Poor Practice 2

Periurban EcoSan Systems

Periurban EcoSan systems are currently very expensive, as shown by the costs in Table 1 taken from a report by the Stockholm Environment Institute (SEI, 2005). In fact these very high costs may even be serious underestimates (Arno Rosemarin, Stockholm Environment Institute - and one of the authors of this SEI report, personal communication, 2007).

In high-density periurban areas two sewers are required, one for urine and one for greywater. The minimum recommended diameter for urine sewers is 50 mm, but "the optimum range is from 75 mm to preferably 110mm", and the gradient must be at least 1 in 100 (GTZ, 2005). A similar-sized sewer is also required for the greywater. Two separate sewers increase costs dramatically (especially when compared with the single 110-mm sewer laid at a gradient of 1 in 200 needed for simplified sewerage - see 'Good Practice 8'). This is exemplified by a cost-comparison study in Germany between urban EcoSan and conventional sewerage which found capital costs to be higher for urban EcoSan: "the multiple sewer systems resulting from the separation of urine, brown [and] greywater are responsible for [the] higher investment costs." (Oldenburg et al., 2007).

Periurban EcoSan systems are therefore currently considered 'poor practice' for exactly the same reason as conventional sewerage (see 'Poor Practice 1'): they are simply much too expensive for use in poor periurban areas. Simplified sewerage (see 'Good Practice 8') was developed to bring affordable sewerage to the periurban poor, but to date there has been no analogous development of "simplified EcoSan" for use in high-density periurban areas.

Table 1. EcoSan household unit costs in urban areas

United Nations World Region	Urban household unit cost (USD)
Sub-Saharan Africa	350
Southern Asia	440
East Asia	650
Eurasia	725
South-East Asia	800
Oceania	875
North Africa	900
Latin America & Caribbean	1,000
West Asia	1,200

Source: Table 4-5 in SEI (2005).

References

GTZ (2005). *Urine Diversion: Piping and Storage* (Technical Data Sheet for Ecosan Components). Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH, Eschborn, Germany; available at: http://www.gtz.de/de/dokumente/en-ecosan-tds-01-b3-urine-diversion-piping-storage-2005.pdf.

Oldenburg, M., Peter-Fröhlich, A., Dlabacs, C., Pawlowski, L. and Bonhomme, A. (2007). EU demonstration project for separate discharge and treatment of urine, faeces and greywater – Part II: Cost comparison of different sanitation systems. *Water Science & Technology* **56** (5), 251–257, available at www.iwaponline.com/wst/05605/wst056050251.htm.

SEI (2005). *Sustainable Pathways to Attain the Millennium Development Goals - Assessing the Role of Water, Energy and Sanitation.* Stockholm: Stockholm Environment Institute, available at: www.sei.se/index.php?page=pubs&pubaction=showitem&item=577.

Further information (with links to many publications on EcoSan systems) is available at:

Stockholm Environment Institute 'EcoSanRes' (www.ecosanres.org)

GTZ EcoSan (www.gtz.de/en/themen/umwelt-infrastruktur/wasser/8524.htm)

University of Leeds (www.personal.leeds.ac.uk/~cen6ddm/EcoSan.html)

WASTE (http://www.ecosan.nl/) - "This site focuses on Ecological Sanitation especially in urban areas"

Prepared by Duncan Mara, University of Leeds, UK, December 2007