

## EXPERIENCES WITH ECOLOGICAL SANITATION IN SOUTH WESTERN UGANDA

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### Background to the South Western Towns Water and Sanitation project (swTws) and its eco-san activities in Kisoro Town

The swTws is an ongoing project implemented in the southwestern region of Uganda under a co-operation agreement between the governments of Uganda and Austria. This region, with a population density of over 400 inhabitants per km<sup>2</sup> is one of the most densely populated regions in the world.

The landscape in southwestern Uganda is structured through numerous chains of hills and ridges. The mountain tops mainly consist of granite and covered by only a thin layer of soil. Because of the massive clearing of forests and the rising demand for agricultural land for cultivation, heavy erosion has occurred in the region of steep mountain sides.

The project aims at providing safe water and improved sanitation facilities to 19 small towns (rural growing centres with populations of 500 - 5000) in the southwestern districts of Uganda, namely Kisoro, Kabale and Rukungiri districts. The project is about to extend its operations into the districts of Ntungamo and Bushenyi.

The first town where sanitation devices based on eco-san were implemented at a larger scale (beyond some demonstration devices) was Kisoro town in Kisoro district. Kisoro district is bordering Rwanda to the south and the Democratic Republic of Congo to the west (see figure 1). It is a mountainous district, which lies at an approximate altitude of 1200 - 2000 m above sea level. Kisoro Town is the administrative headquarters of Kisoro district. The number of residents of Kisoro town and peri-urban areas is approximately 20,000, a number even higher than the guideline value for rural growing centres. The geology in Kisoro consists of porous volcanic soils and stones.

The guiding principles of the project were therefore to:

- Ensure water services for all users and equity of access.
- Make pumped water supply affordable for the community.
- Minimize faecal contaminated wastewater.
- Improve the sanitation situation in general including the treatment of all generated faecal matter contaminated wastewater.
- Reduce the burden of digging pits into the volcanic rocks.



Figure 1 Map of Uganda Showing the Project Area

## **Challenges and progress**

Project activities started in July 1996. Affordable water supply to the people of Kisoro was provided through the use of solar pumps (as opposed to the original diesel pumps or to electric pumps – electricity is imported from Rwanda and supply is irregular).

For sanitation, it was decided to use ecological sanitation systems (eco-san) and attempts were made to apply the composting toilet system. However, local knowledge of the technology was very limited and operation of these units was problematic. Consequently, in 1997, Uno Winblad was invited from Sweden to give technical advice and practical training on what could be done. During his visit, he showed that ecosan systems are applicable in Uganda and that dry systems would be easier to construct and operate. With the acquired training, the technical staff of swTws were able to supervise construction and operation of a number of units in the swTws office in Kabale, and in the towns of Kabale, Kisoro, Rukungiri and Ntungamo.

## **The case of Kisoro**

Kisoro town is supplied with water from Chuho spring, which is located 3.5 km northeast and 110m below the town. Hydrogeological studies indicate that Kisoro town is in a rather untypical upstream position to its own vital water source. The porous volcanic underground, where wastewater can flow very fast, adds to this problem. Diluted and infiltrated faecal matter from Kisoro town presents a high risk for contaminating the Town's own water source.

A number of hotels and house owners in Kisoro use water borne sanitation. Other people were using dug latrines for waste disposal. Therefore a sound and long-term environmental management system had to be put in place to avoid pollution of the underground water.

## **Some activities and achievements in Kisoro**

As mentioned earlier, two different systems of sanitation improvements were promoted and implemented: eco-san toilets, as the state of the art, and a wastewater treatment plant (constructed wetland/reed-bed filters) for the dense core area of the town. A small percentage (max.5%) of the town residents and some hotels are connected.

The implementation of ecological sanitation alternatives involved mobilisation, awareness creation, construction and follow up. Mobilisation and awareness creation was enhanced through a sanitation play performed many times by a local drama group.

The following units were constructed:

- 140 composting toilets at domestic level
- 107 dehydration toilets at domestic level
- 3 dehydration toilets at institutions
- 4 dehydration toilets for the public; these units are managed by private operators.

## **Experiences**

### ***i) Domestic toilets***

Many toilets are not yet in use. For example for the case of the dehydration toilets, out of the 107 substructures built by the project, only 41 units were completed by the owners (upper structure). Out of these 14 units are not yet operational (4 promised to start using them while 10 were not permanently inhabited or not yet convinced to shift from old pit toilets). 27 units are operational although 5 of them still have problems.

**ii) Institutional toilets**

Institutional toilets are performing quite well. At one school there is a significant difference in appearance between the men and women toilets. One reason might be the different "load" of the stances - men 20 users per stance, women - 10 users per stance. The other reason could be the absence of urinals for the men and their common urinating stature (while standing), hence the tendency to urinate in the larger faeces hole to avoid the splashing of urine.

**iii) Public toilets** with private caretakers and regular maintenance are working very well.

In April 2001, a self-evaluation of the sanitation component of swTws Kisoro took place. The objectives were:

- To learn from the experience;
- To see what is on the ground from different perspectives (sex of the users, different authorities, technologies, operation and maintenance, etc);
- To carry out a "structured synthesis" of findings as a basis for further program planning and identification of research needs.

**Way Forward and the National Perspective**

In July 2001, a national seminar was held with Mr. Uno Winblad as the facilitator. The purpose of the workshop were to sensitise and train different key stakeholders on the potentials and application of ecological sanitation, as well as to forge a way for the future of ecological sanitation in Uganda. Delegates were drawn from government ministries of Health, and that of Lands, Water and the Environment, from various tertiary training institutions and from non-governmental organisations, among others. The following are a summary of the recommendations from the workshop regarding the future of eco-san in Uganda:

- As part of the immediate strategies for the promotion of ecological sanitation propagation in the country in the short-term, a seven-member task force is to be formed. The task force is to be comprised of seven members from the Directorate of Water Development (DWD), Environmental Health Department (EHD) of the Ministry of Health, National Agricultural Research Organisation (NARO), Ministry of Education, Ministry of Agriculture, National Environmental Management Authority (NEMA), and one NGO representative.
- Because of the appropriateness of eco-san, and the need to promote and implement it countrywide, it was recommended that annual national ecological sanitation workshops be held henceforth.
- That before and during the implementation of eco-san country wide, there is need to carry out research on the agricultural use of the human nutrients, pathogen destruction and anthropological aspects. This recommendation would address the need to develop appropriate strategies and approaches to the structural and architectural design including costing of eco-san units, have a clear understanding of the pathogenic destruction processes, thereby giving confidence to designers, promoters and users/stakeholders of eco-san. It is expected that the outcomes of this would result into the basis for improving sanitation and health, increase in agricultural production, and improved soil conditions
- In order to enhance an eco-san Network within and outside Uganda, there is need to: set up SWTWS as a 'Hub'; and involve stakeholders.
- An eco-san network will be set up to facilitate information sharing with all the stakeholders. This could be through the use of mailing lists, bulletins, fliers, websites, and workshops.

- ❑ Training materials are to be developed and curricula in schools could incorporate eco-san; resources should be identified, and trainers trained.
- ❑ Relevant laws and guidelines should be reviewed to accommodate eco-san.

In addition, experiences from the swTws project assessments show that:

- ❑ eco-san Projects should not be just appendages to conventional Water Supply & Sanitation (WS&S) projects since a paradigm shift is necessary –”Is it no longer a real issue for water experts?”.
- ❑ eco-san projects need close monitoring systems and follow up especially at the beginning.
- ❑ eco-san devices /hard ware needs to be improved up to the level of porcelain WC.

At the national level, the Directorate of Water Development has secured funds to construct 3 eco-san systems in each of the 56 districts in Uganda. This will act as a seed for further development of the systems.

### **Conclusions and recommendations**

”On site” eco-san is a good method to avoid faecal contaminated wastewater to save and protect resources. The project has proven that there is a possibility to introduce eco-san in East Africa even within “faeeco-phobic communities”. For people who don’t want to deal with faeces a communal or private managed system has to be developed and to be put in place. It must be as convenient as a flush system to the user (flush-pay-and forget). Like wise, the authorities have to take their task to protect people from the danger of improper sanitation by a few individuals. Bye-laws must be applied and executed for both water-borne and ecological sanitation.