



BIO-SANITATION SYSTEMS FOR SCHOOLS

Grantee
SIMGAS TANZANIA LTD

Grant amount
GBP 400,000

Project duration
May 2015–August 2018

Beneficiaries
Students and school kitchen staff

Region
Kilimanjaro



PROJECT BACKGROUND

Hygienic sanitation facilities are crucial for public health. Inadequate sanitation is a major cause of disease worldwide and improving sanitation is known to have a significant beneficial impact on health, both in households and across communities. Some 842,000 people in low- and middle-income countries die each year because of inadequate water, sanitation, and hygiene. Inadequate sanitation is estimated to cause 280,000 diarrhoeal deaths annually and is a major factor in several neglected tropical diseases, including intestinal worms, schistosomiasis, and trachoma.

In East Africa, many schools in rural areas lack enough hygiene and sanitation facilities, and most schools are dependent on wood and charcoal as fuel for cooking, often burned in open fires or poorly functioning stoves and causing health problems for the people involved. The aim of this project was to improve the living conditions of school children in Tanzania by providing safe and financially viable sanitation systems combined with biogas and fertilizer production to schools.

PROJECT DESCRIPTION

The bio-sanitation system developed by Simgas is an integrated solution that sanitises human waste while producing biogas. For the schools, the bio-sanitation

systems reduce the costs of disposing toilet and other organic waste, and of fuel for cooking; reduce soot and carbon emissions and improve the air condition in the kitchen; improve school crop production; improve hygiene, and contribute to a healthier and modern school. Additionally, when the bio-sanitation systems are used for education purposes, it contributes to increased awareness about renewable energy and biogas technology.

The project included a research and development design phase, a field trial, and testing for 11 government schools in Kilimanjaro Region to provide a bio-sanitation solution that is affordable, easy to install, and scalable.

PROJECT RESULTS

By August 2018:

- Access to sanitation facilities with waste treatment had been provided to around 4,750 students and 166 school staff in 12 schools.
- Generally, feedback from the cooks using the gas was very positive. Users reported benefits including reduced fire preparation time and effort, shorter cooking time, and less indoor pollution.



KEY LESSONS

- The smooth functioning of a sanitation system is highly dependent on proper use and maintenance.
- Every (school) site requires a custom design and layout – standardisation is limited.
- Developing a processing plant for toilet waste is very time-consuming and the bio-sanitation system complexity should not be underestimated.
- Ownership for a sanitation solution is difficult to induce. The schools were not at a stage where they could afford to invest in a sanitation system – donor assistance is needed.

GENDER EQUITY AND SOCIAL INCLUSION

After running the sanitation for schools system for a few months in a girls' boarding school, the maintenance team began to experience repeated cases of blockage and clogging of the pipes. On closer inspection, they found that some of the girls had been throwing solid synthetic garbage – including toothpaste tubes, plastic bottles, pieces of waste soap, and sanitary towels – into the toilets. While the systems have contingency plans to trap plastic and other solids that accidentally enter the drainage system, the sheer volume and nature of sanitary towels in this case overwhelmed the normal fail-safe. In response, Simgas began talks with the school and students to understand what measures they had set in place to handle this kind of waste and why the girls kept dumping these items in the toilets. By working closely with the school in this way, Simgas was able to raise awareness of the dangers and complications of dumping sanitary towels in toilets, not only for the sanitation system but also for the overall environment and students' wellbeing.

PRINCIPLES FOR DIGITAL DEVELOPMENT

Build for sustainability: The project took a holistic approach to the school's need for waste disposal, good hygiene, and cheap cooking fuel. The bio-sanitation systems created a solution that reduced the costs associated with these, while at the same time improving the air condition in the kitchen, reducing soot and carbon emissions, improving crop production, and contributing to a healthier and modern school.

NEXT STEPS

The project is expected to scale-up to more schools in the Kilimanjaro Region as Simgas has received additional funding from the OPEC Fund for International Development (OFID) to install its systems into more schools. It is also working with FT-Kilimanjaro (a local NGO affiliate of the TPC Sugar Plantation where most of the schools they work with are located) to assist the schools with the maintenance costs of the systems via a cost-sharing arrangement. This should ensure that the systems continue to be used and maintained.



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