

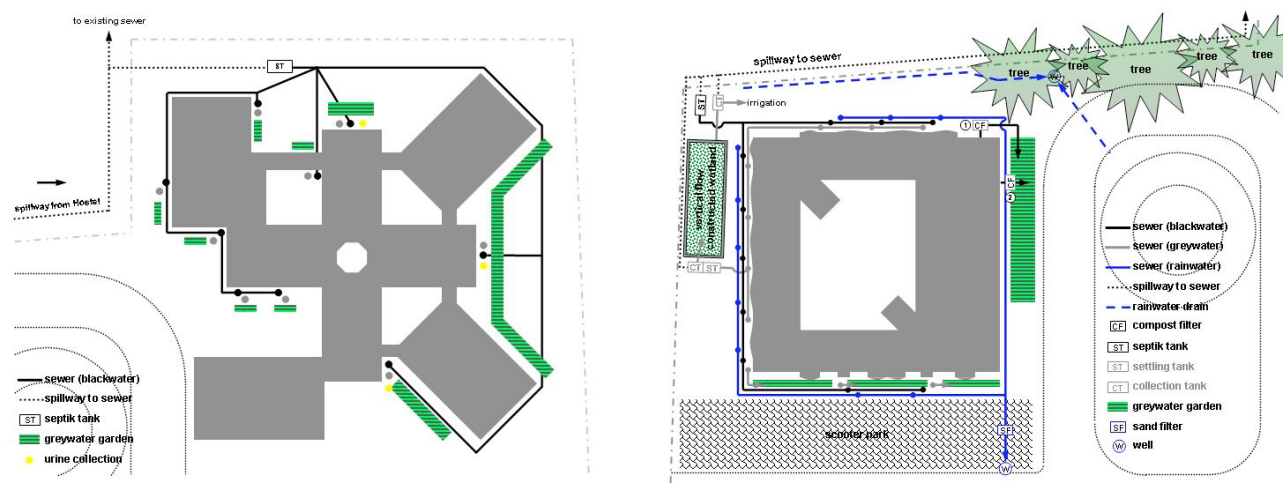
Current State of ecosan Pilot Projects in India supported by GTZ and Seecon International

Implementation of ecosan pilot projects in India, which are supported by GTZ (German Agency for Technical Co-operation) and Seecon International GmbH in the context of the Innovative Ecological Sanitation Network India (IESNI), advances quickly now.

The GoM, DoA, ecosan pilot project – new VANAMATI Nagpur

Grand opening and inauguration of the new VANAMATI Nagpur, the nodal training institute of the Government of Maharashtra (GoM), Department of Agriculture (DoA), for knowledge dissemination in watershed development and agricultural extension management, will be end of November 2005. Two septic tanks have been built to remove settleable and floatable solids from the blackwater before the liquid is drained to a municipal sewer. Greywater produced is collected, treated and reused separately. Greywater from the institute building is used for subsurface irrigation of nearby flowerbeds; distribution of the water is done in mulch-filled absorption trenches without pretreatment. For the treatment of greywater from the hostel building a vertical flow constructed wetland system was built. The treated greywater is collected and reused for irrigation purposes. Separate pipings for the collection of urine from urinals at the institute building have been laid, but for the time being urine is discharged to the blackwater sewer. If a research program on the use of urine as a liquid fertilizer can be launched in co-operation with RAMETI (Regional Agricultural Extension Management Training Institute) Nagpur and the Agricultural University of Nagpur, urine collection tanks will be installed and the use of urine will be demonstrated on a large scale. Rainwater, collected from the roof of the hostel building, is drained to an infiltration & storage well, rainwater that doesn't infiltrate into the ground is used for irrigation purposes (figure 1).

figure 1: Sketch map of ecosan system implemented at VANAMATI Nagpur; institute building (left) and hostel building (right)

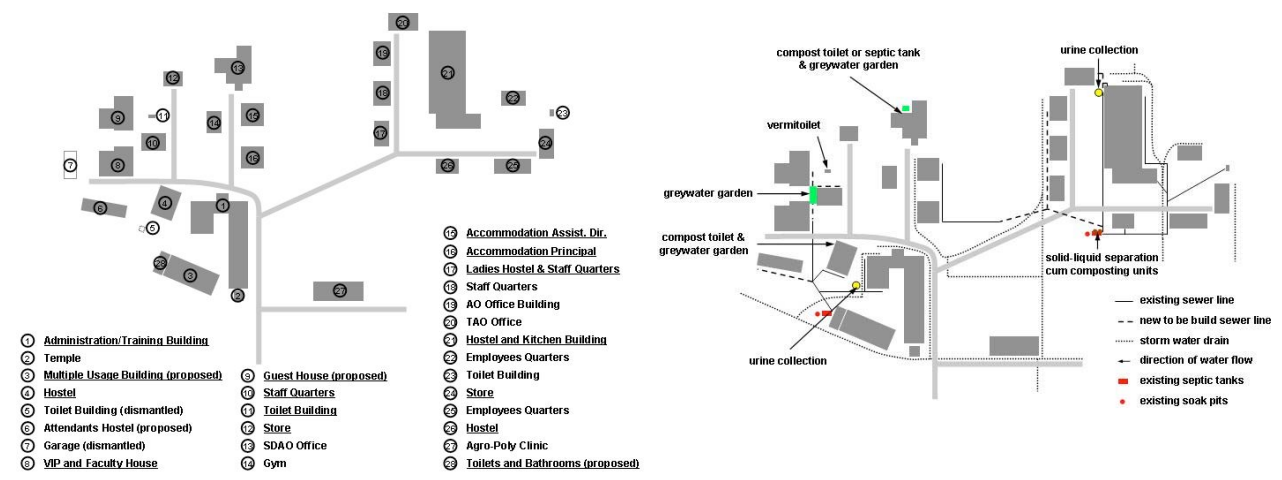


The GoM, DoA, ecosan pilot project – RAMETI Khopoli

As soon as funds are approved, an ecosan system as outlined below (figure 2) will be implemented at RAMETI Khopoli, an official capacity building organisation of the GoM, DoA, for knowledge dissemination in watershed development and agricultural extension management. Urine shall be collected from urinals at the Administration & Training building and the Hostel & Kitchen building for the

demonstration of the safe reuse of urine in agricultural production. An unoccupied apartment, which will be used for accommodation of trainees in future, shall be equipped with a pour-flush vermicomposting toilet system for the treatment of blackwater. Greywater produced at this apartment shall be piped to a flowerbed in front of the building; distribution of the water shall be done in mulch-filled absorption trenches without pretreatment. An existing toilet, which serves staff members, shall be replaced by an elevated double vault urine-separation vermicomposting toilet system. Buildings, which are arranged in a cluster around the Hostel & Kitchen Building, shall be connected to the existing sewer and the wastewater, for the time being, be treated jointly in the existing septic tank and soak-pit. If ample experiences in treating diluted blackwater in “solid-liquid separation cum composting systems” are gained, such a treatment unit may be built at RAMETI Khopoli.

figure 2: Sketch map of RAMETI Khopoli (left) and proposed ecosan scheme (right)



The Navsarjan Trust ecosan pilot project – VTI “Dalit Shakti Kendra”

The ecosan system at the Navsarjan Trust Vocational Training Institute (VTI) “Dalit Shakti Kendra” is under construction and the following ecosan components are already implemented or to be implemented within the next months:

- A new sanitation complex comprising common toilets for females and males, a biogas plant and subsequent treatment of the digested slurry is under construction right now. Blackwater will be directly discharged to the biogas plant, which will also receive the manure of ca. 5 to 10 buffaloes. Water used for primary washing hands will be drained to elevated flowerbeds. Greywater from washbasins will be used for subsurface irrigation of greywater gardens. The biogas produced will be used for cooking and shall substitute a certain proportion of LPG (liquefied pressurized gas) used.
- For the treatment of water used for washing dishes an organic filter was built. The filter material retains solids and the liquid is drained to a collection tank and reused for the irrigation of nearby plantations.
- Two elevated double vault urine-separation vermicomposting toilet systems are going to be built close to the hostel and will serve students and staff members as “emergency toilets” during nighttime. Leachate and water used for primary washing hands will be drained to an evapotranspiration bed, urine will be piped to a collection tank and greywater from the washbasin will be discharged to a flowerbed.
- As soon as the new common sanitation block is put in operation and the “emergency toilets” are built, all toilets inside the Hostel will be closed down. The existing sewer will be used for collection of kitchen water and greywater from the Hostel. The accumulated water will be lifted to a treatment cum storage

unit, which will combine a reed bed and a storage tank. The treated water will be used for irrigation of nearby plantations.

- The common toilet block behind the workshop building will be a common urinal centre serving females and males. Source-separated urine will be collected and applied to the kitchen garden after storage.
- Mixed wastewater from the ground floor level and blackwater from the first floor level of the CTC will be pretreated jointly in an organic filter to remove solids. The pretreated water will be drained to an evapotranspiration/infiltration bed for reuse. The remaining greywater from the first floor level will be used for subsurface irrigation of nearby flowerbeds or greywater gardens; distribution of the water will be done in mulch-filled absorption trenches with or without pretreatment.

The Navsarjan Trust ecosan pilot project – Primary Schools in Gujarat

Construction of the main toilet block at Dhandhuka School, one out of 4 Navsarjan Primary Schools in Gujarat State, is almost finished now and completion of the others will follow before long.

To overcome a common drawback of double-vault composting toilets - the increased surface area required for construction in comparison to conventional toilets – a new idea on how to use the interior space of the sanitation block best was needed. Instead of 4 double-vault cabins, 8 single-vault-urine-separation compost toilets are built. To facilitate harvest of the finished compost the toilets will be operated in batches. It follows that only 4 toilets will be in use at the same time and receive daily deposits until the composting chamber is "full". The worms will then be allowed to complete digestion while the toilet cabin above will be used as a shower. A specially designed cover will prevent water from entering the composting compartment or to be trained to the urine collection tanks. Greywater produced from showering will be diverted to the outside with the help of a channel and being reused for subsurface irrigation of flowerbeds. The alternating use of the cabins as a toilet or shower helps to reduce the interior space and therefore construction costs.

The Acts Trust ecosan case study – public toilet centre in Bangalore

A new biogas plant, which has been designed and built by Suma Khadi Gramodyoga Sangha, a local NGO, is in operation for almost 2 months now and replaces composting trenches at the ACTS Rayasandra Campus, which had been previously used for the treatment of faecal matter collected from the ACTS Public Toilet Centre in Rajendra Nagar Slum. The biogas produced is used for cooking and substitutes a certain

figure 3: New biogas plant at ACTS Rayasandra Campus (left) and use of biogas for cooking (right)

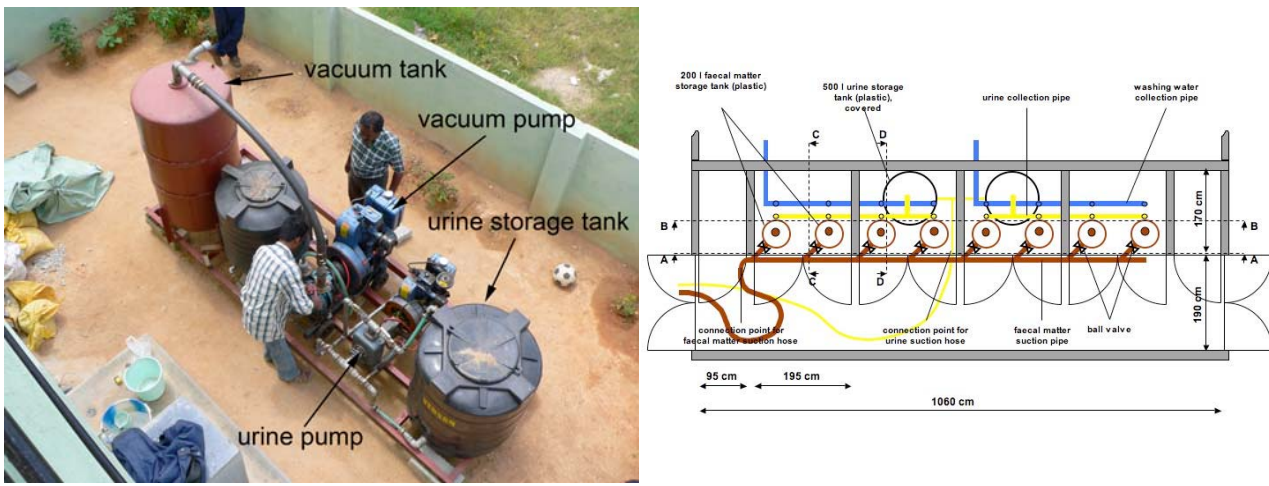


proportion of LPG (figure 3) used. Having a retention capacity of 25 m³, the biogas plant allows extension of the sanitation project on new to be built public toilets. Subsequent treatment of the digested slurry will be done in sludge drying beds.

To further improve hygienic conditions at the public toilet centre in Rajendra Nagar Slum, wash-water that isn't taken up by the planted infiltration bed, is now drained to a nearby municipal sewer.

Construction of the new suction unit (figure 4) for the evacuation of faeces and urine is already done and the new logistics system for collection and transportation of source separated urine and faecal matter will be implemented by November 2005.

figure 4: Suction unit for evacuation of urine and faecal matter from the public toilet centre (left) and sketch of new collection system at the toilet centre (right)



(pic by J. Heeb)

“9th IWWA International Conference“ in Mumbai, India, from November 25-26th, 2005

Latest informations on the current state of ecosan pilot projects in India supported by GTZ and Secon International GmbH will also be given during the „9th IWWA International Conference“ in Mumbai, India, from November 25-26th, 2005.

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