Robin Harder, PhD

Citizenship: Swiss, German, Swedish.
Languages: Fluent in German, English, Swedish, Dutch, French.

CURRENT POSITION

International Postdoc. Environmental Systems Analysis, Department of Technology Management and Economics, Chalmers University of Technology, Sweden
Honorary Postdoctoral Fellow. Sustainable Agricultural Landscapes Lab, Faculty of Land and Food Systems, The University of British Columbia, Canada.

RESEARCH GOAL AND INTERESTS

My aspiration is to contribute to transforming how we manage human excreta to ensure that nutrients are returned to agriculture in a way that supports healthy food, soils, people and environment. Specific research interests include quantitative assessment, systems thinking, and transdisciplinary research applied to resource and waste management, carbon and nutrient cycles, and food and farming systems.

UNIVERSITY DEGREES

2015 **PhD in Chemical Environmental Science**. Chalmers University of Technology, Sweden
Doctoral thesis: Fresh perspectives on the assessment of sewage sludge management.
Licentiate thesis: Quantifying the metabolism of individual households.

2010 **MSc in Civil Engineering (cum laude)**. Delft University of Technology, the Netherlands
Principal subjects: Water and wastewater treatment and transport, environmental biotechnology and microbiology, energy systems and renewable energy.
MSc thesis: Data validation in environmental sensor networks.

2007 **BSc ETH in Civil Engineering**. Swiss Federal Institute of Technology Zurich, Switzerland
BSc thesis: Influence of EM effective microorganisms on the corrosion behaviour of reinforcement rods.

ACADEMIC EXPERIENCE

2017/07 – present
2017/01 – 2017/04 **International Postdoc**. Environmental Systems Analysis, Chalmers University of Technology, Sweden. *Nutrient recycling from human excreta and wastewater to agriculture to support soil regeneration and long-term soil health.*

2013/07 – 2015/12 **PhD Student**. Chemical Environmental Science, Chalmers University of Technology, Sweden. *Environmental assessment of sewage sludge management.*

2011/01 – 2013/06 **PhD Student**. Water Environment Technology, Chalmers University of Technology, Sweden. *Phosphorus flows in urban areas, household metabolism.*

2010/10 – 2010/12 **Research Assistant**. Section Sanitary Engineering, Delft University of Technology, the Netherlands. *Source-separation in urban water infrastructure.*

2008/03 – 2010/01 **Research and Teaching Assistant** (20%). Section Sanitary Engineering, Delft University of Technology, the Netherlands. *Analysis of causes and consequences of sewer system failures.*

2005/03 – 2006/07 **Research and Teaching Assistant** (20%). Swiss Federal Institute of Technology Zurich, Switzerland. *Mathematical modelling of temperature-history based concrete behaviour.*

VISITING POSITIONS

2017/11 – 2018/12 **Postdoctoral Research Fellow**. Sustainable Agricultural Landscapes Lab, Faculty of Land and Food Systems, The University of British Columbia, Canada.

2017/01 – 2017/03 **Academic Guest**. Environmental Social Sciences, Swiss Federal Institute of Aquatic Science and Technology, Switzerland.

RELEVANT NONACADEMIC EXPERIENCE

2017/05 – 2017/06 **Farm Management Assistant**. Ridgedale Farm AB, Sweden. *Streamlining internal processes to support scale-up of farm and educational operations.*

2016/05 – 2016/07 **Regenerative Agriculture Internship**. Ridgedale Permaculture, Sweden.

2015/08 – 2015/08 **Permaculture Internship**. Krameterhof, Austria.

2015/05 – 2015/06 **Permaculture Design Course**. Ridgedale Permaculture, Sweden.

Hands-on experience in designing and running small farms aiming to restore soil fertility, sequester carbon, and grow high-quality local produce.

GRANTS

AWARDED

2016 **Principal Investigator**. *Recycling organic matter and nutrients from sanitation to farming systems to regenerate soil and land: identifying approaches that are feasible and preferable.* Mobility grant for young researchers from the Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning (Formas) under grant agreement 2016-00859. Duration: 3 years (2017-2020). Funding: 3 670 000 SEK.

RESEARCH COMMUNICATION

PUBLIC SPEAKING (2)

2018 **From sewage and biosolid to human excreta management: challenges, opportunities, and overlooked Aspects.** SYLVIS Environmental Management, New Westminster, Canada. *Annual Staff Meeting, 6 December 2018.*

Eight often overlooked aspects of recycling nutrients from human excreta to food and farming systems. Institute for Resources, Environment and Sustainability (IRES), The University of British Columbia, Vancouver, Canada. *IRES Seminar Series, 18 October 2018.*

PEER-REVIEWED SCIENTIFIC JOURNAL ARTICLES (14)

2019 **Harder R**, Wielemaker R, Larsen T, Zeeman G, Öberg G. Recycling nutrients contained in human excreta to agriculture: Pathways, processes, and products. *Critical Reviews in Environmental Science and Technology.* DOI: 10.1080/10643389.2018.1558889.

2017 Svanström M, Heimersson S, Peters G, **Harder R**, I'Ons D, Finnson A, Olsson J. Life cycle assessment of sludge management with phosphorus utilisation and improved hygienisation in Sweden. *Water Science and Technology* 75(9):2013-2014.

2016 **Harder R**, Peters G, Ashbolt N, Svanström M. Using quantitative microbial risk assessment and life cycle assessment to assess management options in urban water and sanitation infrastructures: Opportunities and unresolved issues. *Microbial Risk Analysis* 5:71-77.

Harder R, Peters G, Svanström M, Khan S, Molander S. Estimating human toxicity potential of land application of sewage sludge: The effect of modelling choices. *The International Journal of Life Cycle Assessment* 22(5):731-742.

Harder R, Dombi M, Peters G. Perspectives on quantifying and influencing household metabolism. *Journal of Environmental Planning and Management* 60(2):178-203.

2015 **Harder R**, Peters G, Molander S, Ashbolt N, Svanström M. Including pathogen risk in life cycle assessment: The effect of modelling choices in the context of sewage sludge management. *International Journal of Life Cycle Assessment* 21:60-69.

Harder R, Holmquist H, Molander S, Svanström M, Peters G. Review of environmental assessment case studies blending elements of risk assessment and life cycle assessment. *Environmental Science and Technology* 49(22):13083-13093.

2014 Ordoñez I, **Harder R**, Nikitas A, Rahe U. Waste sorting in apartments: Integrating the perspective of the user. *Journal of Cleaner Production* 106:669-679.

Harder R, Heimersson S, Svanström M, Peters G. Including pathogen risk in life cycle assessment of wastewater management. 1. Estimating the burden of disease associated with pathogens. *Environmental Science and Technology* 48(16):9438-9445.

Heimersson S, **Harder R**, Peters G, Svanström M. Including pathogen risk in life cycle assessment of wastewater management. 2. Quantitative comparison of pathogen risk to other impacts on human health. *Environmental Science and Technology* 48(16):9446-9453.

Mangold M, Morrison G, **Harder R**, Hagbert P, Rauch S. The transformative effect of the introduction of water volumetric billing in a disadvantaged housing area in Sweden. *Water Policy* 16:973-990.

Harder R, Kalmykova Y, Morrison G, Feng F, Mangold M, Dahlén L. Quantification of goods purchases and waste generation at the level of individual households. *Journal of Industrial Ecology* 18(2):227-241.

2012 Kalmykova Y, **Harder R**, Borgestedt H, Svanäng I. Pathways and management of phosphorus in urban areas. *Journal of Industrial Ecology* 16(6):928-939.

2010 ten Veldhuis JAE, **Harder R**, Loog M. Automatic classification of municipal call data to support quantitative risk analysis of urban drainage systems. *Structure and Infrastructure Engineering* 9(2):141-150.

NON-PEER REVIEWED SCIENTIFIC JOURNAL ARTICLES (2)

2015 **Harder R**, Schoen M, Peters G. Including pathogen risk in life cycle assessment. Implications for selecting the functional unit. *Environmental Science and Technology* 49(1):14-15.

2013 **Harder R**, Langeveld J, Clemens F, van Lier J. Bronscheiding in bestaande infrastructuur: kansen en uitdagingen [Source-separation in the urban water infrastructure: opportunities and challenges]. *WT Afvalwater* 13(2):75-87.

REPORTS (2)

2016 Svanström M, Heimersson S, **Harder R**. Livscykelanalys av slamhantering med fosforåterföring [Life cycle assessment of sewage sludge management with phosphorus recovery]. Svenskt Vatten Utveckling (SVU), Report 2016-13.

2012 **Harder R**. Source-separation in the urban water infrastructure. Stichting Toegepast Onderzoek Waterbeheer (STOWA), Report 2012-W14.

EXTRACURRICULAR ACTIVITIES

2011/01 – 2013/06 **Board Member and Chairperson.** Doctoral Student Council at Civil and Environmental Engineering, Chalmers University of Technology, Sweden. *Representation of doctoral students towards the university.*

2008/04 – 2009/04 **Board Member.** Society of Water Management Students at Delft University of Technology, the Netherlands. *Position as treasurer and co-organiser of a one-week study tour to Spain (Ebro Study Tour 2009).*

2004/01 – 2006/10 **Board Member.** Verein Sommer- und Winternachtsfest at the Swiss Federal Institute of Technology Zurich, Switzerland. *Position as treasurer and co-organiser of an open-air concert with about 5 000 visitors (SoNaFe 2005).*

TEACHING QUALIFICATIONS

2015 **Diploma of Higher Education.** Chalmers University of Technology. Courses: Teaching, Learning and Evaluation; Theory and Practice of Science; Philosophies of Learning; Supervision of Research; Writing for Publication and Constructive Alignment.