

Puzhehei Upper Watershed Eco-Sanitation Project--- Overview, Experience and Lessons learnt

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Background

■ Project sponsors:

- ❖ Swiss Reinsurance Company: 2004 ReSource Award
- ❖ Bremen Overseas Research and Development Association (BORDA)
- ❖ German Embassy
- ❖ Government of Wenshan Prefecture, Yunnan

■ Project implementers:

- ❖ Yunnan Environmental Protection Bureau (YEPB)
- ❖ Yunnan Environment Development Institute (YEDI)
- ❖ Qiubei Environmental Protection Bureau (QEPB)

■ Project period:

1 April 2005 – 31 December 2007

Project location

- Typical karst lake area with unique but fragile karst wetland ecology
- Upstream source of Pearl River system, which provides fresh water for the highly industrialized downstream provinces in China's Eastern provinces
- Provincial scenic spot
- Pollution prevention and control project of Puzhehei lake area: one of forthcoming World Bank loan project areas
- One of three circular economy pilot areas in Yunnan with tourism focus



Water environmental issues

- Insufficient control and treatment of household wastewater and wastewater from tourism facilities



**Eutrophication at
lakeshores of
Puzhehei Lake**



Water environmental issues

- Lack of an integrated and appropriate management and disposal system for domestic solid waste, human excreta and animal waste generated by intensive animal husbandry



- Ground water and down stream surface water pollution
- Degradation of soil

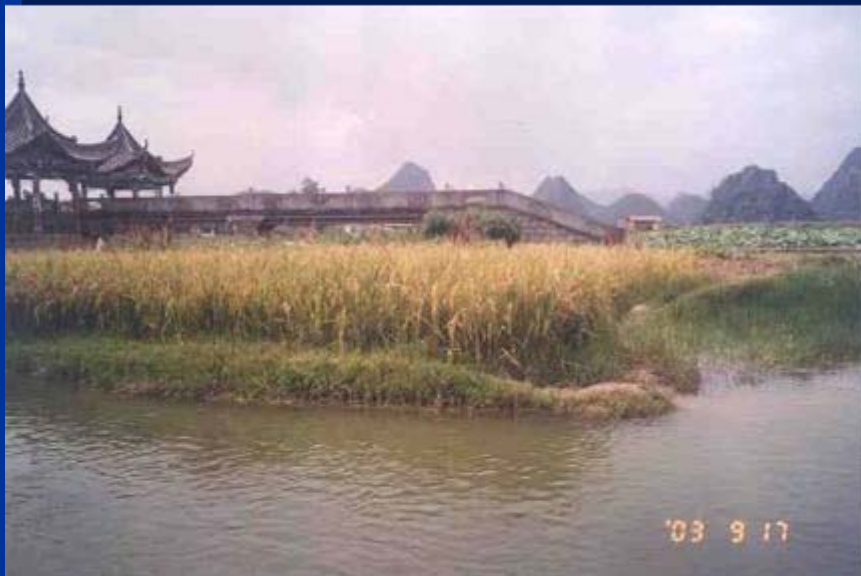


Water environmental issues

- Intensive agricultural activities with intensive utilization of chemical fertiliser and pesticide



Increased non-source pollution from agriculture in the watershed



Project goal

To improve environment management and sanitation in the watershed and contribute to sustainable development through introducing and disseminating ecosan----a closed-loop approach that enables a maximum safe reuse of organic waste

Project components

- **Introduce and demonstrate urine diverting dry toilets and improve the utilisation of small biogas units in the lakeshore villages and schools**
- **Demonstrate biogas technology and slurry application in animal waste management in the area with intensive animal farming practise**
- **Environmental education in schools**
- **Awareness raising and capacity building**

Urine diverting dry toilets - households

- 156 units in 4 lakeshore villages
- 15% of total cost invested by beneficiary households



Urine diverting dry toilets - schools

- Two toilets with 8 or 10 pits in two schools in lakeshore villages



Toilet in Caihuaqing village



Toilet in Xianrendong village

Animal waste management (1)

- Ten 3-in-1 biogas units supported in the tourism core area to improve local sanitation and provide alternative energy for cooking



Animal waste management (2)

- A biogas project with a 200m³ digester, gas purification, solid-liquid separation and biogas burner for a household-managed animal farm cum distillery (ongoing!!!)

Before the project:



Animal waste management (2)

During the project construction:



Slurry storage and separation

Biogas digester with gas storage



Biogas burner for distillery



New stable

Animal waste management (3)

- Testing and demonstration of slurry fertilisation in the watershed (orchards and vegetable plantation near the biogas system)



Environmental education in schools

- Promote ecological sanitation concept and practise in schools
- Development of local environmental education materials and code of conduct
- Environmental education through writing and drawing competition, using camera to identify pollution, etc.
- Joint event with local govt. agency on “Word Environment Day”



Awareness raising and capacity building

Awareness raising and capacity building targeted on local governmental agencies, village committee, local communities (including households, teachers, pupils, village head) , through

- Study tour
- Training workshops and dissemination workshops
- Consultation/stakeholder meetings
- Village meetings
- Feedback mechanisms (questionnaires, etc.)



Project impacts

- Increased awareness on innovative methods of pollution prevention for key water resources/bodies in government at different levels
- Widened awareness of the urgency of water source protection in the general public
- Provided credible models for watershed protection
- Encouraged replication in other areas – 200 more toilets units funded by pref. Govnt. were duplicated in the watershed
- Demonstrated improvement of co-operation between government and non-governmental bodies in environmental protection/natural resources management
- Improved capacity of local EPB in project implementation

Lessons and experience learnt

- Intensive preparations and training before embarking on new concepts laid the foundation for successful project implementation
- Voluntary involvement and household participation in planning and construction process improves the ownership of the project
- Experts' on-site design and later close monitoring ensured a better local adaptability, quality and use
- Wide consultation and stakeholder participation consolidate the local support to the project

Thank you!

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