

ECOSAN - CLOSING THE LOOP IN WASTE WATER MANAGEMENT AND SANITATION - A NEW SUPRA REGIONAL PROJECT OF GTZ"

Christine Werner, Jana Schlick, Gernot Witte, Germany

Conventional forms of individual and centralised sanitation are coming under increasing criticism. In particular, the enormous costs and high water consumption of centralised systems and the groundwater pollution and inadequacy for densely populated areas of latrines and cesspits mean that they are also definitely not suitable as a blanket solution for developing countries, especially in arid climate zones. Moreover, all conventional types of wastewater and sewage disposal systems usually deprive agriculture, and consequently food production, of the valuable nutrients contained in human excrement.

A possible solution for this problem is a sanitation concept called "ecological sanitation", or "ecosan" for short, a more holistic approach towards ecologically and economically sound sanitation. In the view of GTZ the key objective of this approach is not to promote a certain technology, but rather a new philosophy of dealing with what has been regarded as wastewater in the past. The systems of this approach are based on the systematic implementation of a material-flow-oriented recycling process as a holistic alternative to conventional solutions. Ideally, ecological sanitation systems enable the complete recovery of all nutrients from faeces, urine and greywater to the benefit of agriculture, and the minimisation of water pollution, while at the same time ensuring that water is used economically and is reused to the greatest possible extent, particularly for irrigation purposes.

These effects can be achieved by various means – spanning the full range from strictly low-tech to expressly high-tech solutions. In addition to characteristically semi-centralised or non-centralised sanitation systems of modular design, ecological sanitation includes interdisciplinary approaches to the integration of strategies for marketing the recovered nutrients, applying them safely in agriculture, and establishing a service business for building and operating the installations.

At the beginning of 2001 the GTZ launched a supraregional sector project on the subject of ecological sanitation with the aim of developing ecologically, economically and socially sustainable sanitation concepts based on a holistic closed-loop approach and of promoting those concepts in order to establish them as part of the state-of-the-art technologies. The long-term objective of the project, however, is the global dissemination and application of ecosan.

This paper presents an overview of the activities to be carried out within this project as well as first implementations and as far as possible some results.

The activities within this project are the result of a conference which took place at the end of October 2000 in Bonn (Germany). Nearly 200 experts with various professional backgrounds from all over the world discussed the necessary next steps towards the broad acceptance and implementation of ecosan solutions world wide.

Up to now activities related to ecological sanitation have mostly comprised projects focussing on rural areas, a number of which have worked very well. Many experts already have broad knowledge and long-term experience in the field of ecological

sanitation. Experience in urban and periurban areas is still scarce, however.

Joint action is most vital in achieving a successful and supraregional move towards ecological sanitation. One important task of the GTZ-project is to bring together all of these existing bits and pieces in order to use and expand the available experience as well as to avoid the overlapping of activities. Another important task is the exchange of knowledge. This must include existing literature as well as practical experiences. A pool where the knowledge can be collected shall therefore be created, kept up to date and promoted to interested parties.

For both joint action and the exchange of knowledge, creating a world-wide network of people, institutions and projects is very important in order to learn from each other about successful projects, problems, research demands and so forth, and to develop solutions for urban and periurban areas. The network is aimed at experts, potential users and decision-makers who are looking for information and communication concerning specific questions and projects, and at other interested parties who require general information or decision-making assistance.

The implementation of pilot projects represents another important part of the supra-regional GTZ-projects for two reasons: firstly because demonstration is the best publicity, and secondly because a great deal of research and development work is necessary in order to arrive at ecosan solutions that are cost-effective, geared to real-world needs and suitable for dissemination.

Publicity through the demonstration of working examples is important for the successful and sustainable implementation of new sanitation systems and for acceptance by the parties involved. This includes of course the users, whose awareness, demands, convenience, financial means and technical skills all have to be considered, as well as the private sector, administrative institutions and political decision-makers. Perception as well as terminology has to change – what is considered waste is a resource, nutrients are not pollutants.

At the same time much research still needs to be carried out to enable us to identify appropriate ecosan solutions for various contexts. Furthermore many investigations have to be conducted into safe agricultural and horticultural utilisation, market analysis and marketing strategies for the products, the comparison of costs with conventional systems, and the development of models for the training of users, service providers and farmers, including public health and hygiene education. The lack of solutions for densely populated regions and increasing urbanisation have led to the GTZ-project focussing primarily on the implementation of pilot projects in urban areas.

Since the safe recovery of nutrients (nitrogen, phosphorus, potassium, trace elements) and carbon included in human excreta is a very important part of the overall ecosan approach, this concept at the same time plays a major role in the conservation and restoration of soil fertility – and hence in food security and the improvement of public health.

In many parts of the world artificial fertilisers are too expensive and depend partly on fossil resources. At the present consumption rate the deposits of phosphorus, for example, are expected to be exhausted within about 60 years. Ecosan therefore represents an important factor in ensuring sustainable food production in the future.

New businesses need to be created in order to implement and maintain the ecosan infrastructure, and to collect and transport the recyclables and products, as well as marketing them. In order to develop a new sanitation business which is based on preventing pollution, destroying pathogens and recycling nutrients, interdisciplinary co-operation is crucial, requiring expertise not only in sanitation but also in the fields of urban planning, agriculture, irrigation management, economics, social sciences and public health.