

Abstract: Third International Conference on Ecological Sanitation

Title	An urban ecological sanitation pilot study in humid tropical climate
Keywords	Urban ecosan, pilot study, blackwater handling, greywater treatment, economy, social aspects, upscaling
Author(s)	Petter D. Jenssen ¹ , Jakob Magid ² , Lau Seng ³ and Brian Chong ⁴ , Yrjan Fevang ¹ , Ingunn Skadberg ¹
Address	Department of Mathematical Sciences and Technology Agricultural University of Norway
Telephone	+47 6494 8685
Fax	+47 6494 8810
Mobile	+47 913 77 360
E-mail	Petter.jenssen@imt.nlh.no
Abstract ID no	P/7

An urban ecological sanitation pilot study in humid tropical climate

Ecological sanitation (ecosan) is currently being evaluated as the main option for upgrading the sanitary systems in the city of Kuching in Sarawak Malaysia. Kuching has 400 000 inhabitants. In Kuching as in many other Asian cities the toilet waste (blackwater) is separated from the greywater. The blackwater is discharged to septic tanks which overflows to street/storm drains and the greywater is discharged untreated. This system poses health hazards upon water contact and cause nuisance such as odour and aesthetically unappealing conditions. A centralized sewer system was proposed, but was found to be too expensive. Because of the existing structure with separate grey- and blackwater piping conversion to a decentralized source separating ecosan system is facilitated. A pilot ecosan system serving nine (9) residential homes is established. This system, which became operational in January 2004, is the first of its kind in the country.

Upgrading the existing houses to an ecosan system included; replacement of existing toilets with low-flush toilets, converting existing septic tanks to blackwater storage tanks and installation/modification of piping to facilitate efficient transfer of blackwater to desludging tankers transporting the blackwater to a biogas facility.

The greywater is collected via a piping network, passes through a septic tank and is then treated in an onsite biofilter/constructed wetland system. Initial results reveal that the system is able to treat raw greywater to near drinking water standards. This indicates that a more compact design should be possible and still obtain very high effluent quality.

The paper also compares the discharge from the new treatment system to background or baseline data obtained prior to introduction of the ecosan system. Social acceptance, economy and upscaling is also discussed.

1 Department of Mathematical Sciences and Technology, Agricultural University of Norway

2 The Royal Veterinary and Agriculture University, Denmark

3 Universiti Malaysia Sarawak