

Urine-diverting dry toilet (UDDT)



The Urine-diverting dry toilet (UDDT) is designed to use alternative pits or a composting chamber to create a solid, earthlike material. It can process a variety of inputs including urine, feces, organic matter, cleaning water, and dry cleansing materials. Unlike traditional toilets, the UDDT is recommended to use as little cleaning water as possible or to avoid it altogether. The UDDT is relatively easy to design and construct using common materials such as concrete, wire mesh, or plastic. Moreover, the UDDT's design is adaptable and can be modified to meet the requirements of different user groups.

Photo source: SuSanA Secretariat (2007). Urine diverting toilet in Gebers apartment building. Retrieved from <https://www.flickr.com/photos/gtzecosan/2920836113/>

Urine-diverting flush toilet (UDFT)



The urine-diverting flush toilet (UDFT) is designed to separate urine and feces and also fitted out with a water flushing function. The design of a UDFT is similar to that of a conventional flush toilet, with the primary difference being that the toilet bowl is equipped with a urine-diverting mechanism that directs urine to a separate container or drainage system. This separation process has several benefits, including reducing water consumption and improving the quality of wastewater. The urine and feces can then be treated and repurposed into valuable resources, such as fertiliser, biosolids and biogas.

Photo source: Wikimedia Commons. File:Urine diverting flush toilet (2963632777).jpg. Retrieved from https://commons.wikimedia.org/wiki/File:Urine_diverting_flush_toilet_%282963632777%29.jpg

The implementation of urine diversion system GTZ and SANIRESCH program

The Federal Ministry of Education and Research funded two-phase collaborative project for implementation of novel sanitation concepts in an urban office. The objective of the first stage GTZ program (2005-2006) was to design and construct the urine separating system in GTZ main building. The followed SANIRESCH program executed by Maßalsky GmbH institution, studied the feasibility of implementing ecological sanitation (ecosan) concept for separate treatment and recycling of urine, brown- and greywater from an urban office building (Winker and Saadoun, 2011). The system performance was analysed in according with health and hygiene concerns, environmental impact and local resources availability, operation and implementation complexity, financial and economic feasibility, and socio-culture acceptance.

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Nutrients Recovery from Waste

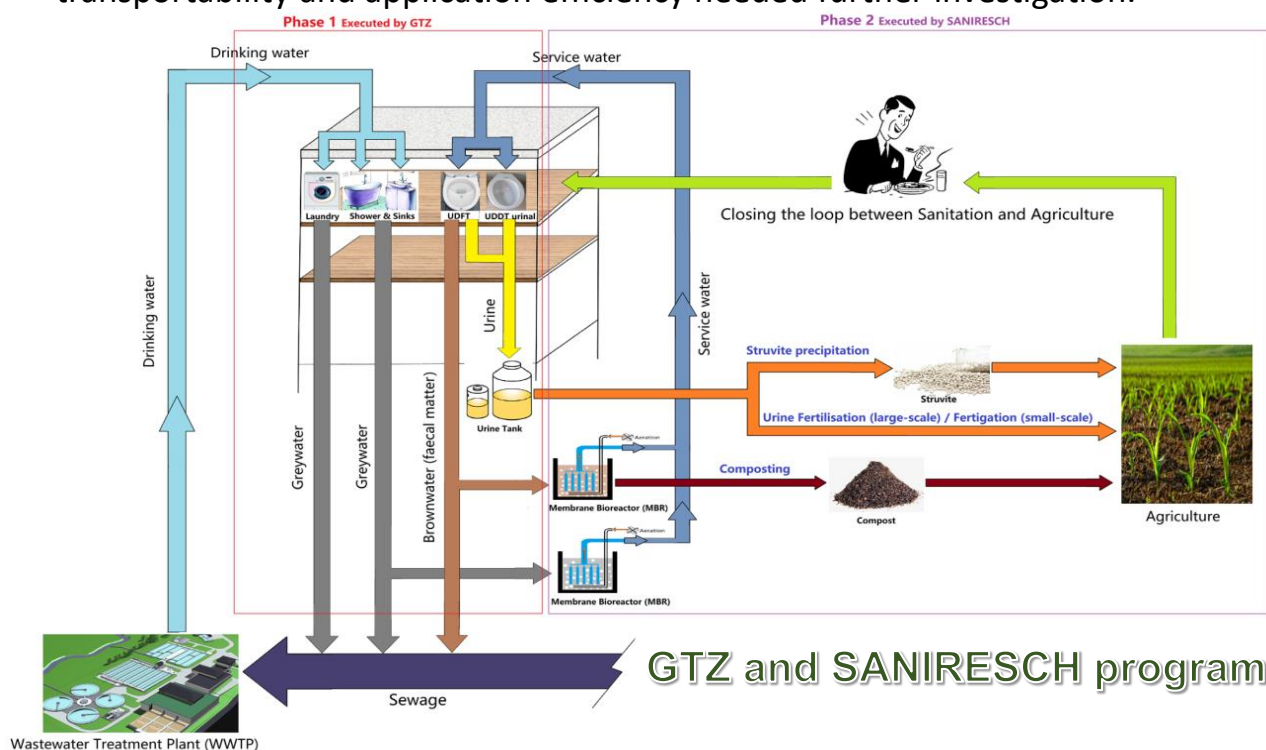


Outcomes:

- The product (compost and struvite) received from the system was hygienic and safe to use for agricultural fertilisation.
- The socio-acceptance of such system was sound, both farmers' and consumers' show the willingness to use urine as a liquid fertiliser.
- The project was considered economically feasible in favorable conditions.

Limitations:

- The integration of advanced wastewater treatment technologies, such as struvite precipitation, had not been studied yet.
- The technologies for reusing the product in agriculture as well as the increase in its transportability and application efficiency needed further investigation.



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