



POSTECH-Ghent University BK On-line Lectures for Sustainable Environment[†]



The Third Route: Using Extreme Decentralization to Create Resilient Urban Water Systems

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Zoom Seminar: 841 6449 4925 (PW 0414)

<https://us02web.zoom.us/j/84164494925?pwd=VS9oR3l0MktUNnBnNEV3SHNkQ01UZz09>

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ABSTRACT

For much of the world's urban population, centralized treatment plants and pipe networks built in the nineteenth and twentieth centuries provide homes with water and a means of disposing of the resulting wastewater. Due to the real or perceived inability of existing systems to deliver safe and palatable water, many users apply additional treatment prior to consumption. Where piped water supply is lacking, drinking water is obtained through water vendors at considerable cost. Despite economic inefficiencies and public health risks inherent in these two water supply systems, the high sunk costs of existing water infrastructure along with low returns on investment and the inflexible nature of the institutions involved in water provision have slowed down the diffusion of alternative approaches that may prove to be less expensive, more adaptable and safer than the current system. In my presentation I will advocate a third, complementary route: household-based personalized water systems. Initially, relatively affluent people expecting more functionality and sustainability from water systems will invest in personalized water systems that allow them to tailor their water to their personal preferences. This approach will tap into the tremendous creativity-base of individual users and entrepreneurs, facilitating the type of co-creation that accelerated the rapid development of consumer electronics. Competition among manufacturers and economies of scale that accrue as these systems become more popular will lead to rapid innovation that drives down costs, improves performance and expands access. These solutions complement emerging approaches for sanitation and resource recovery that do not rely upon sewers for the management of human waste.

SPEAKER'S BIOGRAPHY

PhD Applied Biological Sciences, 2005, Ghent University

Selected scientific awards and fellowships

- Fellow of the International Water Association
- Laureate of the Royal Academy 2016
- ISI Highly Cited Researcher (2014, 2015, 2016, 2017)
- European Research Council Starter Grant
- UQ Foundation Research Excellence Award 2009
- B-IWA Development Innovation Award 2018

Prof. Rabaey is a professor at the Center for Microbial Ecology and Technology (CMET), Department of Biotechnology at Ghent University as well as honorary professor at The University of Queensland. He is one of the founders and the present Chief Technology Officer of CAPTURE (www.capture-resources.be), a centre focusing on resource recovery in the fields of Water, Carbon Capture and Utilization and Plastics to Resource. He is the founder of HYDROHM (www.hydrohm.com), a company focusing on electrification in the water sector. His main research efforts are on resource recovery from wastewater, decentralized treatments, industrial liquid sidestreams and CO₂ streams from industry. Typically a combination of electrochemical and/or microbial approaches is used to achieve formation of added value products. He is the author or co-author of over 200 refereed articles attracting over 34,000 citations, listing him as an ISI Highly Cited Researcher. He is Fellow of the International Water Association and was laureate of the Royal Academy (Belgium) in 2016. He is executive editor in chief of Environmental Science & Ecotechnology, as well as Editorial Advisory Board member for Environmental Science & Technology.

[†] This Zoom seminar is hosted to celebrate the 120th anniversary of diplomatic relations between Belgium and Korea. All Interested Are Welcome.