



Decentralized Wastewater
Treatment Solutions

SBS | School Based Sanitation



**A promising concept to
improve hygiene and health
in schools**



BORDA

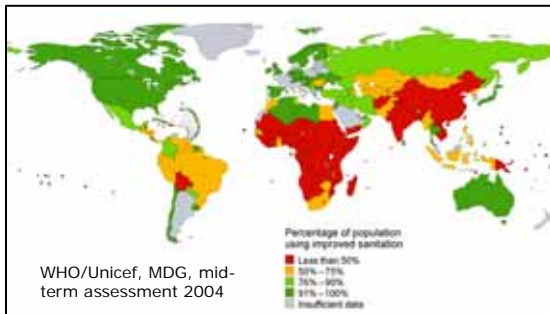
**SBS |
DEWATS Service Package**

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

School children are threatened by a high risk of infection & a lack of privacy and security

Threat to public health

The fact that about 2.6 billion humans around the world, especially in Africa and Asia, suffer from a lack of access to proper basic sanitation reveals the necessity of acting innovatively. Without sufficient sanitation people have to face not only an unworthy and polluted environment, but also a high risk of infection as well as a deficiency of privacy and safety.



In considering the state of public health, it becomes clear that in particular children are afflicted with life-threatening sanitation conditions – most notably at school.

- o Over 980 million children under the age of 18 do not have access to adequate sanitation (UNICEF).
- o Due to unhygienic toilets, hundreds of millions of school children are infected with parasites and worms (UNICEF).
- o 5000 children a day die from diarrhoea which is caused by poor sanitation (UN-Water).

Assault on privacy and security

Insufficient sanitation facilities threaten or ignore privacy and security needs of school children. Due to insecure toilets, which can't be locked, there are often cases of molestations and sexual assaults towards boys and girls. As a result of fear, substantial absenteeism or even dropping out of school distracts pupils, mainly girls, from appropriate education.

Environmental pollution

Most wastewater from schools is discharged untreated into the surrounding environment. This additionally threatens the health of residents who live near schools.

Investment for the future

The improvement of the situation for today's school children has to be seen as an important contribution to the Millennium Development Goal 7, which aims to halve the proportion of people living without basic sanitation by 2015.

According to BORDA's guiding principle - "Facilitating Basic Needs Services – thinking long-term, acting now!" - up scaling the access to sufficient sanitation for school children is needed as an investment for the future.

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, BORDA (Bremen Overseas Research and Development Association) and its BNS Partner Network develop and disseminate innovative solutions for facilitating the access to Basic Needs Services (BNS).

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. SBS (School Based Sanitation) is one of these DEWATS service packages that aims to improve the sanitation conditions in schools.

Secure? Private? Healthy? Conventional school sanitation e.g. India, Zambia and Indonesia



The DEWATS SBS Service Package guarantees hygiene, dignity and basic sanitation in schools

DEWATS School Based Sanitation

During the process of DEWATS SBS implementation in schools, BORDA and its partner organizations cooperate with willing local partners to reconcile the interests of all stakeholders (e.g. school maintaining body, municipality, target group) to construct sanitation facilities that meet the needs of children and young adults. The on-site underground wastewater treatment system provides state-of-the-art technology. Education, evaluation and training programmes complete the DEWATS SBS Service Package to assure the right handling, reliable maintenance and, therefore, the sustainability of the whole SBS project.

Key SBS features

In order to combat the consequences of poor school sanitation, namely the high risk of infections, insecurity and environmental pollution, the following measures are taken during the implementation of DEWATS SBS:



Water tanks guarantee the provision of fresh water

- The willingness for appropriate participation of potential schools is assessed by a **demand-based selection process**. Within this process, the ability of co-financing and the assurance of satisfactory house-keeping have to be documented.

- Planning, financing, implementation and management of the project with participation of all stakeholders
- The construction of a well-built and inviting **sanitation centre** that provides **fresh clean water** and toilets that meet basic **hygienic standards** as well as separate facilities for males and females
- The implementation of a decentralized, sub terrestrial and locally adapted **wastewater treatment** system, including the option for **wastewater re-use** and **biogas generation**
- **Health and Hygiene Education (HHE)**, **Health Impact Assessment (HIA)** and **maintenance training** for the preparation, implementation and management of proper School Based Sanitation



Housekeeping, operation & maintenance training is included in the SBS Service Package

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:

- Thanks to clean toilets and the provision of fresh water, the hygienic conditions are improved, which leads to a **significant reduction of health risk and infection**.

- **Good hygiene behaviour**, due to Health and Hygiene Education and the **availability of hygienic sanitation** facilities for children and teenagers, is improved in a sustainable manner at school, but it is also **transferred to home** - from children to parents. Thereby, **social dissemination** of upgraded hygienic customs is initiated.
- **Privacy, security and dignity** of the school children are ensured by the new toilet facilities. In consequence, **absenteeism and school dropout rates** are lowered observably, especially for girls.



Three girls are exploring the new Sanitation Centre at the Iman Poworejo School, Indonesia

- The biological treatment of wastewater without technical energy inputs by DEWATS applications makes wastewater meet **environmental standards** and advances the living conditions in the school's surrounding area.



DEWATS SBS - a proven solution

Additional benefits

- o The biogas that occurs from wastewater treatment can be used for cooking in the school kitchen.
- o The school garden can be irrigated by the treated water from the DEWATS plant.



The biogas, generated by the DEWATS plant, is used for cooking in the school kitchen

Operation & maintenance training

The benefits of DEWATS SBS can only be assured through permanent and attentive housekeeping. That's why the DEWATS SBS Service Package integrates a special operation and maintenance training. It enables students or housekeeping staff to run the facility independently, which is crucial for its sustainability.



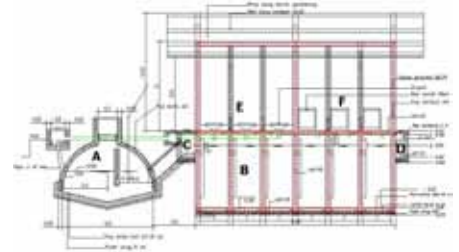
Pupils in India meet a Sanitation Centre with toilet facilities suitable for children

Major maintenance, when required (e.g. desludging every two years), is distributed to professional organizations. Compulsory monitoring is carried out during the start-up phase and optional whenever there is an assumption that the system does not work correctly.

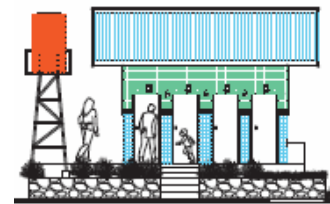


A proven solution

Today, BORDA and its BNS Partner Network, have already achieved the sustainable operation of more than 900 DEWATS plants, including the successful realization of over 30 SBS projects. This demonstrates that DEWATS School Based Sanitation is a proven and affordable solution to combat sanitation grievances at schools. Project costs vary between 10.000 and 30.000 Euro depending on the number of pupils (on average 200-500) and regional conditions.



The DEWATS modules for physical and biological wastewater treatment in schools are: bio digester, sedimentation chamber, anaerobic baffled reactor and discharge to drainage ditch.




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: 



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