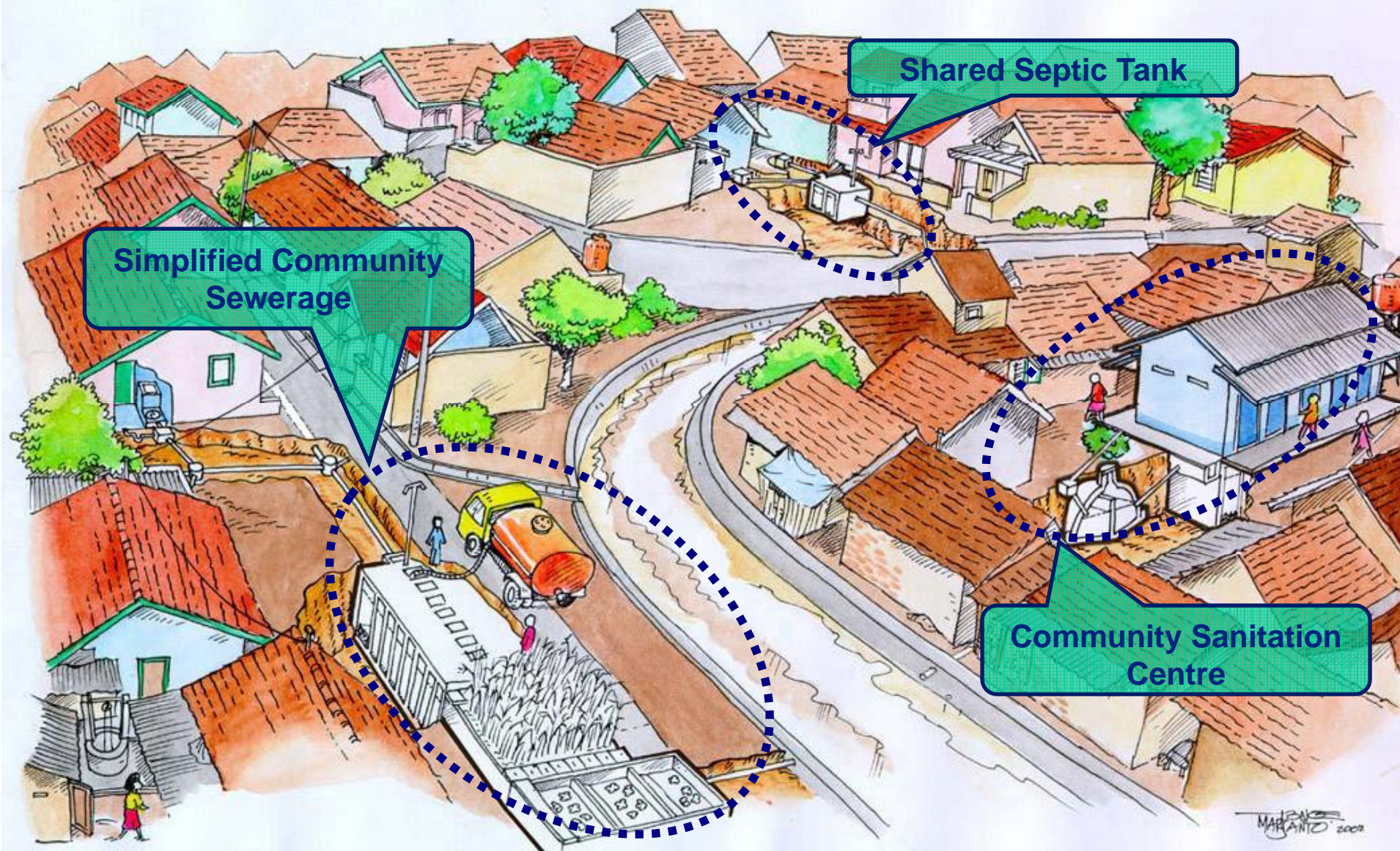




Kolhapur
Municipal
Corporation



CBS Options





Kolhapur
Municipal
Corporation



Decentralized Wastewater Treatment System



DEWATS is an innovative, partly standardized synthesis of well-known waste water-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



Kolhapur
Municipal
Corporation



is led by some principles,
being the guide frame for designing

- **Decentralization**

responsibility, technology, capacity, ...

- **Simplification**

process, technology, O&M, ...

- **Conservation / Recycling**

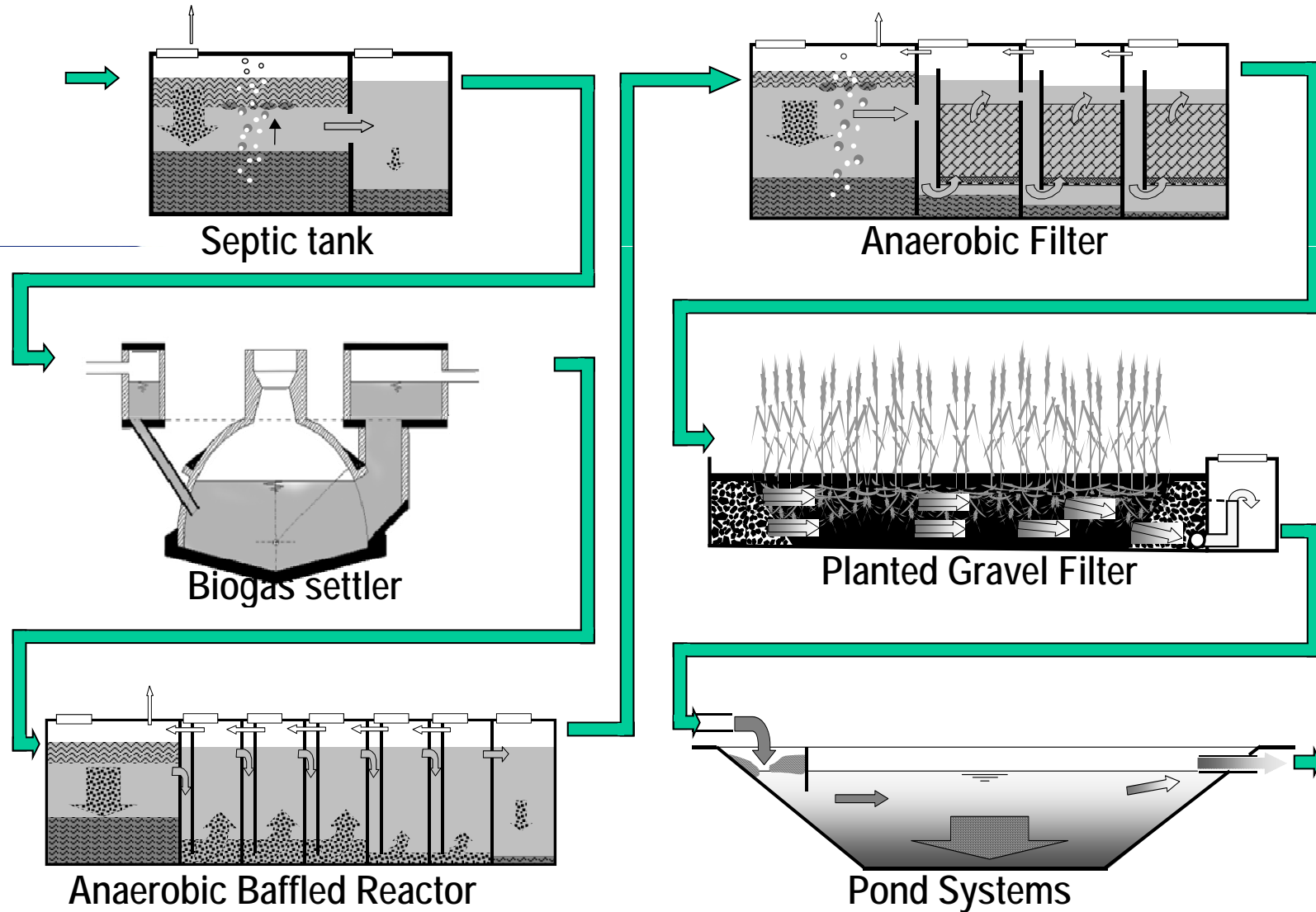
resources – water, nutrients, energy



Kolhapur
Municipal
Corporation



Some of the DEWATS modules





Kolhapur
Municipal
Corporation



FI



Septic tank



Anti-septic filter





Kolhapur
Municipal
Corporation



Byproducts of the process & re-use

Treated Water



Irrigation



Gardening



Flushing



Biogas



Cooking



Heating



Lighting



Sludge



Soil conditioner



Horticulture

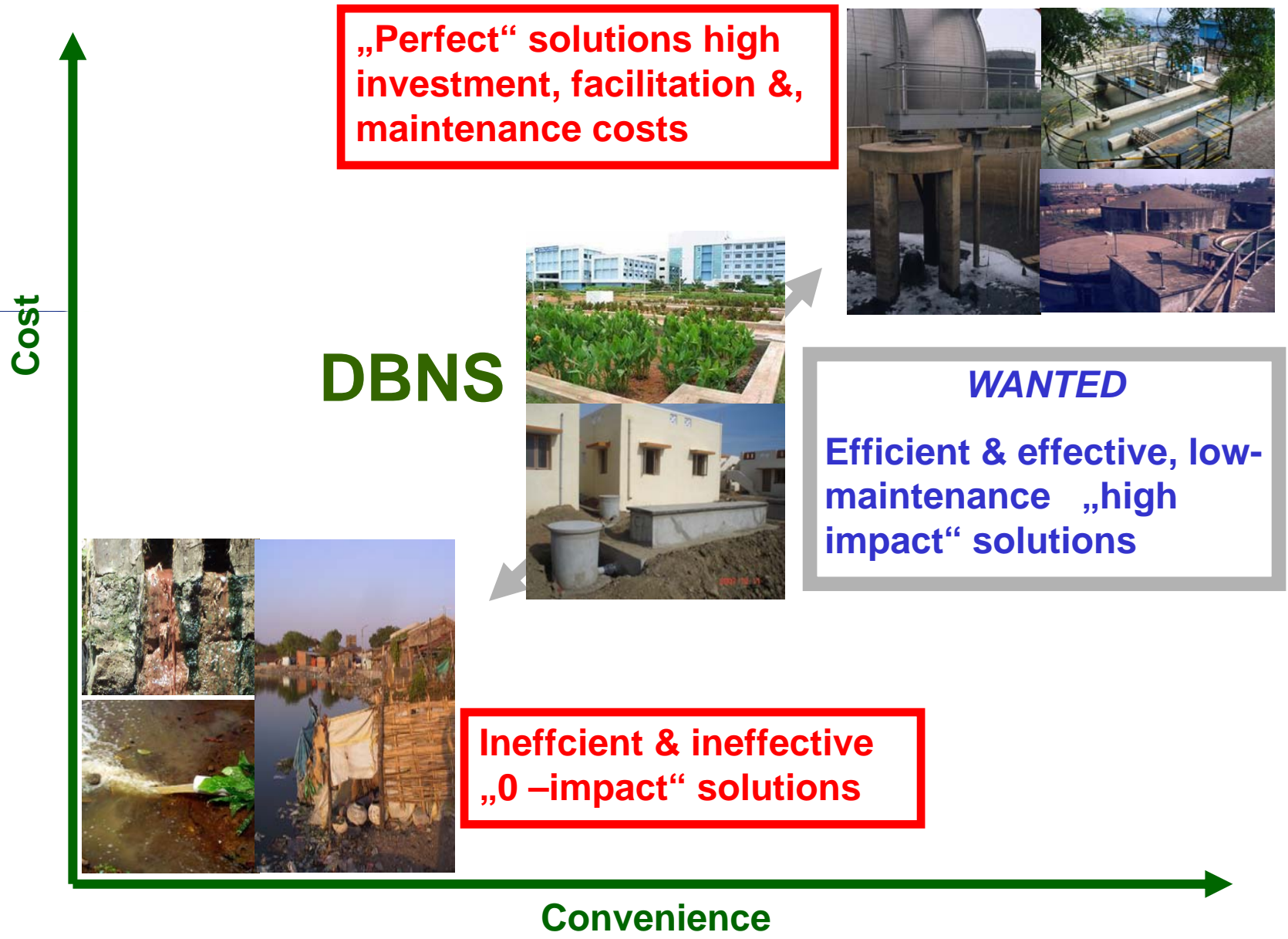




DNBS filling the gap



Kolhapur
Municipal
Corporation





Comparison

20

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
 - 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

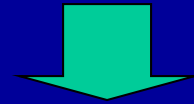
- **Planning**
 - wastewater is collected from a cluster
 - wastewater treated and disposed/reused near the source.
- **Design**
 - Design is for small area and simple.
 - Incremental modular expansion of system with small investment
- **Construction**
 - Initial investment flexible.
 - Total investment 50%.
- **O & M**
 - System failure affects only cluster
 - Low operation and maintenance cost
 - Doesn't require skilled manpower



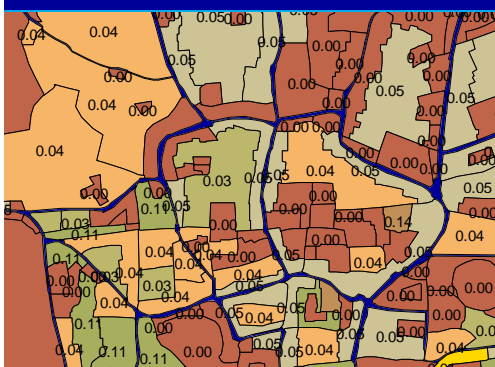
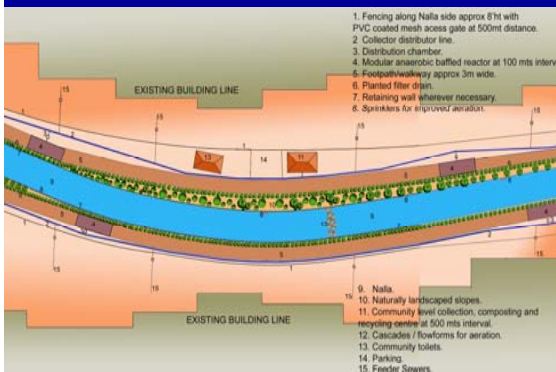
Kolhapur
Municipal
Corporation



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



Kolhapur
Municipal
Corporation



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



**Kolhapur
Municipal
Corporation**



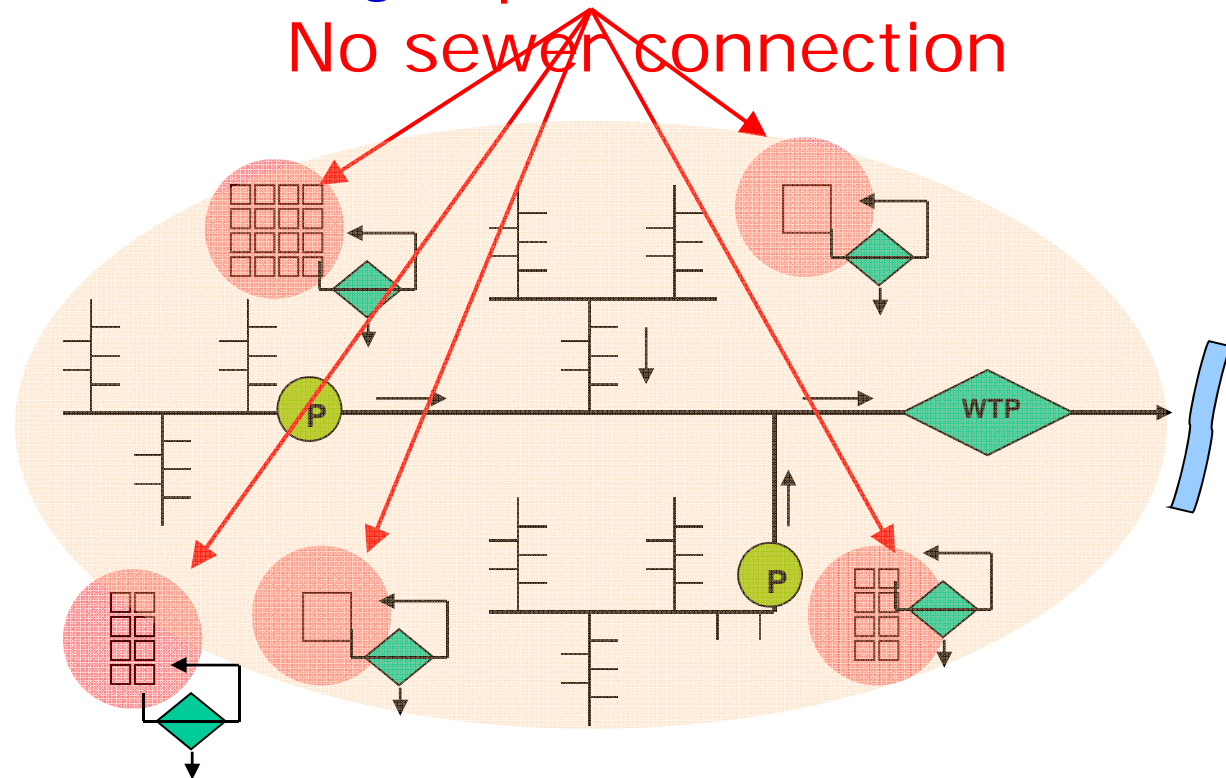
Conclusion

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.



Smart integration of decentralized Basic Need Services
into existing Centralised Urban Services
Areas where service is not provided
No sewer connection





**Kolhapur
Municipal
Corporation**



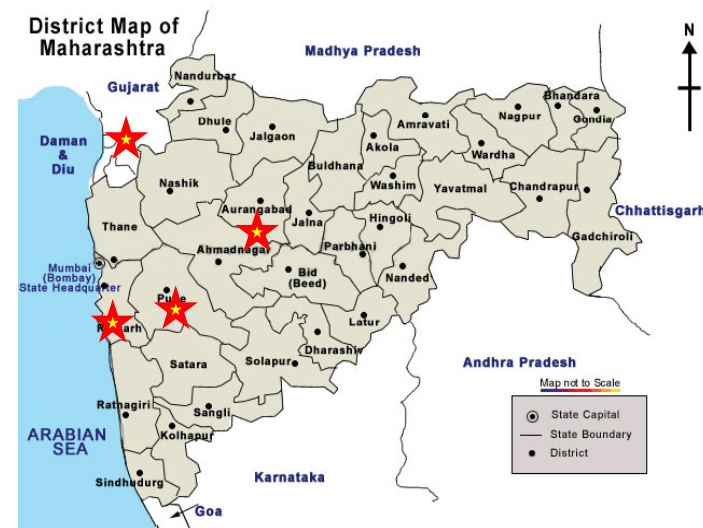
11

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



1991	2001	2007	2010	2025	2040
4.06	4.84	5.45	5.78	7.68	10.1

- **Water Supply:** 135 MLD
 - **Treatment:** 4 STP (162 MLD)
- **Sewage Generation :** 80 MLD
 - **Treatment:** 1 STP (45 MLD)
 - **Coverage:** 30%
- **Slums: 54**
- **Slum population: 56,000**



Dissemination of Decentralised Sanitation Solutions

1. State level Seminar (UDD)
↓
1. District level Seminar (UDD)
↓
2. City level
↓
3. City demonstration Projects
↓
4. City level seminar
↓
5. City plan for decentralised sanitation solutions
↓
6. Sanitized Cities ???



Dissemination of Decentralised Sanitation Solutions

1. State level Seminar (UDD)



2. District level seminars(UDD)



Training at KMC



3. City level seminars (KMC)





4. 1st Demo Unit: DEWATS for Institution

**Deteriorated
sewerage network &
septic tanks at staff
quarters of Hospital**



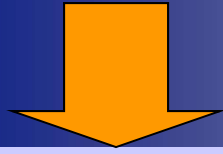
DEWATS

8000 l /day water recovered.

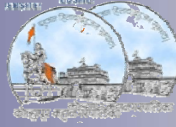
Landscape developed

**Community hygiene improved (renewal of
sewage network).**





In Collaboration with



**Kolhapur
Municipal
Corporation**



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



2st + 3rd DEMO Unit: Community Based Sanitation

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





**Kolhapur
Municipal
Corporation**



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)**



**Kolhapur
Municipal
Corporation**



***Let us commit ourselves...
Thank you.***



Presentation by –
Kunal Kumar
Commissioner
Kolhapur Municipal Corporation
Contact - 0231-2546171





Kolhapur
Municipal
Corporation



Thanks for your attention !

For more information,
please do not hesitate to contact us:

Tel/Fax: ++ 91-80-41527554

eMail: bangalore@borda-sa.org

Homepage: www.borda.de