

Eco Sanitation

Ecological sanitation (Ecosan) is a new concept in handling substances that have so far been termed wastewater or water-carried waste for disposal. It is a hygienic system of human waste disposal to retrieve and re-use the nutrients like nitrogen, phosphorus and potassium from human waste, and to economise the use of water. It is based on the idea that urine, faeces and water are resources in an ecological loop and, recycling of nutrients helps ensure food security. Ecosan aims to promote the development, implementation and dissemination of socially and culturally acceptable and sustainable sanitation approaches. These approaches are hygienically safe and environmentally sound. The main objectives of Ecosan are to:

- * reduce the health risks associated with sanitation, water contamination and waste disposal
- * prevent the pollution of surface and underground water
- * reduce, through recycling of grey water, wastewater discharged to sewers
- * prevent the degradation of soil fertility
- * optimise the management of nutrients and water resources for agricultural purposes, by recovering nutrients from urine and faeces.

Growing Interest

Uncontrolled disposal of excreta in soil and water bodies leads to an overload of organic compounds and nutrients in the environment, resulting in the loss of plant and animal life. Conventional sewerage relies on a dependable water supply. In many areas, where there is an increasing pressure upon available water resources, this can no longer be taken for granted. Besides the high construction and maintenance costs of sewerage, it has now been felt that they do not allow for the recovery and recycling of valuable nutrients into the food production loop. All this has increased people's interest in Ecosan.

How It Works

Ecosan involves diverse technologies such as urine-diversion dehydration (UDD) toilets, composting, rainwater harvesting, constructed wetlands, vacuum sewers, biogas reactors and many more. Composting of human faeces in dry toilets is done to avoid spread of pathogens. Alternatively, it is mixed with small volumes of flushing water in a separate composting module, and dehydrated with the help of solar energy. It can also be digested in a biogas plant for recovery of methane gas and subsequent use of the dried sludge as fertiliser. Effective micro-organism (EM) technology, which involves micro-organisms helpful in decomposing organic matter, is used to assure hygienic conditions in toilets and urinals to

compost wastes, to improve sewage treatment and, to hygienise and improve aquaculture. In water-rich regions, wastewater can be treated to an extent that it can be re-used for water-intensive farming systems like fish-farming.



The Advantages

Ecological sanitation

- * provides affordable sanitation options for all; covers a wide range of design and technique for the collection and treatment of human waste; can be dry and/or water-based system.
- * provides appropriate solutions adapted to the local situation; suitable both for rural and urban settings; allows for centralised and decentralised management.
- * promotes health, protects environment, conserves water, and minimises the pollution of the water system.
- * promotes safe and hygienic recovery and use of nutrients, organics, trace elements, water, and bio-energy.
- * preserves soil fertility; improves agricultural productivity and food security.
- * helps conserve resources through substitution of mineral fertiliser, and lower water consumption.

Ecosan in India

So far, most of the ecosan facilities have been set up under community-based projects. The German Technical Cooperation agency (GTZ), BORDA, a German NGO, and the KfW Bank, Germany, as 'partners of the sustainable sanitation alliance' (SuSanA), and its Indian partners like Ecosan Services Foundation (ESF), Pune, Navsarjan Trust, Gujarat, etc. are playing a major role in the development and implementation of such projects. The Auroville Foundation, Tamilnadu, is another supporting organisation for Ecosan projects. The following are some successful Ecosan projects in India supported by SuSanA partners:

- * Sanitation systems at Navsarjan Schools in Gujarat, AVM College Badalpur (near Mumbai), and Champill Trust (Karnataka)
- * Public toilets at Tirupati (Andhra Pradesh)
- * Community-based sanitation programme at Ulalu, Bengaluru
- * KfW-supported rural sanitation project in Rajasthan.

Sources: en.wikipedia.org, gtz.de, ecosan.nl, ecosanindia.org, indiaenvironmentportal.org.in, auroville.com/auroannam

