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<b>Title</b>	<b>Mainstreaming DEWATS systems within the ecosan concept in Wenjiang, Sichuan Province, China</b>
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### **Mainstreaming DEWATS systems within the ecosan concept in Wenjiang, Sichuan Province, China**

This paper presents the results of a research study and ecosan inception phase in Chengdu, Sichuan Province, PR China. Sichuan Province is a western Province of the PR China, with the Province capital Chengdu.

Ecosan – mainly urine diverting dry toilets - have been successfully implemented and up-scaled in the rural areas of China. But still the majority of wastewater of peri-urban and urban citizens is not treated. In the most rapidly growing urban centres of the country the large investment, operation and maintenance costs of centralised treatment plants are not affordable.

Since the 1990s, when BORDA initiated the promotion of decentralised wastewater treatment systems, called DEWATS, in China and India, the application of this technology has spread further throughout the region. DEWATS describes an approach, which

encompasses with several technological components. It applies only technologies which require little or almost no qualified maintenance or operational supervision, and work without external energy demand. The target was to especially adapt the components to the conditions in peri-urban and urban areas of developing countries. The four systems are:

- sedimentation and primary treatment
- secondary anaerobic treatment fixed bed filter or Baffled septic tank,(biogas)
- secondary or tertiary aerobic/anaerobic treatment in constructed wetlands
- secondary or tertiary aerobic/anaerobic treatment in ponds

Because of the advantages of the system in costs, treatment efficiency and operation reliability, the Sichuan Governmental legislation supported the up-scaling of DEWATS: Today newly constructed areas (apartment blocks and institutional buildings) without sewer connection have to build a DEWATS to get construction permission. The investment cost have to be covered by the investor, the construction is done under supervision of the local Rural energy offices. So far more than 100,000 units have been built until 2002 in China ,whereof about 47,400 DEWATS with a constructed volume of 2,440,000 m<sup>3</sup> treat 250 million tons water per year in Sichuan Province.

As the DEWATS plants in Sichuan Province commonly treat the total municipal wastewater stream and discharge to the nearest receiving water/sewer. Reuse is often neglected in the planning. The objective of the research is to integrate and optimize the DEWATS within the ecosan concept. Hereby the focus will be to

- considering-in-house sanitation and a separation of streams at their source
- assure the utilisation of the products in agriculture

With the separation of wastewater streams the treatment steps can be adjusted to the specific organic and nutrient load. Modifying the design will result in smaller plant size and/or increased treatment efficiency. This is expected to be a major promotional factor, because the investor in the DEWATS plant have a specific interest in lowering the investment costs. Furthermore the utilisation of the products water, energy and fertiliser has a value for the inhabitants and the local agriculture , which should be promoted strongly. In any case water saving devices should be considered wherever possible.

The research included the formulation of technical proposals, pilot implementation and field research. An integral and important part during the inception phase are awareness raising and informed choice processes for the households/users/decision maker.

The project is carried out jointly by GTZ<sup>i</sup>, BORDA and local partner BRTC<sup>ii</sup> and Rural Energy office from November 2004 until April 2005. The first results will be presented in Durban.

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<sup>i</sup> Gesellschaft für Technische Zusammenarbeit

<sup>ii</sup> Biogas Research and Technology Centre