

Linda Strande
Zürich, Switzerland

EDUCATION

2009	Ph.D. Civil and Environmental Engineering University of Washington , Seattle, Washington, USA Adviser: H. David Stensel
2004	M.S.E. Civil and Environmental Engineering University of Washington , Adviser: H. David Stensel
2004	M.S., University of Washington, Soils Science University of Washington , Seattle, Washington, USA Adviser: Sally L. Brown and Chuck L. Henry
1994	B.A., University of Washington, Mathematics University of Washington , Seattle, Washington, USA

RESEARCH POSITIONS

Sept 2024 – Present	Head of Department, Eawag / Sandec
July 2010 – Present	Group Leader / Senior Research Scientist (Tenured since June 2015) Eawag - Swiss Federal Institute of Aquatic Science and Technology Sandec – Sanitation, Water and Solid Waste for Development Dübendorf, Switzerland

TEACHING EXPERIENCE

- EPFL. Introduction to Faecal Sludge Management MOOC. Launch May 2017.
<https://www.coursera.org/learn/faecalsludge>. >10,000 course participants.
- EPFL. Lecturer, Sanitary engineering in developing countries EPFL course Env 402 in SIE department
ENAC faculty 2010 to present.
- ETH. Environmental Sanitation Planning and Infrastructure in Developing Countries ETH course 102-0838-00L in D-BAUG department 2010 to present.

AWARDS AND RECOGNITIONS (recent)

2024	Bataafsch Foundation 11th International Steven Hoogendijk Award
2023	IWA NSS (non-sewered sanitation) Chairman Recognition Award

RESEARCH FUNDING (current)

- September 2024 – August 2026 Developing Environmental Wastewater-Based Surveillance in Non-Sewered Areas in Low-Income Contexts, 197,423 CHF total, PI Linda Strande, Eawag Discretionary Funding.
- June 2023 – May 2027. Improved Models for Safely Managed Sanitation: Stabilization of Faecal Sludge in Onsite Containment and Impact on Treatment, 700,000 CHF total, PI: Linda Strande, Swiss National Science Foundation (SNF).
- August 2022 – Dec 2026. Water, Behavior Change and Environmental Sanitation (WABES) Phase 2: Sustainable solutions through research, knowledge and professionalism, 398,857 CHF / 2,237,000 CHF Total, PI: Christoph Lüthi, Linda Strande project lead on faecal sludge management, Swiss Development Cooperation (SDC).
- April 2021 – March 2024. emergency sanitation backstopping mandate. 200,000 CHF / 1,000,000 CHF. Swiss Humanitarian Aid (SHA).
- January 2021 – December 2024 Water Hub in NEST: Science meets industry in the NEST building to develop and demonstrate on-site treatment technologies for water and sanitation innovation (Phase

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II). 371,000 CHF / 1,900,000 CHF. PI Blackwater component: Linda Strande, Eawag Discretionary Funding.

MENTORING AND SERVICE

SUPERVISION AND MENTORING AT EAWAG

Supervision of 11 Research Project Managers at Eawag
Supervision of 4 current and 7 completed PhD students
Supervision of 5 Post-doctoral researchers
Supervision of >30 Swiss Civil Servants and University Projects
Cosupervision for >25 Masters' Degrees
Mentoring of >10 EPP and ETH4D fellows

SCIENTIFIC COMMITTEES

Member of committee: FSMA (Faecal Sludge Alliance)
Member of conference committee: FSM6, FSM5, FSM4 (Faecal Sludge Management)
Chair of conference committee: FSM3 (Faecal Sludge Management 3) conference, Hanoi Vietnam, January 2015
Member of IWA Specialist group and conference committee: NSS (Non-Sewered Sanitation)

PEER-REVIEWED SCIENTIFIC PUBLICATIONS (since 2014)

BOOK CONTRIBUTIONS

Methods for Faecal Sludge Analysis. ISBN: 9781780409122 eBook: 9781780409122 IWA Publishing, London, 2021.
Faecal Sludge Management: Highlights and Exercises. Englund, M., **Strande, L.** (Editor). ISBN 978-3-906484-70-9, Eawag: Swiss Federal Institute of Aquatic Science and Technology. 2019.
Guidelines on Sanitation and Health. **Strande, L.** (Member of the Development Committee). ISBN 978-92-4-151470-5. World Health Organization (WHO) 2018.
Resource Recovery from Waste: Business Models for Energy, Nutrient and Water Reuse in Low- and Middle-income Countries. **Strande, L.** (Book Contributor). Otoo, M., Drechsel, P. (Editors) Oxon, UK: Routledge – Earthscan, 816 pg. ISBN: 9781138016552 (hardcover) 9781315780863 (eBook), 2018.
Faecal Sludge Management: Systems Approach for Implementation and Operation. IWA Publishing, London. 2014. 432 pg. ISBN: 9781780404721 (Hardback) 9781780404738 (eBook), Book available in English, French, Spanish, Hindi, Marathi and Tamil, and Russian translation in preparation.

REFEERED JOURNAL ARTICLES

Sam, S.B., Niederdorfer, R., Scheidegger, A., Ward, B.J., Johnson, D., Bürgmann, H., Morgenroth, E., **Strande, L.** Microbial communities in fecal sludge at city-wide scale in Lusaka, Zambia: relation to usage patterns, accumulation in containments, and treatment performance. In preparation.
Kapanda, K., Sam, S., Andriessen, N., Ward, B.J., **Strande, L.**, Tembo, J.M. Metrics for stabilization of fecal sludge, and relation to dewatering metrics. Journal of Water, Sanitation & Hygiene for Development, 14 (5), 389-399, 2024.
Strande, L. Integrating Recent Scientific Advances to Enhance Non-Sewered Sanitation in Urban Areas. Nature Water, 2, 405–418, 2024.

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- Maqbool, N., Sam, S.B., Khan, S.J., **Strande, L.** Biomethane potential of fresh and stored fecal sludge, food waste, and relation of organic fractions to biogas production. *Journal of Water, Sanitation & Hygiene for Development*, 14 (3): 277–290, 2024.
- Strande, L.**, Evans, B., von Sperling, M., Bartram, J., Harada, H., Nakagiri, A., Nguyen, V.-A. Urban Sanitation: New Terminology for Globally Relevant Solutions? *Environmental Science & Technology*, 57, 42, 15771-15779, 2023.
- Sam, S.B., Morgenroth, E., **Strande, L.** From feces to fecal sludge: the influence of diet, organic fractions, cations, and stabilization on dewatering performance. *Journal of Water Sanitation and Hygiene for Development*, 13(9), 699-710, 2023.
- Andriessen, N., Appiah-Effah, E., Browne, S.J.I., al Jahjah, R., Kabika, J., Kinobe, J.R., Korir, N., Nishimwe, P., Niwagaba, C.B., Pradeep, R., Prasad, P., Tembo, J.M., William, A., Ambuehl, B., **Strande, L.** Quantities and qualities of faecal sludge: Experiences from field implementation with a Volaser in 7 countries during a pandemic. *Frontiers in Water*, 5, 1130081, 2023.
- Ward, B.J., Nguyen, M.T., Sam, S.B., Korir, N., Niwagaba, C., Morgenroth, E., **Strande, L.** Particle size as a driver of dewatering performance and its relationship to stabilization in fecal sludge. *Journal of Environmental Management Vol 326*, 116801, 2023
- Sam, S.B., Ward, B.J., Niederdorfer, R., Morgenroth, E., **Strande, L.** Elucidating the role of extracellular polymeric substances (EPS) in dewaterability of fecal sludge from onsite sanitation systems, and changes during anaerobic storage. *Water Research Vol 222*, 2022.
- Shaw, K., Vogel, M., Andriessen, N., Hardeman, T., Dorea, C., **Strande, L.** Towards globally relevant, small-footprint dewatering solutions: Optimal conditioner dose for highly variable blackwater from non-sewered sanitation. *Journal of Environmental Management Vol 321*, 2022.
- Prasad, P., Andriessen, N., Moorthy, A., Das, A., Coppens, K., Pradeep, R., **Strande, L.** Field-testing of methods for the estimation of quantities and qualities (Q&Q) of faecal sludge in Sircilla, India. *Journal of Water, Sanitation and Hygiene for Development* 2021.
- Ward B.J., Andriessen N., Tembo J.M., Kabika J., Grau M., Scheidegger A., Morgenroth E., and **Strande L.** Predictive models using cheap and easy field measurements: Can they fill a gap fecal sludge monitoring and process control? *Water Research* 2021.
- Narayan, A.S., Marks, S.J., Meierhofer, R., **Strande, L.**, Tilley, E., Zurbrügg, C., Lüthi, C. Advancements in and Integration of Water, Sanitation and Solid Waste in Low and Middle Income Countries. *Annual Review of Environment and Resources* 2021.
- Bleuler, M., Gold, M., **Strande, L.**, Schönborn, A. Pyrolysis of Dry Toilet Substrate as a Means of Nutrient Recycling in Agricultural Systems: Potential Risks and Benefits. *Waste and Biomass Valorization* 2021.
- Englund, M., Carbajal, J.P., Ferré, A., Bassan, M., Vu, T.H.A., Nguyen, V.A., **Strande, L.** Modelling quantities and qualities (Q&Q) of faecal sludge in Hanoi, Vietnam and Kampala, Uganda for improved management solutions. *Journal of Environmental Management*, 261, 2020, 110202.
- Peal, A., Evans, B., Sangaralingam, A., Ban, R., Blackett, I., Hawkins, P., Schoebitz, L., Scott, R., Sleight, A., **Strande, L.**, Roda, O. Estimating safely managed sanitation in urban areas; lessons learned from a global implementation of excreta-flow diagrams, *Frontiers in Environmental Science*, 31 January 2020.
- Ward, B.J., Gueye, A., Diop, B., Traber, J., Morgenroth, M., **Strande, L.** Evaluation of conceptual model and predictors of faecal sludge dewatering performance in Senegal and Tanzania. *Water Research*, 167, article 115101, 2019.
- Fischer, M., Nguyen, M., **Strande, L.** Context matters: horizontal and hierarchical network governance structures in the Vietnamese sanitation sector. *Ecology and Society*, 24 (3):17 2019.

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- Andriessen, N., Ward, B.J., **Strande, L.** To char or not to char? Review of technologies to produce solid fuels for resource recovery from faecal sludge. *Journal of Water, Sanitation and Hygiene for Development*, 9 (2): 210-224 2019.
- Gold, M., Bleuler, M., Cunningham, M., Arnheiter, R., Schönborn, A., Niwagaba, C., **Strande, L.** Operating parameters for three resource recovery options from slow-pyrolysis of faecal sludge. *Journal of Water, Sanitation and Hygiene for Development*. August 8:4, 707-717 2018.
- Strande, L.**, Schoebitz, L., Bischoff, F., Ddiba, D., Niwagaba, C. Methods to reliably estimate faecal sludge quantities and qualities for the design of treatment technologies and management solutions. *Journal of Environmental Management*. 223:1, 898-907 2018.
- Roni, P., Ward, B.J., **Strande, L.**, Maurer, M. Review of synthetic human faeces and faecal sludge for sanitation and wastewater research. *Water Research* Apr 1;132, 222-240 2018.
- Gold, M., Harada, H., Therrien, J.-D., Nishida, T., Cunningham, M., Semiyaga, S., Fujii, S., Niwagaba, C., Dorea, C., Nguyen, V.-A., **Strande, L.** Cross-country analysis of faecal sludge dewatering. *Environmental Technology* Sep 12, 1-11 2018.
- Schoebitz, L., Bischoff, F., Lohri, C.R., Niwagaba, C., Siber, R., **Strande, L.** GIS analysis and optimization of faecal sludge logistics at city-wide scale in Kampala, Uganda. *Sustainability* 9:2, 194-2017.
- Gold, M., Sekigongo, P., Ddiba, D., Seck, A., Niwagaba, C., Diene, A., Diaw, S., Niang, S., **Strande, L.** Faecal sludge as a solid industrial fuel: A pilot-scale study. *Journal of Water, Sanitation and Hygiene for Development* 7:2, 243-251 2017.
- Gueye, A., Mbeguere, M., Niang, S., Diop, C., **Strande, L.** Novel plant species for faecal sludge drying beds: Survival, biomass response and forage quality. *Ecological Engineering*. 94, 617-621, 2016.
- Gold, M., Dayer, P., Faye, C., Clair, G., Seck, A., Niang, S., Morgenroth, E., **Strande, L.** Locally produced natural conditioners for dewatering of faecal sludge, *Environmental Technology* April 17, 1-13, 2016.
- Bischel, H., Oezel, B., **Strande, L.**, McArdell, C., Udert, K., Kohn, T. Pathogens and pharmaceuticals in source-separated urine in eThekweni, South Africa. *Water Research*, 85, 57-65, 2015.
- Bassan, M., Mbéguéré, M., Koné, D., Holliger, C., **Strande, L.** Success and failure assessment methodology for wastewater and faecal sludge treatment projects in low-income countries. *Journal of Environmental Planning and Management*, 58 (10) 1690-1710, 2015.
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- Seck, A., Gold, M., Niang, S., Mbéguéré, M., Diop, C., **Strande, L.** Technology development of unplanted drying beds for resource recovery from faecal sludge: fuel production in Sub-Saharan Africa. *Journal of Water Sanitation and Hygiene for Development*, 5 (1) 72-80, 2015.
- Sonko, E.h.M., Mbéguéré M., Diop, C., Niang, S., **Strande, L.** Effect of hydraulic loading frequency on performance of planted drying beds for the treatment of faecal sludge. *Journal of Water Sanitation and Hygiene for Development* 4(4) 633-641 2014.
- Kengne, E.S., Kengne, I.M., Nguetsop, V.F., Foubi, I.S., Akoa, A., **Strande, L.** Algal diversity and distribution in Waste Stabilization Ponds treating faecal sludge leachate from drying vegetated beds. *International Journal of Biological and Chemical Sciences* 8(3): 946-955, 2014.
- Tilley, E., **Strande, L.**, Lüthi, C., Mosler, H.-J., Udert, K., Gebauer, H., Hering, J.G. Looking beyond technology to provide adequate and sustainable sanitation in low income countries. *Environmental Science & Technology* 48(17) 9965–9970, 2014.
- Kengne, E.S., Kengne, I.M., Arsenea, L.N.W., Akoa, A., Nguyeng –Viet, H., **Strande, L.** Performance of Vertical Flow Constructed Wetlands for Faecal Sludge Drying Bed Leachate: Effect of Hydraulic Loading. *Ecological Engineering* 71 384–393, 2014.

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- Diener, S., Semiyaga, S., Niwagaba, C., Murray, A., Gning, J.B., Mbéguéré, M., Ennin, J.E., Zurbrugg, C., **Strande, L.** A value proposition: resource recovery from faecal sludge – can it be the driver for improved sanitation? *Resources Conservation & Recycling* 88 32-38, 2014.
- Murray Muspratt, A., Nakato, T., Niwagaba, C., Dione, H., Baawuah, N., Kang, J., Stupin, L., Regulinski, J., Mbéguéré, M., **Strande, L.** Fuel Potential of Faecal Sludge: Calorific Value Results from Uganda, Ghana, and Senegal. *Journal of Water Sanitation and Hygiene for Development* 4:2 223-230, 2014.