

Don't think of **wastewater**: evaluation and planning tools for reuse-oriented sanitation

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Water & Sanitation Symposium - 4.10.09

“[w]e need to **transform** the way we look at **wastewater**, recognizing it as a **resource** rather than a problem, and manage it accordingly,”

(pp 133-134, World Water Development Report 3 March 2009)

Why Reuse?

- environmental protection
- to motivate long-term O&M of treatment schemes

Research Goals

- build **awareness**: contribute quantitative rigor and site-specificity to claim that WW is a resource
- build **agency**: develop step-wise reuse-driven planning process

Field sites: Chengdu, China; Ghana

Burden to Capacity Sustainability Assessment: Chengdu Application

PRODUCTION	
BURDEN	CAPACITY
<i>Domestic WW produced</i> m ³ /d 220,000	<i>Domestic WW convey</i> 68,000
TREATMENT	
Electricity used to treat WW MJ/y 5.2x10 ⁷	Empirical energy value of WW 1.1x10 ⁷
Cost of nutrient treatment and removal \$/y 18,000	Local retail value of influent nutrients 900,000
END USE	
Local value of resources in sludge \$/y 597,000	Value of sludge being captured 0

Design for Service

5-step planning approach

List of services that WW/FS/treatment byproducts can provide



Assessment of demand for those services in city of interest



Assessment of performance of 'business as usual' provision of above services



Design wastewater infrastructure to improve the sustainability of those services with lowest performance



Assessment of intrinsic characteristics of wastewater treatment technology options