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19 May 2008
Sanitation Challenge
Wageningen, NL

ecosan demonstration project: GTZ headquarter, Germany

partner of

**sustainable
sanitation
alliance**

gtz

ecosan program
recycling oriented
wastewater management
and sanitation systems

commissioned by



**Federal Ministry
for Economic Cooperation
and Development**

GTZ headquarter

- consists of 4 buildings, providing office facilities for 650 employees, canteen, meeting and conference rooms
- main building had to be renovated (2004 - 2006)
- opportunity to introduce a high-comfort urban ecosan system



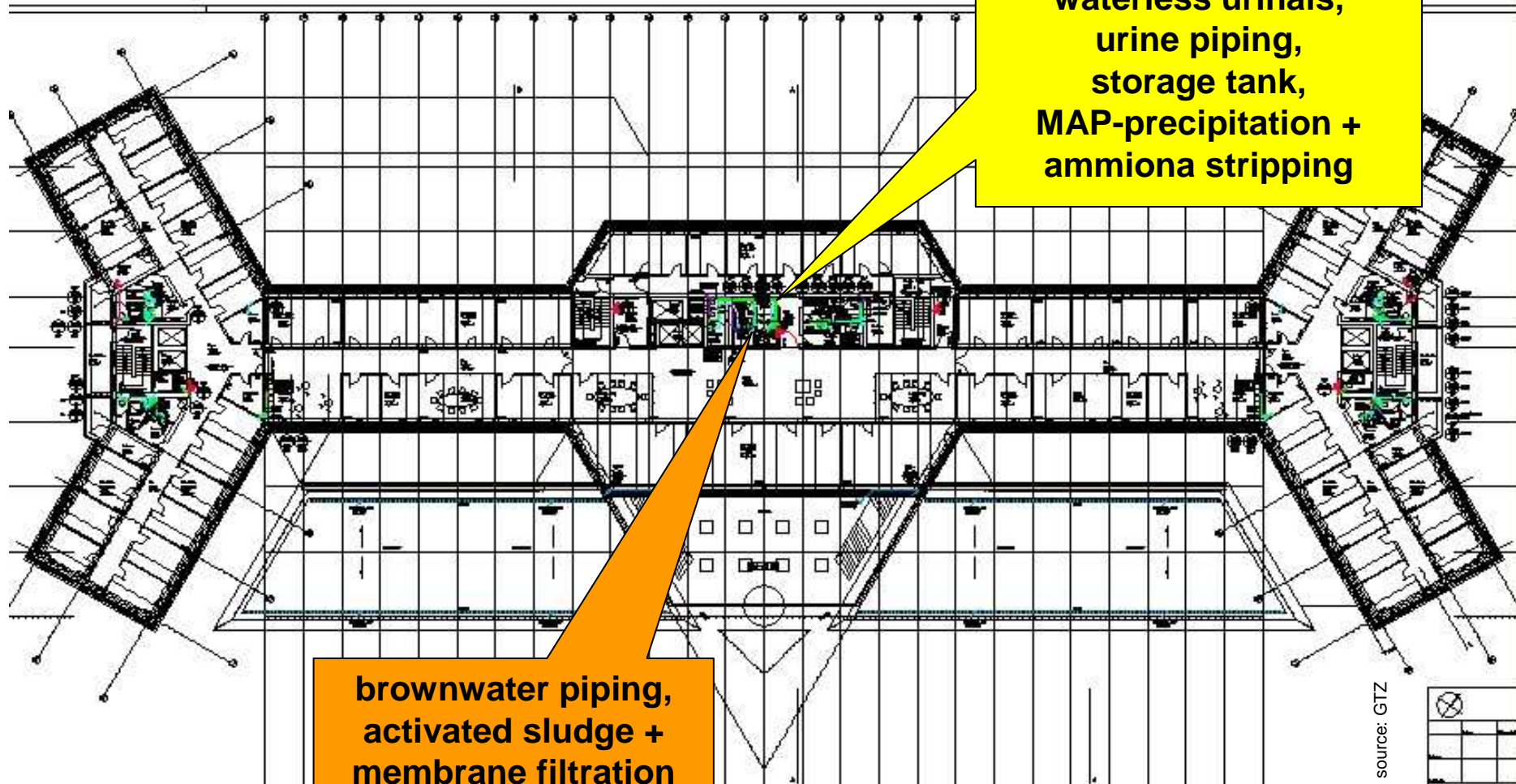
source: GTZ

GTZ main office building under construction (GTZ)



source: (tisp-HWP-Seidel)

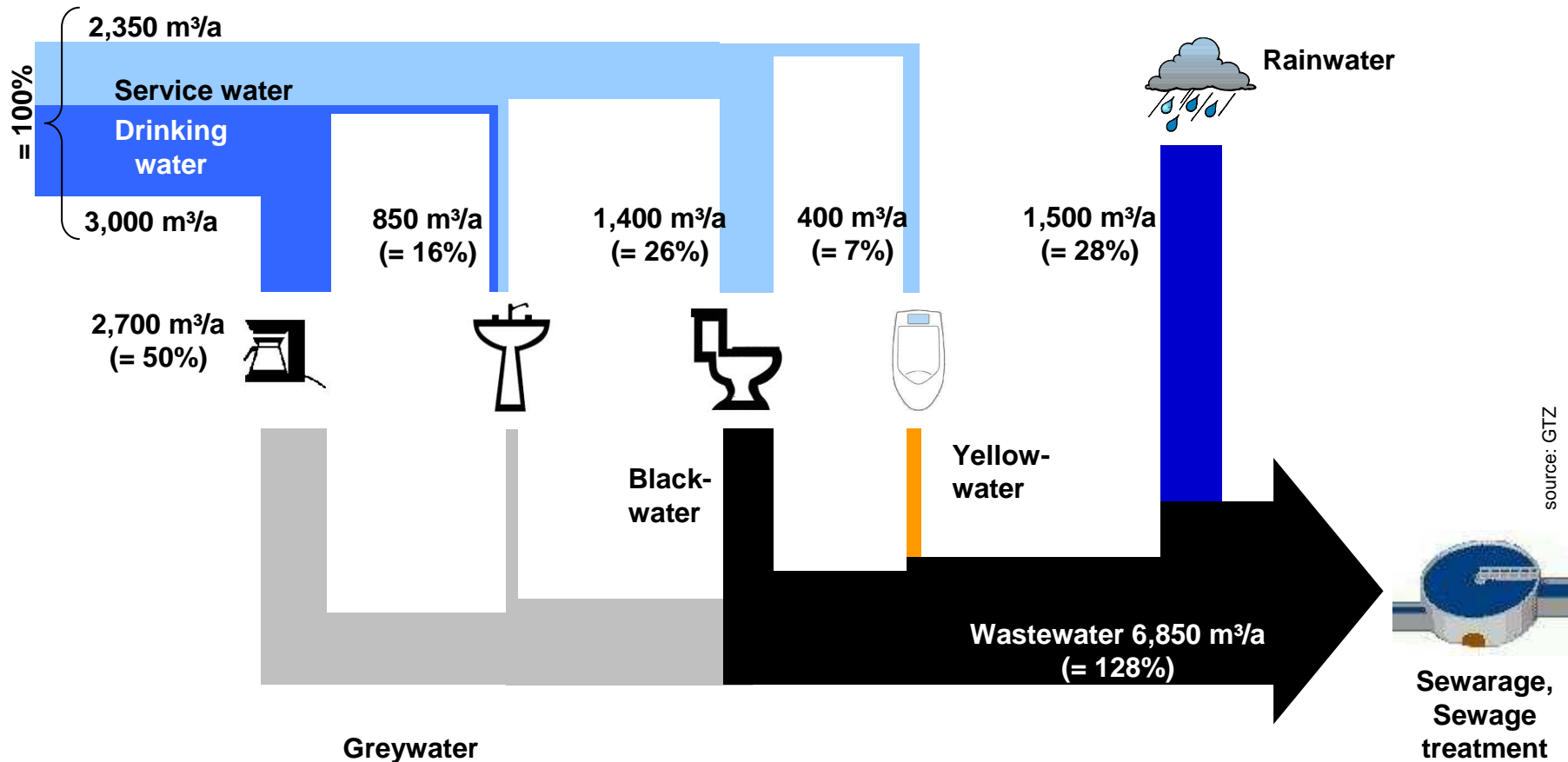
New design of the GTZ main building

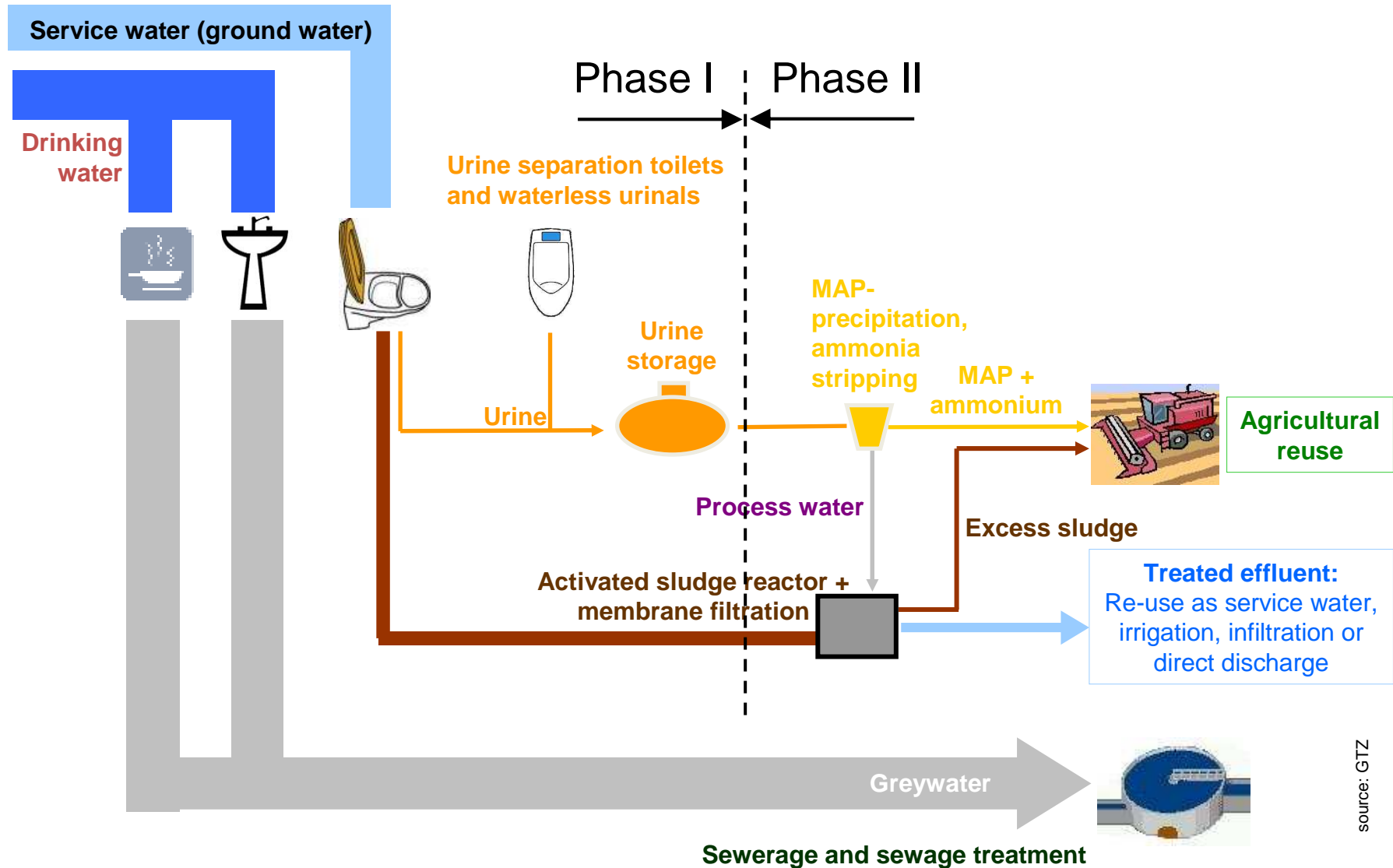


source: GTZ

Previous conventional system

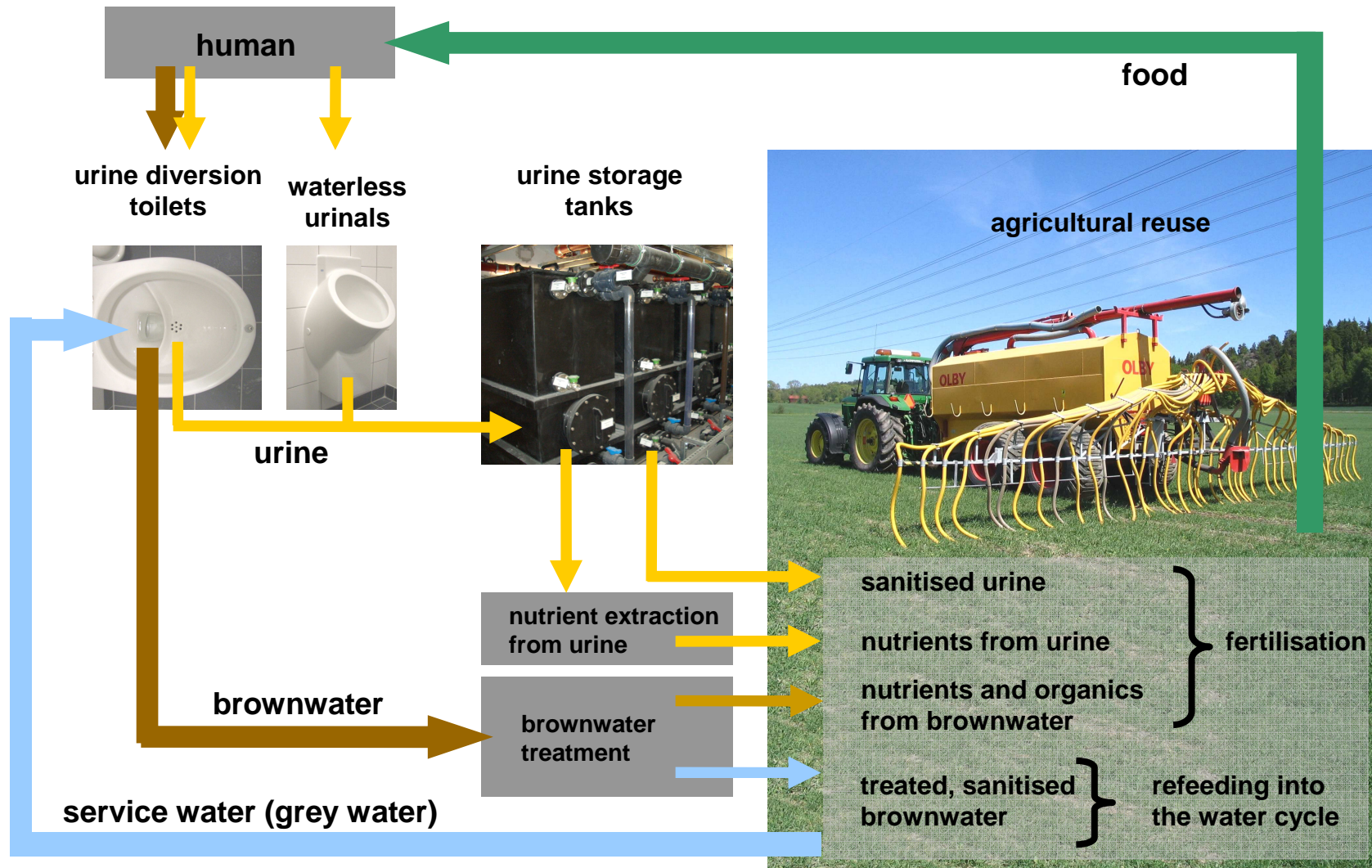
Additionally ~ 68,000 m³/a of service water evacuated and discharged into a creek nearby!



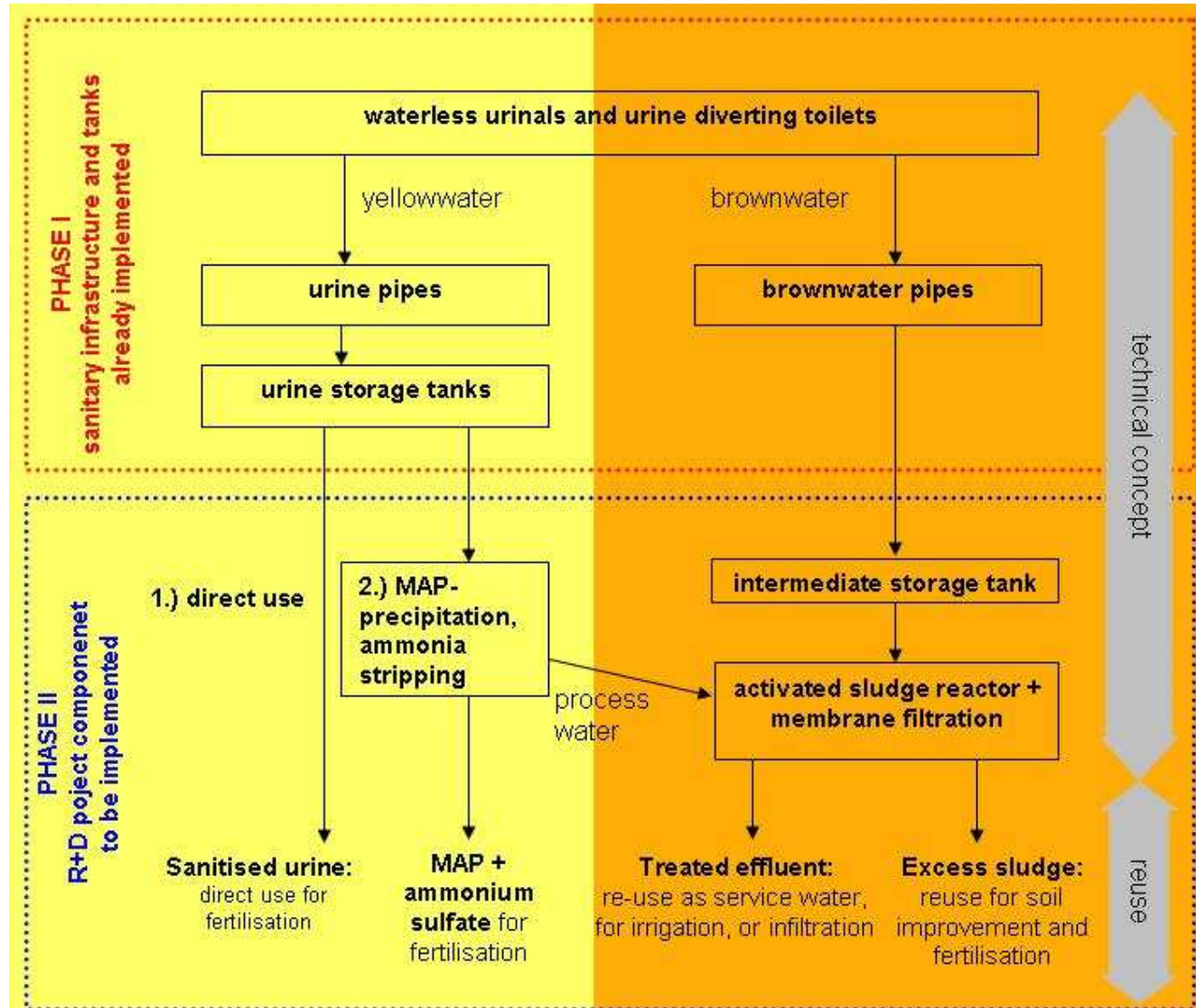


source: GTZ

Flowstreams aimed at



source: GTZ



source: GTZ



ecosan toilet room
at the GTZ headquarter

User information on urine separation toilets and waterless urinals

gtz Mehr als Wasser sparen!



Die neuen Separationstoiletten und wasserlosen Urinale im Mittelteil von Haus 1 sparen Wasser und erlauben die getrennte Sammlung von Urin für die Wiederverwertung in der Landwirtschaft. Sie sind Teil des ökologischen Sanitärkonzepts ecosan.

Damit die Trennung funktioniert, benutzen Sie bitte die Toiletten sitzend. Ihr Gewicht öffnet ein Ventil im vorderen Bereich der Toilettenschüssel und der Urin fließt unverdünnt durch eine separate Leitung in den Speichertank im Keller.



Anschließend spülen Sie wie gewohnt. Mit der Zwei-Mengen-Spültaste können Sie wahlweise mit vier oder einem Liter spülen.

Für alle Herren, die auf den „Komfort“ des Stehens nicht verzichten möchten, gibt es wasserlose Urinale, die ebenfalls die unverdünnte Erfassung des Urins erlauben und zur Einsparung von Wasser beitragen.

source: GTZ

- **Phase I:**
Urine separation system
(financed by GTZ and supported by the Ministry of Environment of the State Hessen)
→ implemented and in use
- **Phase II:**
Urine and brownwater treatment and reuse
(to be financed by the German Federal Ministry for Education and Research)
→ to be implemented

source: GTZ



**pump truck connection
to docking station**



storage tanks



**pumping into
containers**



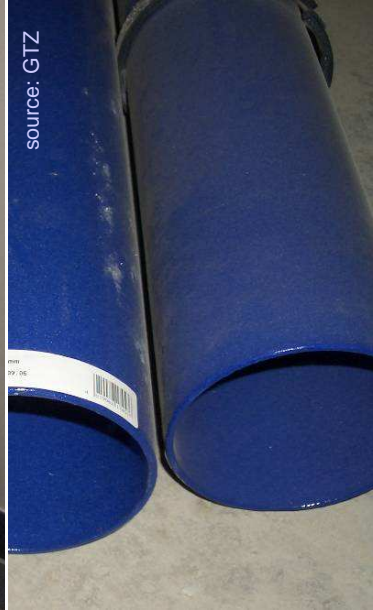
urine separation toilet



waterless urinal



urine pipes



storage tanks



docking station for tank trucks



... for collection and storage (top)

... for the treatment of urine and brownwater (right and left)



Urine system

Brownwater system

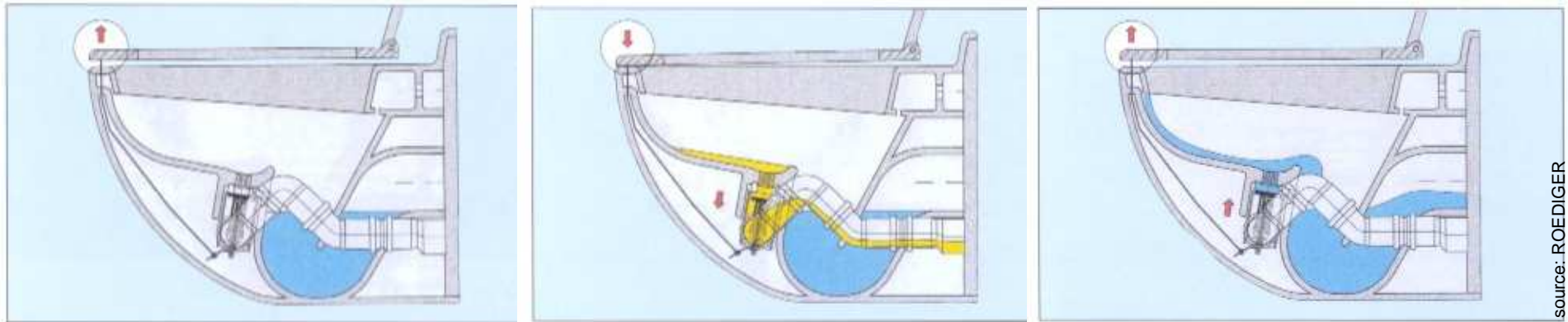
56 urine separation low flush toilets

- | Urine system | Brownwater system |
|---|---|
| 56 urine separation low flush toilets | |
| <ul style="list-style-type: none">• 25 waterless urinals• separate urine pipes• 10 m³ urine storage tank• urine treatment options<ul style="list-style-type: none">(A) Prolonged storage for hygienization(B) MAP-precipitation and ammonia stripping• agricultural use of urine and urine products on research plots | <ul style="list-style-type: none">• separate brownwater pipes• biological treatment (activated sludge) + membrane filtration• agricultural use of excess sludge on research plots• use of treated effluent as service water (alternative uses: green irrigation, groundwater recharge or direct discharge) |

Phase II = Joint research project

...with private companies (Roediger, Huber) and universities (FH Gießen, Uni Bonn, RWTH Aachen), to be financed by the German Federal Ministry for Education and Research.

- Development of technologies for urine and brownwater treatment and reuse practices
- Operation and maintenance
- Acceptance, environmental and health impact (particularly with regard to micro pollutants)
- Legal aspects
- Costs



Roediger "No-Mix Toilet": functional scheme of flushing (Roediger)

Capacity building

- ideal location for a demonstration project:
almost daily visits of decision makers from all over the world
- special demonstration room and guided tours
- good supplement of the ecosan project in the KfW building in Frankfurt (vacuum toilets and sewerage, greywater recycling)



visit of a Chinese delegation



model of the KfW building, Frankfurt

Characteristics

- demonstration of new sanitary options in an urban area
- autonomy possible: if combined with greywater treatment, no connection to sewer system necessary
- high-tech, decentralized and modular solution
- well suited for:
 - office buildings
 - urban settlements
 - situations where the extension of conventional sanitation systems cannot keep up with fast urbanisation



Visions for ecosan in urban areas



Thank you for your attention!



For more information, please visit us at:
www.gtz.de/ecosan