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5 SUSTAINABILITY CRITERIA

# Making WASH in Schools more Sustainable

Case Stories from SuSanA Partners



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## ACKNOWLEDGEMENTS

This publication was initiated during the SuSanA working group 07 meeting in Stockholm where the members raised the demand for showcasing best practices in school sanitation worldwide. The working group, named “Rural community and schools with gender and social aspects”, consists of many very engaged SuSanA members who are doing great work in the communities. Their work is often very successful and sustainable, but they lack time to communicate and share their results. One of the outcomes of the meeting was to make the results of the SuSanA partners more visible so that others can learn from best practice examples.

During the past two years, case stories of SuSanA partners have been collected on the SuSanA forum and a selected number of them were compiled into this first publication. WECF, currently leading the working group, and GIZ who spearheaded this process are grateful to the many people who contributed to this exercise of knowledge management, joint learning and advocacy.

The following people provided inputs and advice: Maria Ines Matiz (Columbia), Kim Anderson (Sweden), Robert Gensch (Germany), Vanden Bowen (India), Camilla Wirseen (Kenya), Fabiola Garduño (Mexico), Oleg Rotari (Moldava), Margriet Samwel (Netherlands), Bella Monse (Philippines), Christian Rieck (Germany), Perpetue Kamuyumbu (Rwanda), Kevin Wall (South Africa), Anna Tsvetkova and Igor Schokin (Ukraine), Claudia Wendland (Germany), Jeannette Laramée (Zambia) and Peter Morgan and Annie Kanyemba (Zimbabwe). More stories were submitted in the [SuSanA forum](#) by numerous organisation for which we are thankful and hope to compile a second publication in the future.

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## DEAR READERS

Left: Children from CHISUNGU PRIMARY SCHOOL have fun using their self-made handwashing device that saves water. Middle: Peter Morgan (right) works closely with inhabitants to find the best solutions that work. Right: Peter Morgan received the Stockholm Water Prize in 2013 from H.M. King Carl XVI Gustaf of Sweden for his life-long work to protect the health and lives of millions of people through improved water and sanitation technologies.

This excellent publication, which reports on examples from around the world, will hopefully start a growing trend—to ensure increased access to improved sanitation and safe water supplies, linked to improved hand washing facilities and hygiene, in the school environment. There is no better place for pupils to learn about such things than the school itself and then encourage their families to follow and put them into practice in their own homes.

For all of us, the school environment together with the upbringing in our homes laid down a strong foundation to our way of life. I recall that many years ago, I drew inspiration from my teachers and with their help and encouragement, I inculcated good values that helped me to lead a life which always honoured my days at school. The school is perhaps the greatest place to learn the fundamentals and new skills. For it is upon this solid foundation that all future learning depends.

Whilst we have sought to improve the lives of many living in the rural homesteads of Africa, I think nothing has been so rewarding as seeing the lives of the pupils improved, not only by providing access to improved sanitation, water and hygiene, but in some way to involve the students more directly. For pupils have a great capacity to learn and retain what they have learned.

And as we have often said, our future leaders, officials, decision makers, educators and all, must pass through the school phase, where they can learn and hopefully put their learning into practice. The profession of a teacher is indeed an important one and will always remain crucial to us all.

I hope one day that school curricula will include far more details about the important developments which have taken place in this sector of development. Along with theoretical learning, the importance of practical application of methods, which can improve family and school life, is critical.

We have made a start, along with many others, to place the school near centre stage for development in the WASH sector. We have shown that girls and boys can have a flair for construction and practical application of methods which improve food production and hygienic conditions in the homestead. The importance of a good toilet, a reliable water supply whether it be an improved well or hand pump—or even the control of water use where water is delivered through taps mark big steps forward.

Let us build on this important theme, so that both within the schools and in the home we progress strongly to improve access to vital, improved water supplies and sanitation for the benefit of all.

Peter Morgan  
Harare, July 2014

ENSURING WATER, SANITATION, AND HYGIENE (WASH) IN SCHOOLS HAS SHOWN TO INCREASE ATTENDANCE AND EDUCATIONAL PERFORMANCE IN SCHOOLS. ADEQUATE WASH CONDITIONS ALSO IMPROVE THE GENERAL WELL-BEING OF CHILDREN, TEACHERS, AND THEIR FAMILIES. HOWEVER, ENSURING SUSTAINABLE WASH FACILITIES IN SCHOOLS REMAINS A CHALLENGE NOT ONLY IN DEVELOPING BUT IN DEVELOPED COUNTRIES AS WELL.

This publication showcases various approaches, both practical and innovative, to provide sustainable WASH solutions in schools around the world. The stories are not limited to the construction of water and sanitation systems but also show how these systems are operated and maintained through active involvement of pupils, teachers, cleaning staff and community members. In some cases, awareness is raised for the accountability of functioning WASH facilities among school children and teachers, which can lead to empowered school communities taking responsibility and consequent actions to improve the situation themselves.

The stories presented here shall raise awareness about the importance of ensuring access to WASH and in particular sanitation in school settings among decision-makers, planners and practitioners working in and with schools and interested people around the globe. They will also shed light on the good work that is being done by SuSanA members and partners.

As WASH in Schools is not considered a priority for most communities and municipalities, the situation in many places is deplorable to the extent that there are even no toilets for students and teachers to use. In other situations, the physical infrastructure may exist, but it is not well maintained. No management system is in place to keep facilities clean every day, and children do not practise proper hygiene, all of which can lead to both health and environmental problems. In other words, there is a need not just for WASH, but for sustainable WAtEr, Sanitation and Hygiene.

WASH in Schools poses a special challenge since many criteria need to be fulfilled to impact pupils and teachers lives and to some extent also the surrounding communities. Therefore, the publication highlights in each case the most important sustainability criteria.



## THE 5 SUSTAINABILITY CRITERIA

- 1 PROMOTE HEALTH AND HYGIENE EFFECTIVELY
- 2 PROTECT THE ENVIRONMENT AND NATURAL RESOURCES
- 3 TECHNICALLY APPROPRIATE INCLUDING OPERATIONS AND MAINTENANCE
- 4 FINANCIALLY AND ECONOMICALLY VIABLE
- 5 SOCIALLY ACCEPTABLE AND INSTITUTIONALLY APPROPRIATE

SuSanA identified  
five criteria that make  
a WASH sustainable.

None of the presented stories fully achieve all five of these criteria, but each of them is working towards a more sustainable WASH situation in schools. A more detailed description of each of these criteria is included on page 31.



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Top left: Children drawing during a hygiene-education exercise. Top right: Teachers and community members are introduced to the new sanitation facility. Below right: Stored urine is applied to flowers to demonstrate the usefulness as fertiliser.

**STUDENTS AND THEIR FAMILIES BOTH CONTRIBUTE TO AND BENEFIT FROM IMPROVED SANITATION FACILITIES.**

“One of the benefits that the new facilities bring to our school is that it does not need water for flushing and that we can take advantage of it for irrigation of plants, eating, drinking, hand washing.” – Alex

Alex is a student of a rural school in La Horqueta in Colombia. His school lacked toilet facilities and connection to water supply systems just like 60% of all public schools in rural Colombia. His teacher Leydi Alejandra explains, “the school depends on rainwater harvesting and storage. That’s why it is very important for us to save water which we want to use for hand washing or bathing rather than for flushing the toilet”. In the past, the only available sanitation facility were pit latrines that were in poor condition or full which sometimes forced the children to open defecation until urine-diverting dry toilets (UDDTs) were installed at the school.

Alex explains how the toilets work: “We separate the pee and the poo. When I go to the toilet to pee, I pour a small amount of water for ‘flushing’, and also when I poo, I pour two scoops of sawdust into the toilet.” Because the toilets don’t require much water,

the rainwater collected at the La Horqueta school is now sufficient to supply water for drinking and cooking (after filtration), hand washing, cleaning the toilet, and watering the school garden. The collected urine is stored and re-used in the school garden.<sup>2</sup> Faecal matter is composted and stored for several months and afterwards used to cultivate ornamental plants around the school.

The operation and maintenance work is shared among the pupils and their families. The project researchers Natalia Rodriguez, Carlos Gutierrez and Juan Felipe Jaramillo explain the important role that the students play: “The pupils have learnt not only about the new technology which we hope they will transfer into their home villages. They have also learnt what it means to maintain the facilities in a participatory way. Boys and girls are now both looking after their facilities and are responsible for a clean environment.”

Moreover, the needed materials applied to cover the faeces (ash and sawdust) are provided by some students’ families.<sup>3</sup> “We cook with wood and a lot of ash is thereby produced which we don’t have any use of but which helps the school to operate the toilets, so we supply it to them,” one student’s mother reports. The provision of hygiene supplies is also managed cooperatively in this small school. “We have only 15 students here. So, the school is

**2**  
SUSTAINABILITY CRITERION


PROTECT THE ENVIRONMENT AND NATURAL RESOURCES: UDDTs contain waste, conserve rainwater, and provide fertilizer for plants at the school.

**3**  
SUSTAINABILITY CRITERION

TECHNICALLY APPROPRIATE INCLUDING O&M: Students and their families work together to take care of their sanitation system.

very small and it is easy for us to coordinate the demand. Now periodically children's families supply the soap and toilet paper," the teacher of the school says.

At the same time, families also benefit from the availability of the toilet facilities. Through their children, families throughout the town are well aware of the facilities. "Because we are regularly measuring how much urine and faeces are collected we found out that the toilet facilities are also used during school holidays by villagers and families on their own initiatives and are guided by posters," adds Natalia.

Carlos says: "Including the children in the planning process is very important for the acceptance and successful implementation. By interviewing students from a similar project in this region, we found out that the benches were not appropriate for children. The standard size of the toilet seat was too large and the division wall for urine bowl was too high with sharp edges. Both generated inconveniences for the children." A new wooden bench was constructed and the seat was replaced with an appropriate one. 

The project leader María Inés Matiz concludes that the following factors contributed to the success of these projects in the region:

**STRONG RELATIONSHIP BETWEEN THE SCHOOL MANAGEMENT AND PARENTS**

**INCLUDING PARENTS IN THE PROVISION OF SUPPLIES SUCH AS ASH; WORKS ESPECIALLY WELL AT SMALL SCHOOLS**

**USER ASSESSMENT AND FEEDBACK FROM THE STUDENTS**

**COMBINATION OF WORKSHOPS AND FOLLOW UP TO MAKE SURE USERS DEVELOP OWNERSHIP OF THE SYSTEM**

Kim Andersson from SEI, who provided technical support for this project, adds: "This initiative highlights the role of schools as demonstration centres in rural areas. The project showed the benefits of an alternative sanitation system, and this together with the interest of the community and various organisations have led to replication in rural households in the area. A key, long term impact of the project is the generation of acceptance and ownership of a new sanitation technology for rural communities."

**5**  
SUSTAINABILITY  
CRITERION  
SOCIALLY ACCEPTABLE  
AND INSTITUTIONALLY  
APPROPRIATE:  
Feedback from other  
projects in the region  
was crucial for designing  
these systems.

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**TWO RURAL SCHOOLS IN APULO MUNICIPALITY, CUNDIMARCA, COLOMBIA**

The schools were equipped with UDDTs. The project was funded and carried out by Health and Environment Institute of El Bosque University in Bogotá. The Institute has worked on projects of applied research and social progress in such schools on themes related to health and the environment, which includes the promotion and implementation of alternative sanitation systems, for the last seven years and has received technical assistance from Stockholm Environment Institute.







Top left: "Toiletten machen Schule" award ceremony with the winning schools in Berlin. Top right: Art project in one of the participating schools. Below right: Inauguration ceremony of the new school facilities.

### A CONTEST INSPIRES STUDENTS AND SCHOOLS TO COME UP WITH THEIR OWN IDEAS FOR IMPROVING THEIR SANITATION FACILITIES.

The taboo around the topic of sanitation persists around the world. In Germany, for example, the school toilet is often perceived as a dirty, smelly and a uncomfortable place. A survey among students in Berlin revealed that an alarming 75 % of the interviewed students avoid using their school sanitation facilities and even try to drink less in order to avoid going to the toilet. In many schools the facilities are not functioning properly, and there is often a lack of sufficient toilet paper, soap, brushes or dustbins. In addition there is often neglect and little appreciation for school restrooms, and many schools face problems with vandalism and graffiti.

To address these problems, the German Toilet Organization (GTO) launched a competition named "Toiletten machen Schule" ("Toilets making the grade") in November 2012. The competition was intended to break this taboo, create ownership and provide interested schools with a helpful tool to raise awareness and initiate a dialogue among all involved stakeholders on how the existing situation can be improved. GTO supported the schools by providing an inspirational package on how best

to structure the process and plan activities accordingly. All relevant stakeholders including students, teachers, school management, facility managers, parents committees and cleaning staff were asked to jointly assess and honestly reflect on the current sanitation situation in their schools and suggest ideas for improvement. As an incentive for the schools to actively engage in the process, a full renovation of a boys and girls toilet block was offered as a prize for the winning schools. The prizes were offered through the support of corporate partners from the sanitation and service sector in Germany.

Seventy-nine schools from all over Germany participated in the contest, and all developed interesting concepts for improvement of their school's sanitation situation. The winning school was a primary school in Wellesweiler, Saarland, where the team members set up a "toilet committee", consisting of students, teachers and the facility manager. Together the members of the committee came up with many ideas for improvement and will keep track of whether each person is taking care of the tasks he or she volunteered for. <sup>9</sup> Furthermore, the topic of sanitation is now included in the school curriculum so that students learn about proper hygiene, sanitation, and water conservation. <sup>1</sup>

#### 3 SUSTAINABILITY CRITERION

TECHNICALLY APPROPRIATE INCLUDING O&M:

A contest inspires many creative ideas for engaging students and parents in the upkeep of their own toilets and washrooms.

#### 1 SUSTAINABILITY CRITERION

PROMOTE HEALTH AND HYGIENE EFFECTIVELY:

The topic of sanitation is included in the school curriculum, so students learn about proper hygiene, sanitation, and water conservation."

Another winning school came up with the idea of a “Toilet-coin”. The parents were asked to voluntarily contribute 1€ (\$1.35) each month, and the collected funds were used to hire a “sanitation coach”. The coach works with the students to keep the facilities clean, comfortable and pleasant to visit. The students also worked with an artist to further decorate the washrooms. This school also intends to cooperate with parents who work in relevant trades and who are able to donate time and materials to take care of smaller repairs.

A school from Berlin convinced the jury with their “Adopt a toilet” idea, where students take direct responsibility for a specific toilet during their time at school. This idea helps increase personal commitment to the upkeep of the school’s sanitation facilities. The project concept was developed in cooperation with Dr. Tom Keating of Project CLEAN (Cleaners, Learners and Educators Against Neglect), who has been working to improve school restrooms in the United States for more than 20 years.



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“TOILETTEN MACHEN SCHULE”

The German Toilet Organization is an NGO situated in Berlin. Since 2005, they have worked internationally in the field of sustainable sanitation. As part of its work GTO offers workshops in schools to improve their sanitation situation and to raise awareness about the global crisis.





Top left: Adolescent school girls content with their new toilets. Top right: Newly built sanitation facility for girls with a large number of urinals and a few closed cubicles. Below right: Closed toilets and wash rooms with urinals for older students.

**SUSTAINABILITY CRITERION 5**  
SOCIALLY ACCEPTABLE AND INSTITUTIONALLY APPROPRIATE:

Improved sanitation facilities convince families to allow girls to continue their education even after puberty.

**IMPROVED SANITATION FACILITIES KEEP GIRLS IN SCHOOL.**

Students and teachers at Chandra Girl’s School in Tamil Nadu used to have no other option than to use the nearby wasteland as a toilet. The health and safety of the girls and school staff suffered under dreadful circumstances as diarrhoeal diseases easily spread, and the girls were also at risk of getting attacked while looking for a secret place to urinate or defecate. “We used to go at least in pairs because we felt much safer then,” Prianga says.

Her friend K. Arthi from 9th standard adds, “I know the problem of lacking toilet facilities was more serious for the grown up girls who had to change their napkins. It was almost impossible for them to do it in the small toilet and in the crowded atmosphere. Because of this, many girls used to take leave and lose classes during menstruation. Some girls who used sanitary towels could not wash nor change their sanitary towels. They often felt embarrassed and started crying if they stained their dress.”

That began to change in March 2012 when Wherever the Need completed a new eco-sanitation block for the girls at the school. Maharunisha relates her experiences: “I am from a very orthodox Muslim family studying 9th standard here. My parents were

never happy that I went to the river side and did not follow the custom of washing after every pee. They asked me to come home every time I am in need of using a toilet. Since my house is about a kilometre away, it was impossible to manage going home and back to school with the interval time. When I reached puberty, I was asked to stop my studies by my parents. After I told them about the newly built sanitary block and brought them to the school to see it themselves, they have allowed me to continue my studies.”<sup>5</sup> During the first four months after completion of the new toilets, school enrolment increased by 7% and attendance by 15%, and the incidence of illness has also declined.

The topic of menstruation remains taboo in India, but since a hygiene education program started at the school, the attitudes of many have changed. “We have been providing sanitary napkins for a long time. But since we started conducting hygiene awareness courses, which also included menstrual awareness, the sale of sanitary napkins increased significantly. We used to sell 20 pads a day, now we sell 140,” says Vanden Bowen from the local NGO Wherever the Need. Use of sanitary napkins is important because if they are not available, girls may use dirty cloths and rags which can lead to infection. “We are very satisfied with the improvement due to the project. Some of the girls now stockpile sanitary napkins before school holidays to make sure

that they do not run out of adequate hygiene articles while the school shop is closed,” adds S. Paramasivan.

“With the experience of comfort in using the sanitary pads, I spoke to my two sisters and they are also now using pads, which I buy from the school. I know that many girls like me are buying pads for their mother and sisters at home. One can see the sanitary napkin pads are now in sale in the shop we have at the village,” says K. Arthi.

During the planning process, UDDTs were selected as the key sanitation technology, but that alone was not enough as Vanden explains: “As it was a girls’ school, we paid more attention to the gender aspects. We also built an incinerator for the safe disposal of used sanitary napkins.” K. Arthi adds: “The change of pads became much easier with the wash room fitted with an incinerator. The Ayyah who is engaged in cleaning the sanitary block regularly burns the disposed pads.” The Ayyah is a woman from the nearby village who is responsible for the daily maintenance and the cleanliness of the sanitary block. The Parents-Teacher-Association covers her salary as well as other operating costs.

Wherever the Need also recognises the valuable nature of the urine and faeces collected by the ecological toilets, and therefore collects the output of the toilets. <sup>2</sup> <sup>4</sup> Vanden describes the process: “We are running several projects in the region and we are well appointed with necessary equipment.

It is easier and eco-friendlier to do the collection and distribution of the output in a centralized way than to force schools to invest, for example, in trucks. Meanwhile, we are regularly able to check the facilities and do maintenance work if necessary.”

The eventual sale of the urine and faeces also provides the project financial security. “The income we generate from the sale of the compost is sufficient to cover the associated maintenance and running costs each year. The necessity of maintenance deviates from each school. If they had to bear the costs for themselves it would not always be possible to do the required repairs. But as we are saving the income from all schools, the costs and incomes even out.”

Vanden identified timing the behaviour change perfectly as one of the most important lessons learned. “When we started building the sanitary facilities we realised that the girls were very open and interested in the new technology. They were curious themselves and did not need motivation from external factors. We used this moment to educate them about sanitation, health and hygiene behaviour.” Parents, through the school, are also very aware of the project and its benefits and now wish to get ecological toilets as well. Two students, Prianga and Jayaputhradevi, campaigned for eco-toilets in Anaivari, their home village. Inspired by this story, two private donors from the United Kingdom have recently funded the construction of an eco-toilet block at Anaivari Primary School. <sup>1</sup>

SUSTAINABILITY CRITERIONS

2 4

PROTECT THE ENVIRONMENT AND NATURAL RESOURCES & BE FINANCIALLY AND ECONOMICALLY VIABLE: Closing the loop by collecting and reuse urine and faeces protects environment and finances O&M of the toilets.

SUSTAINABILITY CRITERION

1

PROMOTE HEALTH AND HYGIENE EFFECTIVELY: Hygiene education classes help to break taboos and encourage girls to campaign for greater investment in sanitation facilities in their home villages.

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CHANDRA GIRL'S SCHOOL IN TAMIL NADU

This project was carried out by the British NGO Wherever the Need which also has offices in India. 1,300 female students and their teachers benefit from the new sanitation facilities at this school but the NGO runs several more school toilet projects in the region.



Wherever the Need



Top left: Children standing in line at Peepoo cabins.  
Top right: The Peepoo toilet.  
Below right: Peepoo Dubu training material for school children.

**TOILETS DON'T NECESSARILY HAVE TO BE BUILT IN LONG-LASTING MASONED CONSTRUCTIONS TO BE EFFECTIVE.**

“Before Peepoo some students would press or hold till they got home.”

Kibera in Kenya is known as Africa’s second-largest urban slum, and, as with most of the world’s urban slums, sanitation is a huge problem. Because governments find informal settlements like these undesirable, they usually don’t support or finance permanent infrastructure. In slums, there is often a lack of space for building toilets due to the high density. The available facilities are very few and often in poor condition. Many schools in urban slums completely lack toilets and those that may be available are often very dirty and overfull. Children, in particular, are afraid of falling into overfilled latrines and dislike the smell, as Camilla responsible for Peepoo School Program notes. This leaves the children with no other option than to defecate out in the open. In the worst cases, rapes have become an everyday occurrence. In an atmosphere of poor health, children are unable to fulfil their education potential.

Peepoople AB is a Swedish company that produces a totally new sanitation solution called the Peepoo.

The Peepoo toilet is a single-use, self-sanitising and biodegradable toilet that turns into valuable fertiliser in only four weeks time.<sup>9</sup> In Kibera, the Peepoo School Program was introduced in 2012 by Peepoople Kenya which is an NGO that is responsible for the managing the implementation of Peepoo in urban slums in Kenya. The program offers more than 70 schools and kindergartens the Peepoo sanitation system along with training in hygiene, sanitation and agriculture for children, teachers, and parents. The Peepoos that are in the form of a bag contains six grams of urea and is provided in schools for free through the donor-funded Peepoo School Program. Cubicles are built in schools to provide privacy when using the Peepoo. Within the cubicle there are soak pits aimed for urination only, while Peepoos are used for defecation on a specially designed seat called Kiti. The program also provides hand washing facilities and soap.

“After using the Peepoo we make a knot, so that nothing falls out. It is really easy to use and we can simply do it ourselves. But for smaller kids who need help there is an assistant or teacher always available,” says a student. A child from another school relates to the reason why the system is popular among students: “After the implementation of the Peepoo system my toilet at school is cleaner and we are no longer sick.”<sup>5</sup>

**3**  
SUSTAINABILITY CRITERION

TECHNICALLY APPROPRIATE INCLUDING O&M:

Peepoo fulfils WHO requirements for a safe sanitation systems since it isolates faeces from humans and other animals, and effectively sanitises the excreta before returned to nature.

**5**  
SUSTAINABILITY CRITERION

SOCIALLY ACCEPTABLE AND INSTITUTIONALLY APPROPRIATE:

A low-cost and portable system adapts sanitation to informal settlements and gains the acceptance of children.

The Peepoo is not only a toilet but part of a complete sanitation system. The used Peepoos are collected and transported out of the slum on daily basis. The Peepoos are brought to a sanitation yard for the four week sanitisation period before being reused as fertiliser. Some schools keep the used Peepoos and plant vegetables using the Peepoo fertiliser which contributes to food security for the school children. “Used Peepoos can be reused as fertilizer for gardening. Therefore we store the bags for four weeks in big buckets to sanitize the content. The thereby produced output can then be reused to improve the yields of our school garden,” the teacher of a participating school says.

The Peepoo team train teachers, children and also the parents in hygiene and sanitation and agriculture as well. Peepoo Dubo is the mascot of the Peepoo School Program. All training materials use Peepoo Dubo. He also exists in full size and visits schools to remind them how to wash hands with soap. <sup>1</sup> The program has been very effective and has already reached more than 10,000 children in Kibera and will now scale to 20,000 children until September 2014. The school children have also proven to be an effective channel for promoting hygiene and sanitation in the community at large through the child-to-community effect. <sup>5</sup>

The Peepoo solution has now become a widely accepted technology that is flexible, easy to use, and set up very quickly and since it is so small (weighs only 10 grams) easily distributed and can be used all over the world. Peepoo toilets are also used in disaster and refugee camps, most recently in the Philippines, after a typhoon, and in Syrian camps for refugees and internally displaced people.

Peepoople Kenya has identified the following aspects as factors in the success of the school program:

**FAST ACCEPTANCE BY CHILDREN FOR TOILETS THAT ARE EASY TO USE, CLEAN AND DON'T SMELL WHICH MAKES THE PROGRAM EASILY SCALABLE.**

**SOAK PITS ARE EASY TO KEEP CLEAN.**

**FACT THERE ARE NO LATRINES WITH OPEN FAECES (THE FAECES ARE ENCLOSED IN PEEPOOS) ERADICATE NOT ONLY THE SMELL BUT ALSO THE FLIES.**

**AN ATTENDANT IS IMPORTANT FOR SUPPORTING SMALLER CHILDREN TO KNOT THE PEEPOO AND TO MAKE SURE CHILDREN WASH THEIR HANDS ALWAYS WITH SOAP.**

**1**  
SUSTAINABILITY  
CRITERION

**PROMOTE HEALTH AND HYGIENE EFFECTIVELY:**  
Peepoo Dubo, the Peepoo mascot, shows a creative way to teach children about sanitation.

**5**  
SUSTAINABILITY  
CRITERION

**SOCIALLY ACCEPTABLE AND INSTITUTIONALLY APPROPRIATE:**  
Schools, students, and parents are all working together for better health in the community at large.



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**DAY CARE CENTRES AND SCHOOLS IN KIBERA**  
The Peepoo School Programme is implemented Kenya by the local NGO Peepoople Kenya. It includes 70 informal schools and day care centres in Kibera and reach 10 000 children (May 2014), and will scale to 20 000 children until August 2014. Financial support is provided by VI Agro forestry and the Swedish Postcode Foundation.





Top left: Local dishwashing practices were considered for the design and construction of this greywater treatment station which begins with solid & grease traps; main treatment is in saturated biofilter, which discharges for irrigation reuse into existing school garden. Top right: SARAR participatory methodology workshops allow for active involvement of the school communities. Below right: A robust concrete handwashing facility was installed at proper height for small users, located just beside existing kitchen. Hygiene & handwashing workshops reinforce behavior change.

## DIFFERENT SETTINGS REQUIRE DIFFERENT SOLUTIONS.

Because Sarar Transformación sought to reach more than 2,500 students in seventeen different schools throughout a mountainous region in Oaxaca, it was clear that a single solution would not be right for all of the locations. Instead, the organisation sought to ensure that the school WASH systems were both protective of the environment and appropriate to the settings they are in. <sup>5</sup>

Sanitation solutions were introduced including composting ecological toilets such as Arborloos and Fossa alternas as well as urine-diverting dry toilets. “For boys we have additionally installed waterless urinals. Since we know that urine contains 87% of the excreted nitrogen, from a climate protection point of view, concentrating on the recovery and reuse of urine represents the most efficient means of emission reduction through nutrient recovery. We therefore collect urine and reuse it,” says Fabiola, project coordinator from Sarar Transformación. A portion of the collected urine is applied in the ornamental gardens of the school. The rest is used as a renewable liquid fertilizer in a tree nursery, destined for a WWF (World Wide Fund For Nature) reforestation project. An agreement with the WWF and the Mexican watershed management

program ensures a permanent customer for the collected urine.

In addition to the sanitation facilities, fixed handwashing stations were constructed wherever possible. Fabiola, project coordinator from the local NGO, recommends robust and stable hand washing stations. “They are very suitable because they are tougher against percussion which makes them long lasting even in children dominated environments.” However, in some places construction of such stations were not possible due to lack of running water, so “Tippy Taps” were installed in their place. These are easily constructed and suitable for varied environmental conditions. Furthermore, they are portable so that, if the Arborloo needs to be moved, the Tippy Tap can easily be moved along with the toilet. To further conserve water, grey water collection and treatment was implemented wherever possible, meaning that water used for hand washing and dishwashing is collected, treated, and then used to irrigate the existing school garden.

The entire SWASH+ program was coordinated by Sarar Transformación with support from Global Water Challenge and funding from Coca-Cola Atlanta. In order to strengthen and institutionalise the roles and responsibilities of the various local stakeholders, the program formalized the handover process. Local authorities, school committees and the

**5**  
SUSTAINABILITY CRITERION  
SOCIALLY ACCEPTABLE AND INSTITUTIONALLY APPROPRIATE:  
Conditions vary between different schools. Hence different solutions are needed.

administration thereby agreed to oversee the correct use and management of the installed water and dry sanitation systems and to transmit knowledge and information to the incoming students, parent's committee members, new teachers and school authorities.

Fabiola pegged the following aspects as factors of successful school projects:

STURDY DESIGN OF TECHNOLOGY WHILE  
MAINTAINING CHILD FRIENDLY APPEARANCE  
FOR INCREASED USER ACCEPTANCE

FORMALIZED HANDOVER PROCESS INCLUDING THE  
SIGNING OF A MEMORANDUM OF UNDERSTANDING

ACTION PLAN TO INVOLVE AND TRAIN NEWLY  
ARRIVING STUDENTS AND TEACHERS



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#### SCHOOLS IN OAXACA, MEXICO

The project rolled out by Sasar Transformación has reached 17 schools in the three rural Mexican indigenous municipalities of San Miguel Suchixtepec, San Pedro el Alto and San Marcial Ozolotepec. The SWASH+ program was coordinated by Sasar Transformación with support from Global Water Challenge, with funding from Coca-Cola Atlanta in collaboration with World Wildlife Fund Incorporated. Around 2,000 students and their teachers have benefitted from the project.







Top left: River cleaning activities in district Drochia  
 Top right: First toilet for a family type home for vulnerable children in Northern Moldova. A happy boy. Below right: Testing the water quality of the wells in Zgutita, Drochia.

**STUDENTS CAN THEMSELVES BECOME THE WATER EXPERTS.**

Only 15 % of rural Moldovans have access to running potable water in their houses and only 55 % have access to basic sanitation (defined as a pit latrine with a lid), and rural schools in Moldova usually rely on shallow wells for drinking water, but the water is often contaminated with bacteria and nitrate. However, rather than installing new infrastructure, the NGO Ormax took a different approach than many others and first initiated a campaign focussed on education, capacity building, and mobilisation of the population, a programme based on the water safety plan approach of WHO, adapted by WECF, and carried out by local Moldovan partners Ormax, Wisdom and Renasterea Rurala.

From 2010 to 2011, the pupils were trained on water and sanitation topics, including linkages between health and WASH, and they then analysed the situation in their own schools and villages. Their activities include:

**OBSERVATION OF WATER TURBIDITY AS AN INDICATOR OF WATER QUALITY**

**MEASUREMENT OF NITRATE CONCENTRATIONS USING NITRATE TEST STICKS**

**SIMPLE BACTERIOLOGICAL TESTS**

**INSPECTIONS OF THE DRINKING WATER WELLS**

**ASSESSMENT OF POTENTIAL RISKS TO THE DRINKING WATER SOURCES, INCLUDING THOSE FROM AGRICULTURE AND PIT LATRINES OR LEAKING SEPTIC TANKS**

**MAPPING THE INFORMATION GATHERED FOR THE VILLAGE.**

Based on these observations and analyses, they were able to raise awareness among the population and start to take actions to improve the situation. **1 5**

The wells with high nitrate levels are of particular concern for families with small children. The pupils were able to inform these families about nitrate levels in their water and mark the wells that are not suitable for food preparation. The impact of the activities is visible as changes in community behaviour: no more solid waste is dumped near the public or private wells, mapping of wells continues today, and spring cleaning of wells is once again a tradition in the communities. **2**

“All the pupils of the school were involved in well inventorying and well testing and after the first tests

**1**  
**SUSTAINABILITY CRITERION**  
**PROMOTE HEALTH AND HYGIENE EFFECTIVELY:**  
 Students become the water experts in their village.

**5**  
**SUSTAINABILITY CRITERION**  
**SOCIALLY ACCEPTABLE AND INSTITUTIONALLY APPROPRIATE:**  
 The Water Safety Plans which are developed by the students are adapted to the local conditions

**2**  
**SUSTAINABILITY CRITERION**  
**PROTECT THE ENVIRONMENT AND NATURAL RESOURCES:**  
 Water Safety Plan is aiming at water protection.

SUSTAINABILITY  
CRITERION

4

BE FINANCIALLY AND ECONOMICALLY VIABLE: The Water Safety Plan education does not require high costs but leads to high impact in terms of water quality and hygiene.

we found, that the results confirmed that the school was supplied with water from one of the most polluted well of the village (500 mg/l nitrate),” explained Sergiu Colesnic, Ormax volunteer and employee of the village Zgurita. These results were presented to a foreign NGO that was visiting the village. One week later, a volunteer from the NGO equipped the school with a filter and now the children can drink water of a good quality at least at school. “We don’t have enough money to make big changes in our communities, but sometimes, we have to do our best and prove that we want to improve our situation. We continue our work at local and national level, and we are trying now to collect funds to rehabilitate the water supply in the village and have safe water for our children at home too,” reported Sergiu, who is also the father of three small girls in the village. 4

After a two-year long, successful educational campaign in 10 villages in northern Moldova, a demonstration ecosan toilet was constructed for the school in Hasnaseni. The first ecosan school toilet in Drochia has been serving its 250 pupils since the end of 2011. Around 7 individual ecosan toilets were constructed ever since and the demand from local population for access to safe, hygienic and modern sanitation facilities is very high. In order to promote new innovative technologies for rural communities in Moldova, Ormax is now working towards the establishment of the First Ecological Center of Social Innovation to serve as a resource center, manufacture, consultancy services, and provider of training and support to local craftsmen and the local population.



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ZGURITA, DOMINTENI, HASNASENI IN MOLDOVA  
Based on the WHO approach, WECF developed a Water Safety Plan Methodology for Schools especially in small communities in the pan-European Region, which has been widely applied in more than 8 countries of Eastern Europe and the Caucasus, in the last years. The issue of sanitation turned out to be often neglected. That is why the WSP approach was further developed to a Water and Sanitation Safety Plan (WSSP) which is now available in an overall WSSP compendium and can be applied by small scale operators, schools and NGOs.



The project of WECF partner Ormax in Moldova was financed by the Foundation Danielle Mitterrand-France Libertés and Church World Services. Ormax received the UN Water “Water for Life” Best Practices Award for the action.



Top left: Group handwashing at school is an activity, children really like to do. It is a simple water pipe system with drilled or punched small holes which safely water, cannot break easily and is low-cost.

Top right: A class is organised in 5 groups to keep school toilets and washing facilities clean and well maintained on a daily basis. Once a week, each group is on duty, and once done they put their name card in the 'done' box. Below right: A group of children is executing the daily cleaning routine, a task which is rotating every day.

### DAILY ROUTINES ARE KEY TO CREATING GOOD HABITS FOR A LIFETIME.

Many Philippine schools and day care centers have joined the “Essential Health Care Program” (EHCP) as response to a number of serious health problems faced by elementary school and day care children on the archipelago and is based on the Fit for School Approach. EHCP is a national hygiene promotion program that encourages children to practice the skills of regular hand washing with soap and tooth brushing with fluoride toothpaste as a part of their daily routine in the school to facilitate and sustain healthy behaviour. It currently reaches 2.5 million children in Philippine Elementary Schools. The kids enjoy the activities when they perform them together with their peers. “At first, I thought it would be very difficult to implement this program with the children. But I realised that after a few weeks, children easily perform the daily routine of washing their hands and then brushing their teeth. In fact, they enjoy doing it every day. <sup>1</sup> It is not difficult after all. Also, I find so much fulfilment that, in my own small way, I am teaching children a very simple habit that will have a lifetime impact on their health when they grow older. Health is wealth!” Ms. Liezl Catapang, a day care worker, proudly announces. In addition to the daily activities, biannual deworming

is conducted. Studies have shown that already after one year of implementation, the prevalence of high intensity worm infections, oral infections, absenteeism and malnourished children have significantly decreased. The continuous supply of soap, toothbrushes and toothpaste for the children is a prerequisite for the implementation. Costs amount to only 25 Pesos (which is less than \$1USD) per child for the entire school year, paid by the local governments.

The GIZ Fit for School Program, working in the Philippines, Laos, Cambodia and Indonesia together with their partners SEAMEO, UNICEF and DFAT (formerly AusAID) are now focusing on the issue of sanitation in schools by building upon the experiences of the hygiene promotion interventions. Improvements in sanitation are expected to further enhance the health of children. In the Philippines, most of the existing toilets are built inside or attached to classrooms. Though they are well maintained as teachers want their classrooms to be tidy and clean, they offer only little privacy. Many schools also lack functional, gender-separated and enough sanitary facilities leading to open defecation, to holding back the urge to use the toilet, and not washing hands with soap after using the toilet. Against this backdrop, the key task is to identify simple, scalable and sustainable measures to improve sanitation in elementary schools and day care centres that can be maintained, operated and kept clean by the schools in the long run.

**SUSTAINABILITY CRITERION**



**PROMOTE HEALTH AND HYGIENE EFFECTIVELY:** Daily group hand washing can change behaviour and be fun!

**1**  
SUSTAINABILITY  
CRITERION

**PROMOTE HEALTH AND HYGIENE EFFECTIVELY:**  
Schools learning simple management skills which keep WASH facilities clean and functional – making it a fun activity is one key to success.

**5**  
SUSTAINABILITY  
CRITERIONS

**SOCIALLY ACCEPTABLE AND INSTITUTIONALLY APPROPRIATE:**  
An interactive monitoring process with users and stakeholders leads to development of context-specific solutions.

**3 4**  
SUSTAINABILITY  
CRITERION

**TECHNICALLY APPROPRIATE INCLUDING O&M & FINANCIALLY AND ECONOMICALLY VIABLE:**  
Strengthening schoolbased management – making sure operation and maintenance is properly budgeted.

In some schools different designs of toilet, urinal (male and female) and handwashing facilities were implemented, mostly re-habilitated, and sometimes newly constructed in order to address these challenges. “In school we had only few toilets and we often defecated and urinated near the school. It is awful being seen defecating outside in an open area. The new toilets are comfortable and great for privacy, as boys cannot see us anymore when using the toilet. I also do not have to hold the urine anymore and wait until I go home,” says Loren, a student at one of the participating schools.

In parallel, and most crucial, the program and the schools developed simple tools for students and teachers to encourage daily cleaning of school grounds and toilets as well as light regular maintenance and small repair tasks that can be accomplished by the school community without involvement of technical experts. It can be observed that children love to engage themselves if roles and duties are distributed in a fair way, rotated regularly and have different levels of responsibility and reputation. The aim is to integrate regular cleaning into the daily school activities. These interventions address, often, poor cleaning and maintenance practices in schools, ensure that schools improve their management, and keep school grounds and facilities clean and usable. This is the first step towards a healthy learning environment and behaviour change.

And it is seen as the pre-condition for schools to proof their management skills prior to investments in infrastructure. The schools are monitored regularly through observations, focus group discussions with children and teachers, and semi-structured interviews with school principals and local authorities as part of accompanying research. The collected data provide valuable feedback to facilitate a culture of cleaning and maintenance of toilets in public schools. “School-based management appears to be a key element for sustainability,” says Bella Monse from GIZ Philippines. It puts the school in charge of developing and implementing a School Improvement Plan and a related School Operating Budget. This enables the school to allocate resources more effectively in the best interests of the students and institutionalise operation and maintenance routines. This is an important step to establish a sense of shared responsibility of the entire school community.

Involving the communities through Parent-Teacher Associations has also shown to be very successful. For example, parents and communities are involved in the construction of hand-washing facilities and take an active role in program monitoring. Community involvement increases ownership of parents to take a role to improve their school and be proud of it. Community participation also puts pressure on school management and the local government to perform their duties.

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**THE FIT FOR SCHOOL PROGRAM IN ELEMENTARY SCHOOLS AND DAY CARE CENTRES ACROSS THE PHILIPPINES LAOS, CAMBODIA AND INDONESIA**  
GIZ is supporting the implementation of the Fit for School program aiming to address the hygiene deficiency related diseases by integrating daily group hand washing, tooth brushing and bi-annual deworming as well as daily toilet cleaning and maintenance into the school routine. Fit For School Inc., UNICEF, DFAT and other partners support the program in developing simple, scalable and sustainable solutions for school communities and the government.



Top left: new handwash facilities are demonstrated during a bigger event.  
Top right: Urine storage is being well documented to ensure safe reuse of urine in agriculture.  
Below right: Hygiene education event.

**GIVING CHILDREN RESPONSIBILITY INCREASES THEIR COMMITMENT TO UPKEEP OF THEIR SANITATION FACILITIES.**

At the Burega School Complex, more than 80 students used to have to share one toilet, the toilets were often nearly full, and there was nowhere for hand washing. “When the bell rang we started running to the latrine. Even when you were fast, there was a long queue and sometimes the break was over before it was your turn. We then had to return to class and couldn’t concentrate for the whole lesson,” says a student. For the female students the situation was even worse during their period, since there was no privacy for changing pads or washing. A girl explains: “Sometimes we had to leave school earlier or could not attend at all, because there was no possibility to manage the menstruation. We were very afraid of staining our uniforms so we rather stayed at home than embarrassed ourselves.”

With the installation of urine-diverting ecological toilets, the girl now says, “We have a lot more and also much cleaner and hygienic ecological toilets. There is even a shower for the girls and female teachers to wash their selves. An incinerator

for the disposal of sanitary napkins, which helps us to keep the toilets clean was also installed.”

The school management in collaboration with the newly-established hygiene club has set up teams of students who take turns cleaning the toilets and ensure that water is always available in the plastic water tanks for hand washing. The hygiene clubs also report to the school management if there are any issues or maintenance needs for the sanitation system.

The parents’ committee also supports the school by monitoring the use of the money earned from the sale of the urine and human manure. Together, the parents and school management decided to employ additional staff to take care of daily maintenance and operation of the ecological toilets. <sup>3</sup>

The school management adds: “We were able to find a permanent customer who regularly collects the urine from our school by carrying the jerry cans of urine in his van.” As a result, project manager Prudent Gatera proudly reports that the project is self-sustaining due to the income generated from the collected waste products. She adds, “The income does not only cover the expenses. Since the start of the project in mid-2012, we were able to save 100,000 Rwf (1,500 \$) in the school’s bank account.” <sup>4</sup>

**3**  
SUSTAINABILITY CRITERION  
TECHNICALLY APPROPRIATE INCLUDING O&M:  
All stakeholders contribute to system operations and maintenance.

**4**  
SUSTAINABILITY CRITERION  
BE FINANCIALLY AND ECONOMICALLY VIABLE:  
Sanitation infrastructure can become self-sustaining.

Prudent highlights the following institutional aspects as helpful:

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LONG TERM CONTRACTS INCREASE BILATERAL SECURITY OF CONSUMERS AND SUPPLIERS.

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SHARED RESPONSIBILITIES AMONG STAKEHOLDERS INCREASE COMMITMENT TOWARDS THE PROJECT.

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INCLUDING MENSTRUAL HYGIENE MANAGEMENT FOR GIRLS RAISES SCHOOL ATTENDANCE.

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ORGANISING HYGIENE CLUBS RESULTS IN A MULTIPLIER EFFECT.

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SCHOOL IN BUREGA, RWANDA

The project was carried out and initially financed by Water for People. 1,147 students and 22 staff members benefit from the project which is by now self-sustainable.



water for people



Top left: Franchisee Nocawe Lupuwane (the lady kneeling) with her team. Top and below right: For some employees of the franchisees, it is the first time they have held down a job for which they receive regular payment—and for which they have been given, and instructed in the use of, the correct equipment, including protective clothing.

**O&M FRANCHISES AS CHANGE AGENTS AND JOB CREATORS.**

Many school water and sanitation infrastructure in South Africa either requires extensive refurbishment, or is serviceable but deteriorating, and likely to deteriorate further if not supported by good operation and maintenance. The Council for Scientific and Industrial Research (CSIR), Water Research Commission (WRC) of South Africa and the company Amanz' abantu Services (“water for the people”) evolved and piloted an innovative system for the maintenance and servicing of water and sanitation facilities. The essence of this system is the creation of social franchising partnerships for skills development and job creation, built around quality control and mutual incentives. The system borrows from and adapts some of the same franchising principles commonly found in the way in which many petrol stations, fast food outlets, printing shops and other small businesses are set up and supported so as to ensure consistent quality and reliability of service.

In 2009 Irish Aid, the CSIR, the WRC, the Eastern Cape Provincial Department of Education (DoE) and Amanz' abantu signed a memorandum of understanding to implement a three-year social franchising partnership pilot for routine servicing (akin to the 15,000 km routine servicing of a motor vehicle) of water and sanitation facilities at the approximately

400 schools of the Butterworth education district. A scope of work was agreed, and training and operation plans developed. Advertisements called for parties interested in becoming “water services franchisees” to come forward. The franchisees were required to be residents of the Butterworth area to ensure that the work would be done by “local” people drawn from the communities that would be served and to minimise travelling time and cost to Butterworth and to the schools that would be serviced.

Before starting work, the selected aspirant franchisees received technical training from franchisor Amanz' abantu, and assistance with setting up their businesses. Among the first to take up the opportunity was Nocawe Lupuwana, a former teacher. “We provide two services”, explains Nocawe. “One is cleaning the existing structures and teaching pupils and educators about cleanliness and hygiene. The other service involves sucking up the ‘blackwater’ which fills many of the toilets, making them unusable.”<sup>9</sup> But the impact of her work goes further. “We have become change agents not just in the schools but also in the communities, because the children tell their parents about what has happened at the school, and how the household facilities, and their use, should improve.” She continues: “I have also become a job creator, and my employees can now put food on the table for their families.”

**SUSTAINABILITY CRITERION 3**  
**TECHNICALLY APPROPRIATE INCLUDING O&M:**  
 Franchises provide toilet O&M to keep toilets in good working order.

SUSTAINABILITY CRITERIONS

2 4

PROTECT THE ENVIRONMENT AND NATURAL RESOURCES & BE FINANCIALLY AND ECONOMICALLY VIABLE:

An innovative franchising scheme not only keeps school sanitation facilities in good working order but also is financially sustainable!

Under the guidance of the franchisor, the trainee franchisees undertook the initial cleaning and thereafter routine servicing of the water and sanitation facilities, with mentoring and further training as necessary. The cost of methodology development, training and other assistance was borne by a combination of external funding from Irish Aid and the WRC, as well as social responsibility contributions from Amanz' abantu and from the CSIR. The maintenance services provided by the franchisees were paid by the infrastructure owners (the schools authorities) from their budgets annually allocated for O&M, making the maintenance programmes financially sustainable. 2 4

Thus the initiative has simultaneously: restored sanitation facilities to a usable condition; created, mentored and supported first-time entrepreneurs who are now running their own microbusinesses; and created jobs, training people who have never before in their lives been sufficiently skilled to hold down a steady income-earning job. Franchisees are now active in three further education districts, totalling nearly 1,300 schools (of the order of 20,000 toilets).

Mr Mthunywa Ngonzo, the head of the DoE and an enthusiastic supporter, says he would like to see the initiative extended to many more of the 6,000 public schools in the province. Dr Kevin Wall (formerly CSIR, now University of Pretoria) identified the following important lessons learned from this pilot project:

TASK-SPECIFIC CONCEPT DEVELOPMENT (E.G. THE SPECIFICS OF THE BUSINESS MODEL, THE TRAINING PROGRAMME AND THE OPERATIONS MANUALS) CAN BE DONE ONLY BY A FRANCHISOR THAT HAS HAD FIRST-HAND EXPERIENCE OF WHAT THE TASKS ENTAIL.

FRANCHISEES MUST BE CHOSEN ON THE BASIS OF WILLINGNESS TO WORK HARD AND TO COMMIT TO THE BUSINESS PRINCIPLES.

PROVISION MUST BE MADE IN THE FRANCHISING AGREEMENTS FOR PROMPT REPLACEMENT OF NON-PERFORMING FRANCHISEES.

CASH FLOW PROBLEMS WILL QUICKLY PUT ANY SMALL ENTERPRISE OUT OF BUSINESS. CAREFUL ATTENTION MUST BE PAID TO ENSURING PROMPT PAYMENT OF INVOICES SUBMITTED BY THE FRANCHISEES.

TO FACILITATE RAPID AND DISSENSION-FREE AGREEMENT THAT THE WORK HAS BEEN PERFORMED ACCORDING TO CONTRACT AND PAYMENT CAN BE AUTHORISED, TASKS MUST BE AS STANDARDISED AS POSSIBLE, AND ASSIGNED STANDARD PRICES.

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400 SCHOOLS IN THE BUTTERWORTH DISTRICT OF SOUTH AFRICA

A pilot program for establishing franchises to clean and maintain school sanitation facilities has resulted in microbusinesses that are now active in four school districts, totaling nearly 1,300 schools and close to 20,000 toilets. Financing for methodology development, training, and further assistance was borne by Irish Aid, the WRC, Amanz' abantu, and CSIR.







Top left: Boys in front of the toilet with explanations how to properly use the toilet.

Top right: Girls washing hands.

Below right: Teachers' toilet in use.

### INSTALLING A NEW TECHNOLOGY CREATES ADDITIONAL CHALLENGES BUT CAN ULTIMATELY PAY OFF.

As with more than 40% of schools across Ukraine, the conventional toilets in Nizhyn were pit latrines that often smelled bad and were unpleasant to use. They were located far away from the school building and did not provide any privacy because there were no separate stalls and no functional doors. “The fact that we had to go outside the school building was very uncomfortable,” says a student from the school. “Children very often got a cold and/or urinary tract infections especially during winter season,” adds one of the teachers. The teachers themselves avoided drinking in the morning so they would not need to use the toilet at school.

The NGO Mama86 in cooperation with WECF opted to install urine diverting dry toilets (UDDTs) in a building adjacent to the school building. Although Mama86 had previously installed dry toilets in rural schools, the UDDTs were the first such toilets installed in an urban area in Ukraine. Due to the separation of urine and faecal matter, there is no smell meaning that the toilet could be indoors. “Instead of flushing with water, we put a small shovel of wood shavings or ash into the toilet, so that the odour is absorbed,” says a student.

“The toilets are now directly attached to the school building and we now do not have to go outside anymore,” says another.

However, due to the lack of awareness about UDDTs, the architect was first sceptical, and a year of meetings with different authorities was necessary to get the official permission for the toilet construction. However, UDDTs already operating in other schools in Ukraine served as a demonstration of the technology.<sup>5</sup>

In this school, the pupils formed an ecosan club whose members were first trained by the NGO and later conducted seminars and workshops on sanitation and hygiene for their peers.

The club also worked towards sustainable operation and maintenance of the system. They arranged for the local timber industry to provide wood shavings for “flushing” the toilet. These shavings not only improve the faecal drying process and subsequent composting but also reduce expenditures the school must make to operate the system.<sup>3</sup>

#### SUSTAINABILITY CRITERION

5

#### SOCIALLY ACCEPTABLE AND INSTITUTIONALLY APPROPRIATE:

With patience, perseverance, and successful example projects, acceptance for an innovative technology can be gained.

#### SUSTAINABILITY CRITERION

3

#### TECHNICALLY APPROPRIATE INCLUDING O&M:

Students can take responsibility not only for educating their peers but also for securing the necessary materials needed to operate of the toilets!

In the experience of WECF having initiated more than 50 UDDT school toilets in 10 countries in Eastern Europe, the Caucasus and Central Asia, the keys for acceptance and sustainability of these toilets include:

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**STRONG COMMITMENT BY THE DIRECTOR OR TEACHER OF THE SCHOOL**

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**SIGNING A MEMORANDUM OF UNDERSTANDING ESTABLISHING RESPONSIBILITIES (ESPECIALLY RELATED TO O&M OF THE TOILET AND A BUDGET FOR CLEANING) PRIOR TO IMPLEMENTATION**

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**TRAININGS FOR PUPILS, TEACHERS AND CLEANING STAFF**

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**PUPILS TAKING RESPONSIBILITY FOR THE SYSTEM**

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**SCHOOL NO. 5 IN THE CITY OF NIZHYN**  
The NGO Mama86 in cooperation with WECF constructed the UDDT building adjacent to the existing school building in 2010 with financial support of the Dutch ministry of Foreign Affairs and Fondation Ensemble.





Top left: Construction of fixed-dome biogas plant.  
Top right: Irrigation of the plants on the newly built constructed wetland, that treats the effluent from the biogas plant.  
Below right: Peter and Christopher enjoying freshly cooked tea.

**SUSTAINABILITY CRITERION**

**2**

**PROTECT THE ENVIRONMENT AND NATURAL RESOURCES:** This sanitation system not only protects groundwater from untreated waste but also generates a source of energy for the school to use.

**A GROWING SCHOOL REQUIRES AN ADAPTABLE SANITATION SYSTEM THAT GROWS AND CHANGES WITH IT.**

The Pestalozzi Zambia Children's Trust runs a peri-urban school in Lusaka (Zambia) that has had to continually adapt its sanitation system in recent years as the school has grown from only 80 students in 2004 to more than 220 secondary school students today. First, septic tanks and soak away technologies were installed at the school, but within six months, the school management realized that the septic system was undersized, and the soak away technology was not working due to the high groundwater table. Jeanette Laramee, project coordinator sharply remembers: "We had a big puddle of wastewater building up near the septic tank."

The involvement of the German Toilet Organization, the Bremen Overseas Research and Development Association (BORDA) and the Water and Sanitation Association of Zambia (WASAZA) led to the installation of a decentralized wastewater treatment system (DEWATS) including a biogas digester as the primary treatment module at the school. The DEWATS treats both wastewater and organic kitchen waste and thereby generates

biogas and produces treated wastewater that is used for irrigation of fruit trees. Secondary treatment is provided by a nine chamber anaerobic baffled reactor (ABR), with tertiary treatment provided by a planted gravel filter (PGF).

Jeanette adds: "I had actually already been looking at ways to separate and reuse the grey water at the school. The DEWATS concept now takes this a big step further by enabling energy reuse through biogas and reuse of both grey- and blackwater. About 15 to 20% of the school's required energy for cooking is used from the biogas plant which helps us enormously and supports our financial independence." <sup>2</sup>

A member of the school kitchen staff happily explained the benefits of the new sanitation system: "Before we had to cook with firewood. Now we can at least partly cook with biogas. This causes less impact on the environment. But furthermore it also protects the children's and my own health which suffered a lot from the open fires we used before."

Altogether, we estimate that the availability of biogas allows for a reduction of approximately 5,100 kg of firewood per year. This amounts to a savings of over \$500 per year for the school, and clearly benefits the environment through a reduction of firewood use and consequent GHG emissions.

With a more complex system than many other schools have, operations and maintenance are also more crucial to the sustainability of the project. Although minimal maintenance has been required in the first five years for the biogas digester and ABR, the planted gravel filter periodically needs to be maintained. After about five years of operation, organic material had accumulated in the stone filter, thus limiting water flow through the PGF. The stones were removed, washed free of organics, and placed back in the PGF. New canna indica, reeds, elephant ear and even banana seedlings were then replanted in the washed stone filter. Additionally, the plants in the filter need to be trimmed and old growth removed to prevent premature blockages in the filter. The benefit of this is that the organic matter can be recycled into the system thus boosting biogas production. In this manner, a circular system of waste and resources is created. The biogas stoves additionally need to be maintained periodically to remove blockages resulting from grease and oil, rust, and small dust particles. WASAZA and BORDA provide support to Pestalozzi for operations and

maintenance issues and also have trained staff at the school so these tasks can be done as much as possible in house.

The system continues to be adapted as continued operation provides greater understanding of the system and as the population of the school continues to grow. Leakages throughout the pre-existing toilets and plumbing have resulted in much greater inflows than expected to the DEWATS system since its installation. So, plumbing improvements have been undertaken recently to reduce flows to the system. In addition, another biogas digester was added to both increase energy production and to increase the wastewater treatment capacity of the system. 9

The educational philosophy of the school is “head, heart, and hands,” and Jeanette Laramee notes that, “The system offers a perfect learning opportunity to demonstrate the value and reuse of resources” which can then be communicated across Zambia when the boarding students return to their homes.

**5**  
SUSTAINABILITY  
CRITERION  
SOCIALLY ACCEPTABLE  
AND INSTITUTIONALLY  
APPROPRIATE:  
The sanitation system is  
able to grow and be  
adapted to a dynamic,  
growing school.



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PESTALOZZI ZAMBIA CHILDREN'S TRUST

The facilities installed at the school were funded by German Toilet Organization and Pestalozzi Zambia Children's Trust. GTO funded the technical expertise of WASAZA and BORDA as well as one mason specifically trained in biogas construction. Pestalozzi funded the material cost, the labour and overall construction coordination. There are currently 200 boarding students plus 90 day students, but the school has further plans for expanding.



German  
Toilet  
Organization



BORDA





Top left: A completed spiral Blair VIP built by the school girls.  
Top right: A young gum tree being watered with diluted urine in a school woodlot.  
Below right: An earlier stage of construction of the spiral Blair VIP.

### STUDENTS TAKE A HANDS-ON ROLE IN THEIR OWN SANITATION SYSTEMS.

In Zimbabwe, simply teaching children about sanitation and hygiene in the classroom wasn't enough – instead students got hand-on experience in both building their own toilets and beneficially reusing their own urine through a project supported by the Stockholm Environment Institute and implemented by Peter Morgan and Annie Kanyemba of Aquamor (Private) Limited between 2008 and 2010.

Selected pupils at the Chisungu Primary school, in Epworth Zimbabwe, were taught in class about a variety of ecological toilets and then also learned how to build both an Arborloo and a Fossa alterna. However most attention was paid to the construction of Blair VIP (ventilated improved pit) toilets, as this is the technology supported by the government in Zimbabwe. In Zimbabwe the Blair VIP forms part of the school curriculum, and most school children know the name Blair and also how it works. Many thousands of schools use the Blair VIP toilet, built as a multi-compartment unit while the single compartment unit is more typically built in households. The larger and more complex the multi-compartment units built by artisans, the more difficult it is for pupils to build. However, refinements were

made to the design and construction method of the single unit making it much cheaper and easier to build. The students built many working units with great pride that continue to be used today. In addition, the students were taught to build many accessories to the toilet including hand washing devices and even pedestals.<sup>5</sup>

The students were also taught the principles of using diluted urine as a fertilizer in the growth of vegetables, maize, and trees in gardens, orchards and woodlots. At first simple experiments were performed in small circular gardens called ring beam gardens. These revealed quickly and simply what a dramatic effect diluted urine (which contains much nitrogen) has on the growth of green vegetables and maize. These experiments were then extended to larger scale trials in gardens and maize fields. This led to the pupils using the same methods in planting and growing trees in woodlots and orchards and even single trees planted near toilets.<sup>2</sup> In all cases growth of the plants was significantly enhanced by the application of diluted urine compared to watering alone.

Whilst this work was carried out at only one school, the benefits have been considerable beyond just that school. The simpler and lower cost BVIPs, developed in the project for school pupils, have now been adopted by the Government of Zimbabwe for use

**5**  
SUSTAINABILITY CRITERION  
SOCIALLY ACCEPTABLE AND INSTITUTIONALLY APPROPRIATE:

Involving children in hands-on training of construction was fun and created ownership of the systems that will have positive impacts on O&M. They also learn skills for life.

**2**  
SUSTAINABILITY CRITERION

PROTECT THE ENVIRONMENT AND NATURAL RESOURCES: These students are making use of easily available resources for productive use.

SUSTAINABILITY  
CRITERIONS

3 4

TECHNICALLY APPROPRIATE  
INCLUDING O&M &  
BE FINANCIALLY AND  
ECONOMICALLY VIABLE:

Simple and scalable technol-  
ogies led to broader adoption  
and implementation by the  
Government of Zimbabwe.

in rural areas. The work also demonstrated that single units could be successfully used in schools in place of multi-compartment units. The construction of the simpler BVIP was ideally suited to practical hands-on training of brick construction and cement application, taught in schools. This work was also linked to the development of an upgradeable series of BVIP toilets which is also now being employed by the GOZ, and the simple hand washing devices,

developed during the study, are now used in several countries. In a self-funded continuation of the project, toilets were restyled so they could easily be emptied (with skilled specialists) and the pit contents are processed and used in tree pits in orchards and woodlots.



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CHISUNGU PRIMARY SCHOOL  
IN EPWORTH, ZIMBABWE

Students at one school in Zimbabwe were taught both how to construct toilets and hand-washing devices and how to reuse diluted urine as fertilizer. Designs of toilets and hand-washing devices developed for this project are now used in other parts of Zimbabwe and beyond. The project was supported by SEI Stockholm. This work has been described in an e-book entitled "Teaching Ecological Sanitation at Schools".



# CRITERIA FOR SUSTAINABILITY OF WASH PROJECTS IN SCHOOLS

## SUSTAINABILITY CRITERION 1 PROMOTE HEALTH AND HYGIENE EFFECTIVELY

Includes the risk of exposure to pathogens and hazardous substances that could not only affect the health of pupils, school staff member but also communities. The sanitation system should at all points from the toilet via the collection and treatment system to the point of reuse or disposal be safe and child friendly in order to avoid the spread of diseases also for possibly affected downstream populations. This topic also covers aspects such as the awareness raising for hygiene and nutrition not just for students and their parents but also teachers in order to improve the overall livelihood.

## SUSTAINABILITY CRITERION 2 PROTECT THE ENVIRONMENT AND NATURAL RESOURCES

Involves the required energy, water and other natural resources for construction, operation and maintenance of the system, as well as the potential emissions to the environment resulting from use. It also includes the degree of recycling and reuse practiced and the effects of these (e.g. reusing wastewater; returning nutrients and organic material to agriculture), and the protection of other non-renewable resources, for example through the production of renewable energies (e.g. biogas). Especially at schools, a big impact can be done by raising awareness of those issues.

## SUSTAINABILITY CRITERION 3 TECHNICALLY APPROPRIATE INCLUDING OPERATIONS AND MAINTENANCE

Incorporates the functionality and the ease with which the entire system including the collection, transport, treatment and reuse and/or final disposal can be constructed, operated and monitored. The functions should be suitable for children's needs, especially in size, to raise the user friendliness and acceptance. They should also be flexible to make sure that different age groups can take advantage of it. Furthermore, the robustness of the technology should be taken into account, being aware that children and their skills and behaviour might sometimes not be suitable for very vulnerable systems.

## SUSTAINABILITY CRITERION 4 FINANCIALLY AND ECONOMICALLY VIABLE

Relate to the capacity of the government, the school itself or pupils' families to pay for sanitation. This includes the construction, operation, maintenance and necessary reinvestments in the system. Besides the evaluation of the costs, it should be taken into account, how the schools could benefit from the recycled products like soil conditioner, fertiliser, energy and reclaimed water. Additional external costs, for example, environmental pollution, health hazards and external benefits such as increased agricultural productivity of school gardens or employment creation have to be observed.

## SUSTAINABILITY CRITERION 5 SOCIALLY ACCEPTABLE AND INSTITUTIONALLY APPROPRIATE

The criteria in this category evaluate the socio-cultural acceptance and appropriateness of the system. The sanitation systems should be appropriate and well equipped for different age groups and different gender. Special needs for girls should be fulfilled in order to decrease school absenteeism. Special attention should also be paid on different religious customs to make sure that the facilities are not only suitable for pupils with different background, but also for children with special needs. The projects should be in compliance with the legal frameworks.

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When the Millennium Development Goals (MDGs) were established in 2002, they included the goal of halving, by 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation.

Although the target for water services has been met, more than 2.5 billion people in the world still lack access to toilets or latrines. The lack of sanitation services in a community often extends to public schools. The lack of sanitation facilities sometimes forces students to open defecate which contributes to the spread of disease and creates an unhygienic and unsuitable environment for students to learn in. For children who are physically handicapped, it is sometimes not possible to attend school at all because the toilet facilities do not meet their needs. Girls, in particular, suffer when inadequate sanitation facilities are available because proper menstrual hygiene sometimes forces them to stay home or even stop attending school altogether.

Adequate sanitation facilities can contribute to better health, improved school attendance, gender equality and environmental sustainability and can help in the effort to achieve the other Millennium Development Goals.

Unfortunately, the situation of sanitation in schools has not been assessed in the achieving the MDG sanitation target. In the current post-MDG and sustainability development goals discussion, however, a specific target for WASH in schools has been proposed as a part of the water and sanitation goal.

In support of this aim, this brochure has been produced to highlight a variety of models for school sanitation projects and systems that have been successfully implemented and maintained and how students, teachers, families and communities all contributed to it.