

## Abstract: Third International Conference on Ecological Sanitation

<b>Title</b>	<b>Linking Ecological Sanitation and Urban Agriculture in Sub-Saharan Africa</b>
<b>Keywords</b>	Urban and peri-urban agriculture, ecosan, UPA-Ecosan, reuse, social acceptability, Uganda, South Africa
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### Comments by the Author:

Themes A and B

The presentation "Linking Ecological Sanitation and Urban Agriculture in Sub-Saharan Africa" is based on the research project "Potentials and Constraints to the Link of Urban and Peri-Urban Agriculture and Ecological Sanitation". A vital part of the studies is the investigation of the safe reuse of faeces and urine and the social acceptability of re-circulation of human-derived nutrients, which addresses theme A AND B.

### Content of the Submitted Abstract

The following abstract illustrates the background of the proposed presentation. A potential presentation in May will be based on first findings of the research visit in South Africa in April 2004 and of the research visit to Uganda and South Africa which will be conducted February-May 2005. Co-Author will be the sanitation officer of the South Western Towns Water and Sanitation Project (SWTWS), Uganda.

## Linking Ecological Sanitation and Urban Agriculture in Sub-Saharan Africa

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### Summary

The presentation illustrates first findings of the research project "Potentials and Constraints to the Link of Urban and Peri-Urban Agriculture and Ecological Sanitation" carried out at Hamburg University of Technology. The objective is, to discuss and learn from existing experiences, failures and success in different cultures and social environments.

### Background

By 2020, the number of people living in developing countries will grow from 4.9 billion to 6.8 billion. Ninety percent of this increase will be in rapidly expanding cities and towns. More

than half the population of Africa and Asia will live in urban areas by 2020 (GARRETT). Growth in urban poverty, food insecurity, and malnutrition will accompany urbanization. Severe environmental degradation and hygienic problems caused by the lack of infrastructure are additional problems.

The linking of urban and peri-urban agriculture and ecological sanitation, in short UPA-Ecosan-Concept (Figure 1) could play an important role for the solution of the mentioned problems. Agriculture within city limits, so-called urban agriculture, became a survival strategy for many poor families in the last decades. These families would not be able to secure their nutrition without urban agriculture. This form of agriculture can be a vehicle to increase food security and health, to generate economic opportunities for people with low income, and to promote recycling of waste and wastewater. The philosophy of ecosan is based on the consequent implementation of the “closing the loop approach” (Nutrient Cycling). Urine and faeces are regarded as resources to be used as fertilizer respectively as soil conditioner. Hence linking ecosan with agriculture, in particular urban agriculture is crucial for the sustainability of both ecosan and urban agriculture and will be essential for the achievement of the Millennium Development Goals.

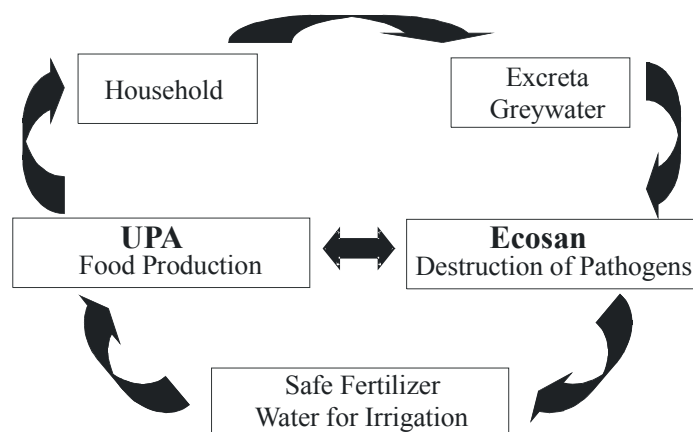


Figure 1: Closing the Loop with an UPA-Ecosan Concept

The UPA-Ecosan-Concept enables sustainable sanitation and hygiene, sustainable resource management, prevention of environmental degradation through urban agriculture, an increase in soil fertility and therefore higher yields. The challenge is to prove this theoretical statement scientifically. It has to be evaluated, if an UPA-Ecosan concept fulfils the requirements of a system, which is safe, easy to maintain, and transferable to local conditions. However, such a system has to be as effective as possible with respect to nutrient recycling, sanitation and public health.

### Research Project

The research project “Potentials and Constraints to the Link of Urban and Peri-Urban Agriculture and Ecological Sanitation” carried out at Hamburg University of Technology is addressing this challenge. The objective of the research is to evaluate the ongoing activities, regarding the potentials and constraints of an UPA-Ecosan concept. A vital part of the studies is the investigation of the safe reuse of faeces and urine and the social acceptability of re-circulation of human-derived nutrients.

Main condition for safe reuse of the products is the sanitation of the material. Different ecosan technologies under use will be monitored for temperature, water content and pH,

the most influencing parameters on pathogen die-off. The monitoring phase will last for twelve months. Laboratory analyses for *Escherichia coli*, Fecal *Streptococcus*, and *Ascaris* eggs will be conducted. To evaluate the influence and importance of the socio-economic, socio-cultural, technical, and climatic conditions the research will be carried out in various settings in Sub-Saharan Africa. Among others the South Western Towns Water and Sanitation Project (SWTWS), Uganda, the Environmental Engineering and Pollution Control Organization (EEPCO), Tanzania, and CSIR in South Africa are co-operation partners.

The second phase of the research, the field study, starts in February. The monitoring devices will be installed and the first session of interviews conducted. The interviews will assess the social acceptability of re-circulation of human-derived nutrients and therefore the potential of the intended reuse. First findings will be available for the Third International Conference on Ecological Sanitation in Durban.

The final results of the research will complement on-going and already conducted research. A catalogue of appropriate methods and technologies on which a sustainable UPA-Ecosan concept can be based will be developed. Such a catalogue is imperative for the development of clear political guidelines, which should allow an effective integration of urban and peri-urban agriculture and ecological sanitation in existing urban economies.

GARRETT, J.L. (2000), *Achieving Urban Food and Nutrition Security in the Developing World, Overview, A 2020 Vision for Food, Agriculture, and the Environment, Focus 3*, International Food Policy Research Institute (IFPRI), Washington