



## Better understanding of innovation dynamics

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**25 years ago, urine-diverting toilets were no more than an idea, challenging the central paradigm of wastewater treatment plants. Since then, however, modular water technologies have become increasingly important. Using a new method, scientists at Eawag have mapped the dynamics of this transition.**

“For a long time, the collection of wastewater at treatment plants was the central paradigm for urban water management in Switzerland, even though the sewer system accounts for 80 per cent of the total costs, with only a fifth of the money actually being spent on treating wastewater,” says Bernhard Truffer, Head of Eawag’s Environmental Social Sciences department and Professor at the University of Utrecht. “The assumption that this is the best solution is increasingly being called into question.”

### Visualising links among concepts

Of growing importance as a possible alternative are what are known as modular water technologies. In Switzerland, 25 years ago, an initial publication by Eawag researchers on urine-diverting toilets helped to launch a sector in which, today, important roles are played not only by a number of start-ups but also by international actors such as the Bill & Melinda Gates Foundation (BMGF). This shift has now been mapped by Jonas Heiberg, Christian Binz and Professor Bernhard Truffer on the basis of interviews with experts, using a new methodological framework developed by the research team: while “socio-technical configuration analysis” may sound as complicated as the graphs of interconnected circles at first glance appear, these networks essentially visualise which actors support similar concepts – and the ties that link them.

### Mediating between opposing camps

“Environment-oriented actors find urine source separation attractive, as it is compatible with low-tech processes such as the composting of faecal sludge,” Truffer’s team reports. “But the BMGF – due to a corporate culture based on software development – has always favoured high-tech solutions.” It was only when water experts collaborated with a design team – and proposed a significantly improved toilet design which is also compatible with high-tech treatment – that the BMGF recognised the commercial potential of urine source separation. “This dual orientation made it possible for the experts to mediate increasingly between the opposing camps.”

Cover picture: Represented in this network are the concepts of technology (T), regulation (R) and design paradigm (P) associated with wastewater treatment plants (violet) and with urine source separation (green). Located at the centre are established technologies, while new technologies are more peripheral. The larger a node is, the more actors support the concept concerned. (Graphic: Jonas Heiberg et al., Elsevier B.V.)

### Original publication

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