
# Sustainable toilets for climate change and the SDGs

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Topics: Drinking Water | Wastewater | Biodiversity | Ecosystems | Pollutants | Water & Development | Society | Climate Change & Energy

**The separation toilet save! has won the Design Award Switzerland 2021. This is also a milestone for Tove Larsen. She is a member of the Eawag Directorate and has been researching for almost 30 years how the nutrients in wastewater can be recovered in a useful way. In this interview on the occasion of World Toilet Day 2021, she explains how crucial our handling of wastewater is for climate change and for achieving the SDGs sustainability goals.**

### What do our toilets have to do with global challenges such as climate change?

Climate change – particularly fast, worldwide population growth – poses significant global challenges for us. These challenges are summarised in the Sustainable Development Goals (SDGs) and also relate to Urban Water Management. SDG 6 calls for clean drinking water and sanitary facilities for everyone as well as protecting water resources against pollution. This means that we must cut the amount of untreated wastewater worldwide in half and substantially increase the recycling and safe reprocessing of water. SDG 14 calls for reduced ocean pollution, particularly pollution from nutrients, which are present in our wastewater in massive quantities. SDG 2 is intended to end world hunger, and the recovery of nutrients from wastewater also plays a key role in this process. Even more goals depend on improving wastewater disposal and sanitary facilities.

### You have been conducting research on separating wastewater streams at the source for many years. What are the advantages?

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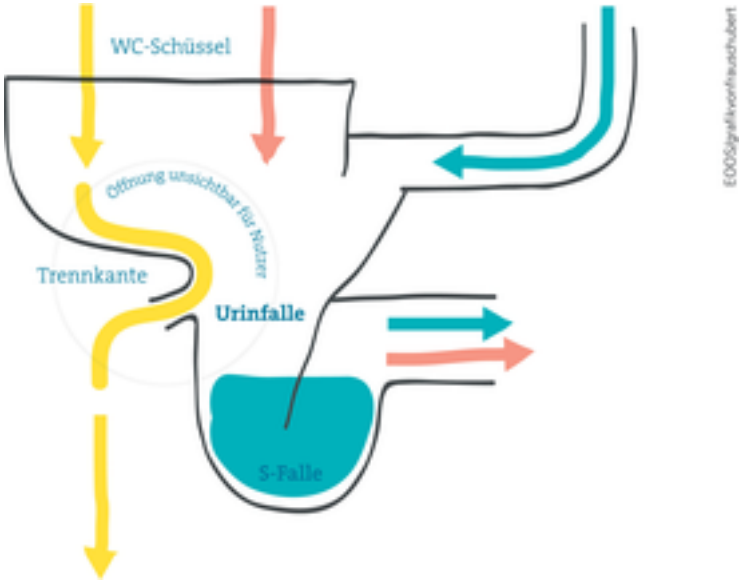
We keep the wastewater's waste streams separate since they are then easier to clean, and first and foremeost, it is easier to recycle the resources they contain. Take urine separation, for example: If the urine is already separated in the toilet, then nutrient elimination becomes unnecessary at the wastewater treatment plant, i.e. the plants become smaller, more cost-efficient and simpler, and the nutrients can be recycled for agricultural fertilisers. This is no longer feasible at a wastewater treatment plant. It took a long time until we were able to convince a major plumbing fixture manufacturer to bring an attractive toilet to market. Our Austrian partner, Harald Gründl from design studio EOOS, recently invented the "Urine Trap", which uses what is known as the "teapot effect" to separately collect urine in the toilet. As a result, he was able to convince Swiss plumbing fixture company Laufen to develop a new toilet that separates urine, which incidentally has now won the Design Prize Switzerland.




**The save! toilet, which uses the NoMix process.**
**Design: EOOS next**

We recently demonstrated that just separating urine alone has a positive impact on the SDGs in particular: Separating wastewater streams allows for more attractive toilets in poorer regions that rely on dry toilets. Because they offer various advantages, they are used more often and therefore have a positive impact on hygiene. Furthermore, they release less nutrients such as nitrogen and phosphorus into water bodies, where they will cause even greater problems than they already do today due to the warming of water bodies. As previously mentioned, these nutrients are mainly found in urine, from which they can be recovered and, together with the micronutrients that they also contain, they can be used as high-quality fertilisers for food, which can in turn have a very positive impact on the food situation. Eawag's spin-off Vuna is already producing fertilisers from urine; these fertilisers are approved for growing vegetables here in Switzerland. With the breakthroughs in toilet design and treatment processes that we have achieved in over 30 years of development, we can now make the added-value chain ready for the market.

**What is your message for World Toilet Day 2021?**

We need to learn to rethink: The centralised, network-based wastewater system has become a desirable model for societies all over the world for good reason. But it still serves only a minority of the global population and, in most places, it simply cannot be implemented.

Furthermore, the major hygienic advantages for people come at the expense of the aquatic environment, which needs to absorb the produced wastewater containing very high levels of nutrients. These nutrients are lacking in food production. We must close the resource cycle, and separating the waste streams in wastewater makes this possible.

World Toilet Day 2021

The theme for this year's UNESCO World Toilet Day 2021 is "sustainable wastewater disposal and climate change". For this occasion, we will publish interviews with our researchers Tove Larsen (member of the Directorate, group leader of the Wastewater Management Department) and Kai Udert (group leader of the Process Engineering department), both of whom have been working on recovering resources from wastewater for several years. In "Flows of Science", Luke Keogh demonstrates the history of urine separation.

Cover picture: Harald Gründl, EOOS next

**Original publication**

Larsen, T. A.; Gruendl, H.; Binz, C. (2021) The potential contribution of urine source separation to the SDG agenda - a review of the progress so far and future development options, *Environmental Science: Water Research and Technology*, 7(7), 1161-1176, doi: 10.1039/D0EW01064B, Institutional Repository

## Related Files

Flows of Science The history of urine source separation [pdf, 9 MB]

## Related Links

NoMix Technologie

Blue Diversion Autarky

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