



**A promising concept to  
improve livelihoods and  
sanitation infrastructure  
in poor urban areas**



**BORDA**

**CBS |  
DEWATS Service Package**

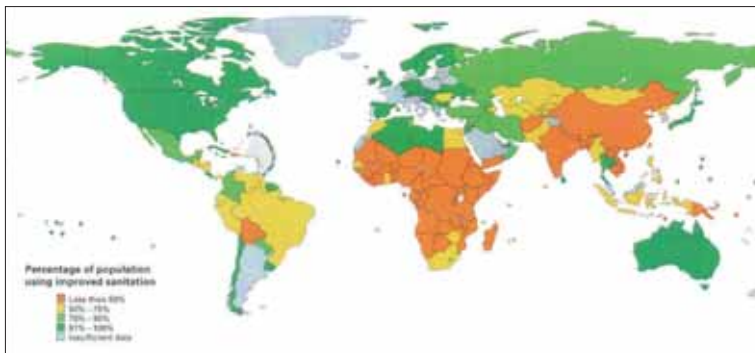
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# An Overview

Official statistics suggest that about 2.6 billion people do not have access to "improved" sanitation. 75% live in Asia, 18% live in Africa and 5% live in Latin America and the Caribbean.

The CBS framework is tailored to improve sanitation conditions in densely populated urban areas. Project implementations depend on the active cooperation of communities, governments, NGOs, and the private sector. Implementation of smart and proven technical options are synthesized with capacity building measures and technical expertise to mainstream Community-Based Sanitation (CBS) as a viable technical option in areas, where neither individual on-site systems nor centralized sewerage systems can fulfill the need of stakeholders for basic sanitation.

CBS projects are based on a holistic and demand responsive approach. Instead of simply providing sanitation "hardware", CBS-projects aim to improve hygiene behavior and sanitation infrastructure in a more integrated and sustainable manner. CBS projects generally focus on poor and densely populated areas and closely reflect preferences of the target communities.



Half the developing world is still without improved sanitation

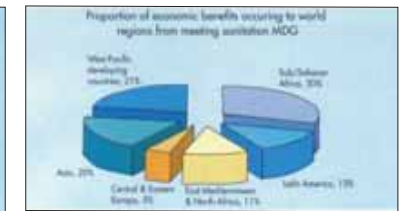
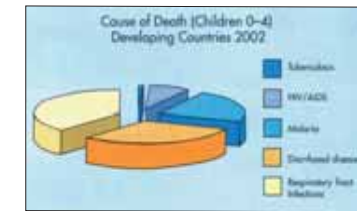
Source: WHO/Unicef JMP, Meeting the MDG, mid-term assessment 2004

# The Challenge

## Lack of basic sanitation threatens livelihoods and national economies

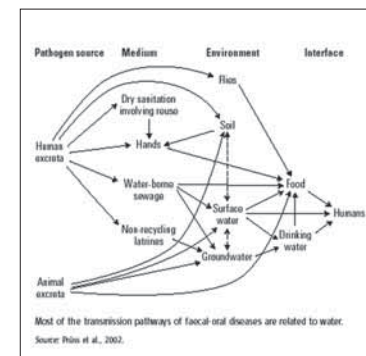
Increased urbanisation and industrialization has reduced quality of livelihoods significantly for millions of people who live in low-income settlements within cities. Lack of basic sanitation infrastructure endangers public health and natural resources, resulting in enormous losses of lives and public/private funds.

Recently published data suggests that improved sanitation reduces diarrhoea morbidity by 32% on average. report by the Asian development Bank (ADB) estimates the economic losses through inadequate sanitation and sewage treatment for Indonesia to be 4.7 billions \$ per year. Besides improving livelihoods and the environment, provision of sanitation facilities would substantially benefit national economies.



Cause of death among young children and potential economic benefit from meeting the sanitation MDG  
Source: B. Evans, Securing Sanitation, SIWI 2004

World Region	Population (m)	Cap. Growth (%)
Asia	3,800	6.7
Latin America	500	5.5
Sub-Saharan Africa	700	5.5
Central & Eastern Europe	400	2.5
World pop. 6.5 bn	6,500	5.5
World pop. meeting sanitation	1,250	5.5
All regions	7,000	5.5



Transmission pathways of faecal-oral diseases  
Source: Prüss et al. 2002

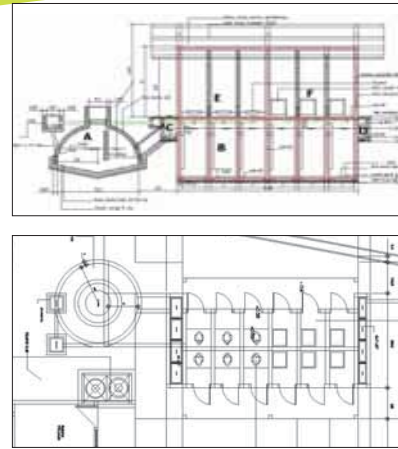


# A Demand Based Solution

New infrastructure development projects usually provide sanitation services to up to 60-70% of the urban population, residing in strategic residential areas, whereas CBS schemes aim to improve health and environment of communities in densely populated areas with low income, usually located in inner-city areas or at the fringe of industrialized zones. The CBS approach is an alternative option that fills the significant „gap“ between inappropriate on-site sanitation (e.g. absorption pits) and the shortcomings of expensive conventional centralized sewerage collection and treatment systems.

between sanitation, hygiene and diseases and are encouraged to organize the operation and maintenance of sanitation infrastructure. CBS projects are highly demand responsive and rely on active participation as well as contributions from target communities and municipalities. Specific mechanisms have been developed for planning and budgeting in order to make CBS compatible with administrative requirements of governments. According to requirements and abilities, sanitation is planned, designed and constructed for and together with the community.

Within CBS communities find their own informed demand, are given education about the connection



CBS fills the Sanitation Gap

# CBS Framework and Principles

Successful CBS projects and programs are based on a multi-stakeholder approach, e.g. a planning, implementation and management framework in which responsibilities and tasks are shared in a systematic manner between different CBS-stakeholders such as communities, Government departments, NGOs, international donors, etc. Two main CBS implementation and management schemes can be distinguished:

### „Provider managed CBS Scheme“

In this case primary investment costs for sanitation infrastructure is financed by public or private development agencies, technical implementation is facilitated by a qualified technical agency (Public, private, NGO) and a service provider agency, generally a qualified NGO, is responsible for all operation and maintenance tasks.

### „Community managed CBS Scheme“

Also within this scheme, investment costs are financed by public or private development agencies, however, technical implementation relies on the active participation of residents and community self-help organisations are responsible for managing of sanitation facilities. Both schemes have been successfully demonstrated and are equally valid alternatives. Choice of either scheme should be based on preference of communities and key-stakeholders on municipality level. Within both schemes, contribution of user-fees are essential to cover operation & maintenance costs.

### Demand-Responsive Approach (DRA)

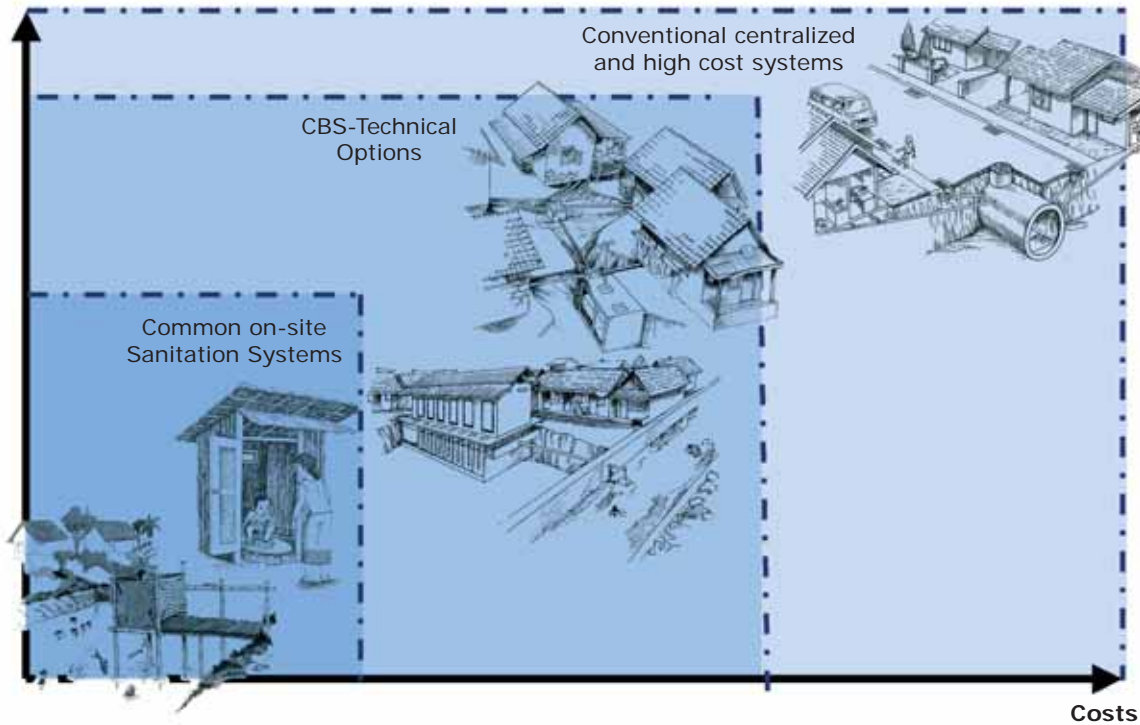
CBS initiatives and partnerships are established in regions where stakeholders on different levels are willing to promote, finance and manage CBS infrastructure. Participating communities should be free of conflict between residents.

- **Participatory Planning:** Participatory project planning must achieve equity within community regarding access to new sanitation infrastructure.
- **Informed Choice:** Sustainable CBS systems reflect the preferences

of stakeholders. Through the Informed Choice approach, communities and municipalities are informed about benefits and disadvantages of different options before decisions are made. **Professional Design and Workmanship:** Functioning and long-lasting sanitation infrastructure depend on professional technical designs and high-quality craftsmanship.

- **Operation and Maintenance:** Costs for operation and maintenance of sanitation infrastructure should be fully covered by communities/users.

## Convenience



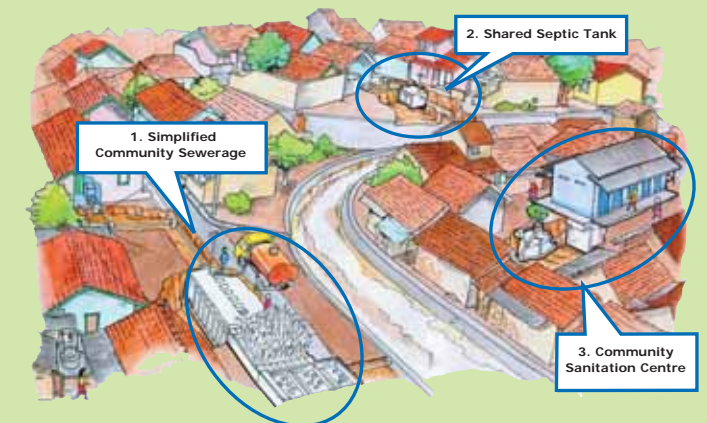
## Favourite CBS Systems

Analysis of numerous implementations in Asia has shown that only three types of water-based CBS-Systems or its combinations are preferred by communities so far

- **Simplified sewerage-systems for settlements**  
Low-diameter sewerage system that collects and discharges household-wastewater from houses of one settlement into low-maintenance wastewater treatment plants (1)
- **Shared septic tank system**  
A number of houses are connected

to one septic tank (2). Systems (1) and (2) are appropriate for smaller and larger poor areas where houses are privately owned and households are willing to invest to upgrade sanitary hardware.

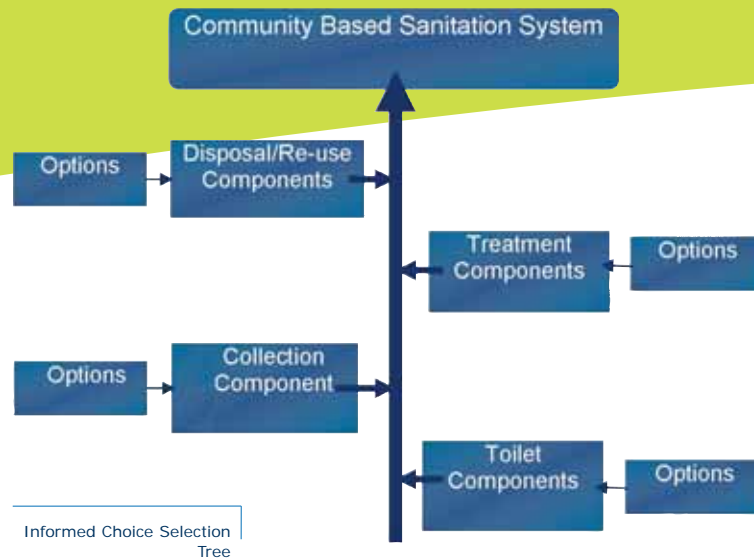
- **Community Sanitation Centres**  
Consist of public water points, toilets, bathrooms and laundry areas. Most appropriate in settlements where majority of residents live in rented accommodation and where space is limited for in-house sanitary hardware.



# Technical Options – Informed Choice

## CBS Components

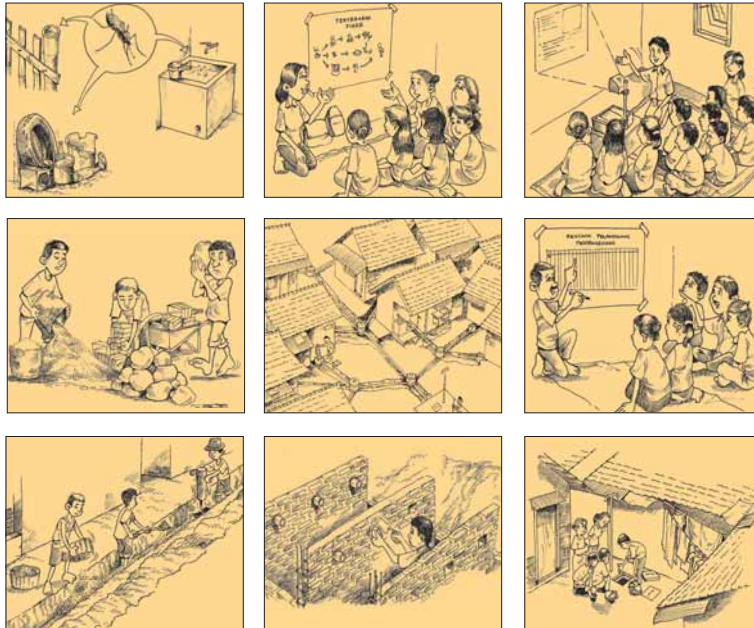
Selection of CBS-systems and its components, depend on existing requirements and capacities of implementing communities. Basic CBS system consist of a toilet component, a collection component, a treatment component and a disposal/ reuse component. The main CBS-components are shown in the selection-tree below.



Informed Choice Selection Tree

## Selection Criteria for Technical Options

- **Capacity:** Are components suitable for individual households and/or neighbourhoods with up to 1000 inhabitants?
- **Costs:** Are anticipated investments and costs for operation and maintenance compatible with existing financial resources?
- **Self-help compatibility:** Can communities effectively assist during construction and implementation? During which phases of implementation is expert staff required?
- **Operation & Maintenance:** Can routine operation and maintenance activities be carried out by members of the community or is expert help required?
- **Replication potential:** Can sanitation experts of municipalities replicate/disseminate preferred technical options independently?
- **Reliability:** Can a problem-free functioning and operation of technical options be guaranteed
- **Convenience:** How far do technical options match preferences of communities regarding „convenience“?
- **Treatment Efficiency:** What environmental discharge standards must be met?



# Sludge stabilization and treatment plants

## When municipalities want to mainstream CBS and Decentralized Wastewater Treatment Systems

Municipalities embarking on disseminating Community Based Sanitation must be aware of the fact that appropriate disposal of sludges accumulated in small-scale wastewater treatment systems need to be carried out in intervals of one to two years. An on-site treatment of digested sludge may be a valuable option in settlements where sufficient area for de-watering or composting is available. However, municipalities

embarking on a large scale implementation of CBS schemes with integrated small wastewater treatment facilities should consider to plan for installing appropriate sludge-treatment facilities at an early stage of

a CBS dissemination programme as an uncontrolled discharge of liquid sludges into the environment poses serious risks for environmental health.

Input	Features of a basic ILPT-plant	Output
Septage	- Screening - Grease Trap - Two Anaerobic	Screenings Grease
Industry Sludge	- Stabilization Reactors - Sand filter bed - Tunnel Dryer - Baffled Reactor - Aaerobic Gravel Filter	Biogas Compost Water



# CBS-Benefits

## Improved Livelihoods

CBS will improve quality of livelihoods and health, especially of mothers and children.

## Protecting clean water sources

Wastewater treatment options will reduce pollution load of groundwater and rivers.

## Innovative Potential of CBS

CBS fills the gap between problematic on-site solutions and costly centralized sewerage systems.

## Efficiency – Time

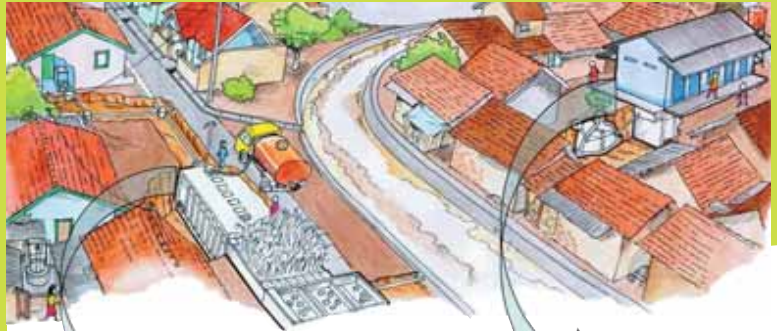
Less than 12 months are anticipated for planning and implementing CBS-systems.

## Efficiency – Costs

Investment as well as operation & maintenance costs of technical CBS options are low.

## Training and capacity building

Stakeholders are trained to plan, implement and manage CBS independently.



Communities improve their livelihoods:  
left: Volleyball field on top of the new CBS-wastewater treatment unit  
right: Community Sanitation Center – a green spot in the settlement

## Eco-friendly tested technical options

Technical options promoted within CBS are smart, proven, and long-lasting. Optional re-use of treated water and biogas utilization are means for active protection of the environment.

## Replication

Local facilitators ensure future CBS replications in participating cities.

## Informed Choice

Communities choose their “own” CBS system after being informed by qualified experts.

## High visibility

Regular information campaigns ensure a high visibility of CBS activities in the media.

## DEWATS Service Packages

- o Treatment Systems
- o Community Based Sanitation
- o School Based Sanitation
- o Sanitation for Hospitals & Hotels
- o Wastewater Treatment for Agro-Industry
- o Emergency Sanitation
- o Sanitation for Prisons
- o Sanitation for Real Estates
- o Sanitation Mapping
- o Municipal Sludge Treatment Plant
- o Health Impact Assessment & Hygiene Education
- o Capacity Development
- o Standardisation
- o Research & Development

## DEWATS – Decentralized Wastewater Treatment Solutions

Developed & disseminated by BORDA and over 20 BORDA BNS Network Partners in South and South East Asia & Southern Africa



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