



Decentralized Wastewater
Treatment Solutions

MSTP | Municipal Sludge Treatment Plant



**An innovative solution to cope
with the problem of septage
sludge disposal and treatment
within a decentralized
sanitation approach**



BORDA

**MSTP |
DEWATS Service Package**

**Developed and disseminated by
BORDA & BORDA BNS Network**

Improper disposal of urban sanitation sludge spreads deadly infections at alarming rates

A challenge to sanitation

Improved sanitation still remains an important challenge to the Millennium Development Goals, which aim to greatly alleviate conditions for the World's impoverished people. In many dense urban areas there already exists sanitation facilities, but they can be neglected and poorly maintained without a central disposal site. The results are sanitation systems that fail to safely dispose of sanitation sludge because of inadequate or inefficient infrastructure. This endangers public health and pollutes the environment. A recent UN report estimates 15% of basic sanitation facilities lack proper separation of human waste from human contact. The consequences are sanitation facilities become a transmitter of infectious diseases and environmental pollution, a direct contradiction of their original purpose.



Disposal of sludge into water supplies is increasing infection and pollution rates

Gaps in centralized sanitation

Currently, 95% of worldwide wastewater is discharged, is insufficiently treated or completely untreated. The majority of residential areas and new real estate complexes, mostly in developing countries, rely on septic tanks and other decentralized systems.

Improper disposal of sludge

All on-site treatment facilities, including septic tanks and open pit latrines, require regular removal of sludge. The removal of this potentially valuable waste is often neglected causing dangerous overflow or improper disposal into water supplies. The results can be deadly through the rapid spread of cholera, worm infestations, hepatitis, and diarrhoeal diseases. On-site desludging is not an option in areas of dense populations and scarce land - a common situation in slum areas outside the reach of centralized sanitation systems. Proper disposal of septage sludge is not promoted and existing treatment facilities lack adequate capacities



Open disposal can overflow in heavy rains causing runaway spread of diseases

Sustainable sanitation, long-term action

According to BORDA, "What cannot be sustained should not be built." DEWATS municipal systems for sludge treatment innovatively and efficiently dispose of on-site sludge by using sustainable mechanical and biological treatment modules without electrical energy, chemicals, and imported materials.

BORDA BNS Networks Mission

With a mission to improve the livelihoods of disadvantaged groups within societies and to sustain the functioning of eco-systems through dissemination of demand oriented Basic Needs Services (BNS), BORDA (Bremen Overseas Research and Development Association) and its BNS Partner Network develop and disseminate innovative solutions for facilitating the access to BNS.



Neglected maintenance contradicts original intentions and design of sanitary facilities

DEWATS Service Packages

One Basic Needs Service is DEWATS, an effective, efficient, affordable and proven wastewater treatment solution for (sub-) tropical regions and low-income countries. DEWATS stands for "Decentralized Wastewater Treatment Solutions", but it is much more than just a technical approach. DEWATS Service Packages include not simply the construction of hardware but a whole set of integrated measures which are combined according to demand. The Sludge Treatment Plant (STP) is one of these DEWATS Service Packages that aims to improve the sanitation conditions in small to medium sized cities by providing a central location for sludge treatment and disposal.

DEWATS STP efficiently treats sludge from many decentralized sanitation facilities

DEWATS Municipal Sludge Treatment Plants

As with other DEWATS solutions, a Sludge Treatment Plant is designed with innovative technology that can be built by local craftsmen and engineers using locally available resources. The municipal based STP is an affordable solution for the regular maintenance of all onsite treatment systems. This ensures the existence and sustainability of safe sanitation. It enables cities to set up a regulation framework and a management plan for decentralized sanitation at their own pace.

Key MSTP features

DEWATS MSTP is an efficient and final treatment solution for sludge waste that utilises sustainable and adaptable technology to implement the following key features:

- o Low investment and operation costs
- o The high load capacity and efficient design allows DEWATS MSTP to accommodate the demands of small to medium cities at a low investment cost
- o The municipal-based sludge treatment plant can accommodate high loads of organic industrial waste as well as septic sludge from residential septic tanks, open pit latrines, and other DEWATS CBS solutions
- o The construction of a central sludge treatment plant fills gaps in

- o areas where centralized sanitation systems do not serve
- o Allows on-site waste to be disposed of properly and on-time without unnecessary environmental degradation and human health risks
- o An open-system and demand based approach within the fiscal reach of municipal governments
- o The proper implementation of a locally-adaptable, central sludge treatment facility includes the option for compost packaging and biogas generation

Resulting benefits

These measures which are coordinated by BORDA's regional offices and implemented with local BORDA BNS Partner Organizations provide a multiplicity of benefits:

- o An expandable solution to sanitation challenges by providing a final treatment facility to dispose high loads of sludge
- o The reduction of transmittable diseases and unsanitary conditions through routine and proper maintenance of on-site sanitation facilities

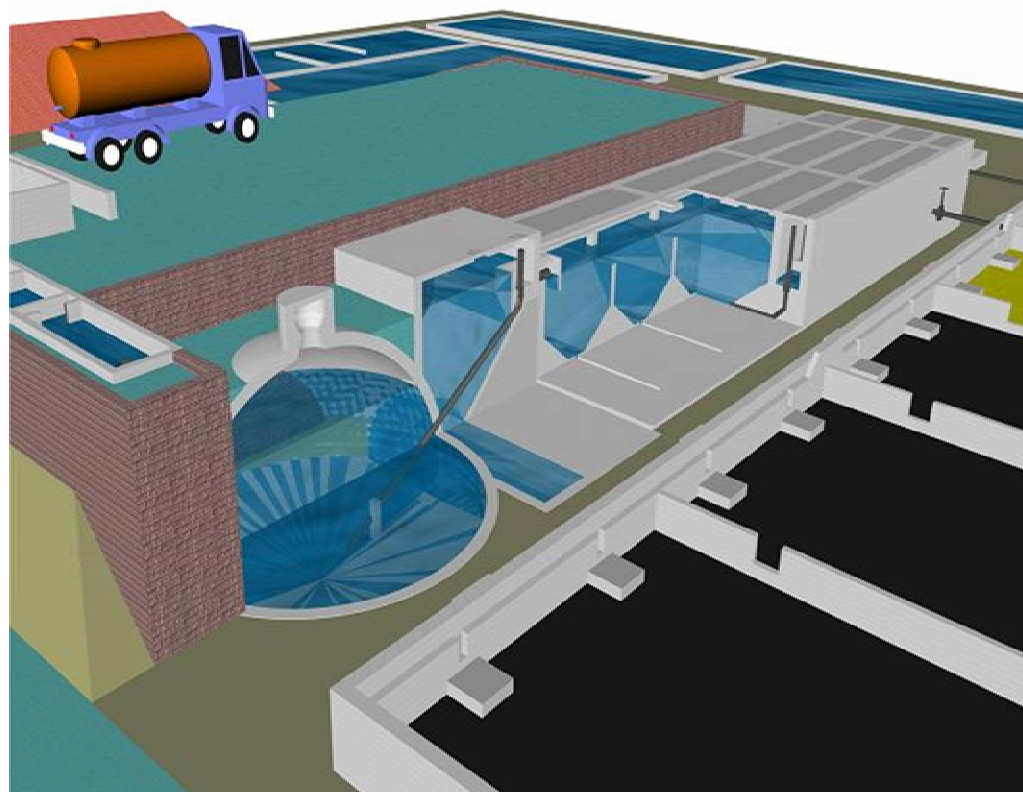
- o The biological treatment of wastewater without technical energy inputs by DEWATS applications makes wastewater meet environmental standards and advances the living conditions of densely populated areas



Investment costs are low because DEWATS MSTP is designed with locally available materials and built by local craftsmen and engineers.



Long-lasting design and non-sophisticated maintenance allows for continual operation



DEWATS STP - a proven solution

Additional benefits

- o The biogas that is generated during sludge treatment is captured and can be used for lighting, cooking or water heating.
- o Compost is a naturally occurring and beneficial fertilizer produced through the treatment process that can be distributed directly to farms
- o Non-sophisticated maintenance allows for continual operation and low operational costs

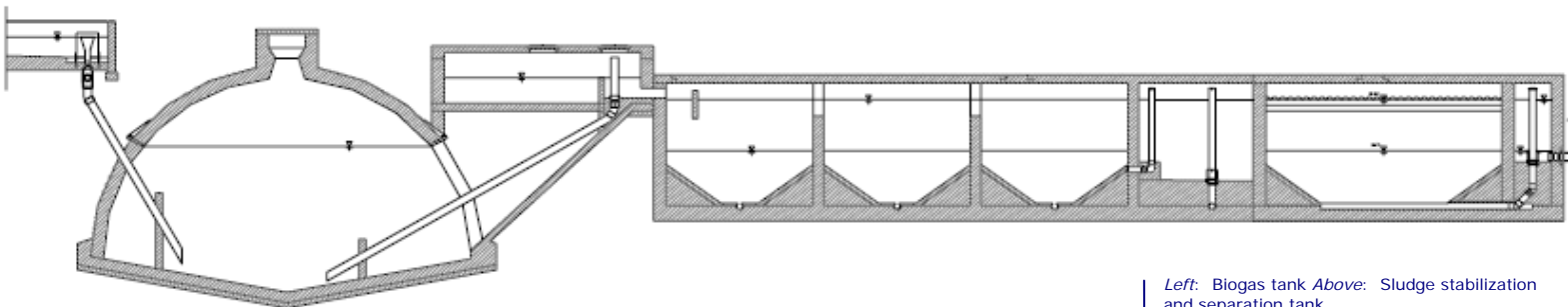
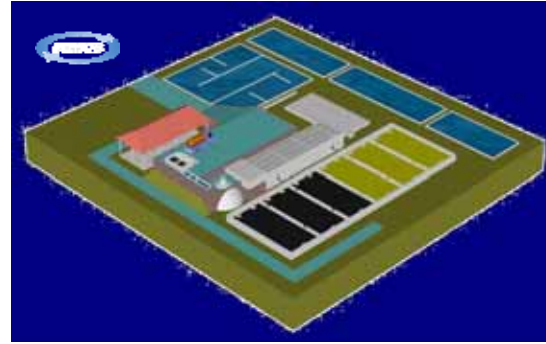
Sanitation Mapping

Locating decentralized sanitation facilities and solid waste dumps has been made easier with the sanitation mapping soft-ware, DEWATS SanMap. It allows local governments to systematically collate and analyse available data on the local sanitation situation. Using this tool helps them to develop plans for up-grading municipal STP's and sanitation infrastructure.

Today, BORDA and its BNS Partner Network, have already achieved the sustainable operation of more than 900 DEWATS solutions. This demonstrates that DEWATS Sludge Treatment Plant is a proven and affordable solution to combat sanitation grievances in small to medium cities. STP costs around \$100.000 USD depending on the load capacity and regional conditions. Implementations are found in Aceh and Mojokerto Municipalities in Indonesia.

A proven solution

For over 10 years BORDA has led the way in innovative sanitation facilities.



Left: Biogas tank Above: Sludge stabilization and separation tank

DEWATS Service Packages

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

DEWATS – Decentralized Wastewater Treatment Solutions

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

With support from:



BORDA

Bremen Overseas Research and Development Association

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BORDA Germany
Head Office
fon: + 49 - 421-137 18
e-mail: office@borda-net.org
www.borda-net.org

BORDA South East Asia
Programme Office
Indonesia
fon: + 62 - 274 88 82 73
e-mail: yogya@borda-sea.org

BORDA South Asia
Programme Office India
fon: + 91 - 80 41 52 75 54
e-mail: bangalore@borda-sa.org

BORDA SADC
Programme Office
fon: + 255 – 22 2600 234
e-mail: dar@borda-sadc.org