

Showcasing Ecological Sanitation at an Environmental Education Centre

Project name:	Sustainable sanitation pilot project (under the framework project Enhanced Sustainable Sanitation Provision in Flooded Areas of India)
Location:	Tarumitra Bio-reserve and Ecology Centre in Patna, Bihar, India
Partner:	Water, Sanitation and Hygiene Institute (WASHi), India
Funder:	Swedish International Development Cooperation Agency (Sida)

Key features:

- Partnership with educational and ecological centre helps reach wider audience
- High-end sanitation facility with integrated solutions; e.g. urine-diverting toilets, solar panel, natural ventilation
- Capacity building and visual materials help overcome apprehensions about ecological sanitation (ecosan) toilets
- Tarumitra has become a local knowledge node for ecological sanitation

This pilot project centres on the establishment of an ecological sanitation (ecosan) complex at the Tarumitra Bio-reserve and Ecology Centre in Patna, Bihar, India. The complex showcases an integrated approach to sustainable sanitation as an alternative to open defecation, which is a common practice in the area. Ecosan has the advantages of saving water – compared to waterborne sanitation – while boosting agricultural productivity by allowing the safe reuse of human excreta as fertilizer and soil conditioner. The Tarumitra Bio-reserve is an ideal site for the complex, because as well as giving its many visitors a chance to see and use ecosan toilets, the centre demonstrates the agricultural use of “humanure”. Also, Tarumitra staff can explain the principles and benefits of ecosan as well as promoting improved sanitation services and personal hygiene practices.

The pilot project was initially supported as part of a Sida-funded action-research project implemented by the Water, Sanitation and Hygiene Institute (WASHi), India, and the Stockholm Environment Institute (SEI).

Tarumitra

Founded in 1988, Tarumitra (meaning Friends of Trees, in both Hindi and Sanskrit) has approximately 250 000 members in more than 2000 high schools and colleges in India and worldwide. The objectives of Tarumitra are to spread ecological sensitivity; to equip its members with skills to handle local environmental problems; to organize campaigns for the preservation of biodiversity.



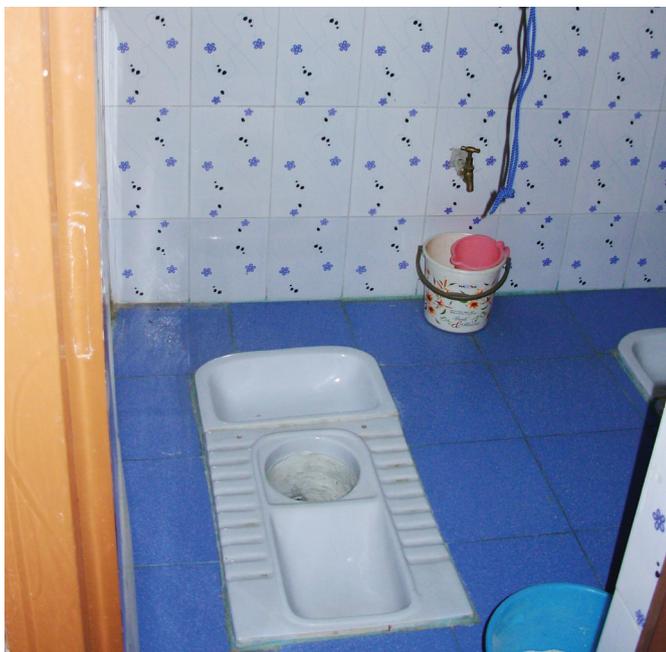
The pilot ecosan complex at the Tarumitra Bio-reserve

Tarumitra organizes residential training camps and lectures for schoolchildren and international university students. These camps focus on creativity in relation to environmental awareness raising; organic cultivation of rare edible plant species, including traditional rice varieties; protecting some 400 species of threatened trees and plants; protecting ecological resources, especially freshwater, from the threats of climate change; and the importance of sustainable sanitation in protecting ecosystems and human health.

Activities

The ecosan sanitation complex built at Tarumitra features female and male compartments, each with two urine-diverting dry toilets (UDDTs), alongside two waterless urinals with odour traps and washbasins. The waste goes into three separate streams. Urine is collected in a dedicated tank, along with greywater from hand washing. Faeces is retained in separate processing chambers, while anal-cleansing water is channelled into a nearby field after sand filtration. The urine, greywater and faeces are safely reused in the Bio-reserve and in agricultural production.

Tarumitra staff were instrumental in designing and creating the sanitation complex, in collaboration with the WASHi/



© Kim Andersson / SEI

Toilet with squatting pan that separates urine and anal-cleansing water. A rope hanging from the ceiling helps less-able users.

SEI team. The attractively designed complex uses natural ventilation, solar panels for lighting, and ash from camp bonfires for treating the faeces. Wherever possible, materials from the campus were used for construction. An interesting innovation is the use of ropes suspended from the ceiling next to the toilets in order to help users who have difficulty squatting or raising themselves. The facility's creative design features could be adapted for sanitation facilities elsewhere.

Initially, some visitors were apprehensive about using the ecosan complex. To address this, visual materials were prepared on how to use the facilities, and visitors are introduced to ecosan principles. According to Mr Kanchan Kumar Pathak, Programme Coordinator at Tarumitra, "All



© Kim Andersson / SEI

Treated urine and faeces are safely reused on the fields at Tarumitra.

visitors are introduced into the concepts of Tarumitra and ecosan through a presentation where the principles of closed loop systems and the benefits of ecosan are promoted".

In addition, an agricultural expert at Tarumitra is successfully using urine as an organic fertilizer on the many crops in the Bio-reserve, including mustard, onion, potato, cabbage and chickpea, and has started research on the use of urine as a pesticide.

Tarumitra staff have been able to provide expert support in the introduction and use of ecosan principles and practices for another pilot project at the nearby Prakash School.

Achievements and lessons

The involvement and support of Tarumitra has been vital for the success of this pilot, as a local centre focusing on nature conservation and organic farming that hosts frequent educational activities. Tarumitra staff already have a good understanding of the interaction between ecosystems and humans, and they have shown strong willingness to test ecosan. The quality of the facility and careful maintenance also help to raise visitors' interest in ecosan. Motivated by improved public health, more sustainable agriculture and environmental protection, the centre can now demonstrate the full benefits of ecosan.

For further information

To learn more about the SEI-WASHi collaboration visit <http://www.sei-international.org/projects?pid=2070> or read the following SEI fact sheets:

Promoting Sustainable Sanitation to Reduce Human Vulnerability in Bihar, India, www.sei-international.org/publications?pid=2393

Agricultural Trials Demonstrate Benefits of Urine Harvesting and Sustainable Sanitation, www.sei-international.org/publications?pid=2500

Ecological Sanitation Facility Meets Gender-Specific Hygiene Needs in School, www.sei-international.org/publications?pid=2498

Flood-resistant Ecological Sanitation Takes Off in a Rural Community, www.sei-international.org/publications?pid=2497

Piloting Enclosed Long-term Composting technology in an Indian Village, www.sei-international.org/publications?pid=2501

New Non-Profit Laboratory Supports Sustainable Sanitation, www.sei-international.org/publications?pid=2496

Or contact the Tarumitra Centre
tarumitra.india@gmail.com

Kim Andersson (SEI)
kim.andersson@sei-international.org

Prakash Kumar (WASHi)
prakaash.kr@gmail.com

Published by:

Stockholm Environment Institute
Linnégatan 87D, Box 24218
104 51 Stockholm
Sweden
Tel: +46 8 30 80 44

sei-international.org
2014

Twitter: @SEIresearch, @SEIclimate

Contact: Kim Andersson

Stockholm Environment Institute
kim.andersson@sei-international.org
Director of Communications:

Robert Watt
robert.watt@sei-international.org