Eawag:
Swiss Federal Institute of Aquatic
Science and Technology

eawag aquatic research

Progress in Faecal Sludge Dewatering:

Evaluating a conceptual model and predictors of dewatering performance

BJ Ward, Stanley Sam, Eberhard Morgenroth, Linda Strande

SAWIRIS FOUNDATION FOR SOCIAL DEVELOPMENT
مؤسسة ساويرس للتنمية الاجتماعية

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Motivation: Addressing two challenges in parallel

Manage current faecal sludge crisis

Develop sustainable innovative solutions for future treatment and management

Dewatering: A barrier to achieving faecal sludge management

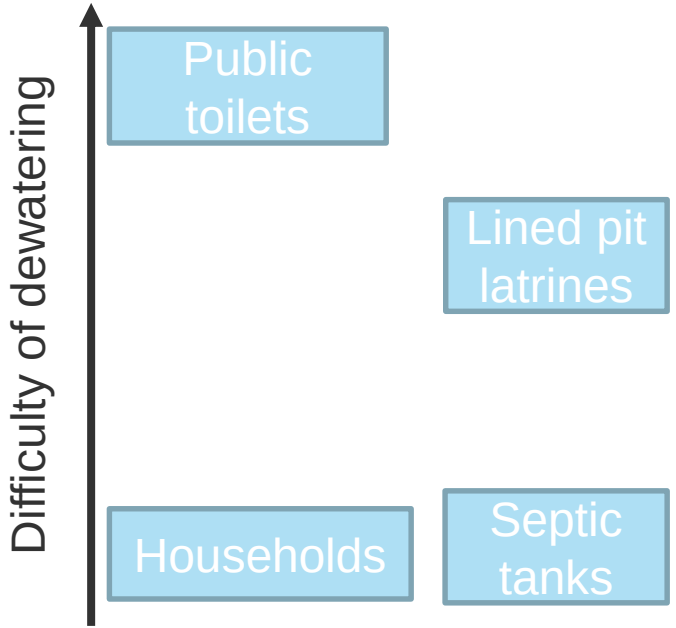
What's holding us back?

Dewatering needs to be:

- Cheaper
- Smaller footprint
- Faster
- More reliable

Photo: Kevin Taylor

Observations from practitioners and empirical research



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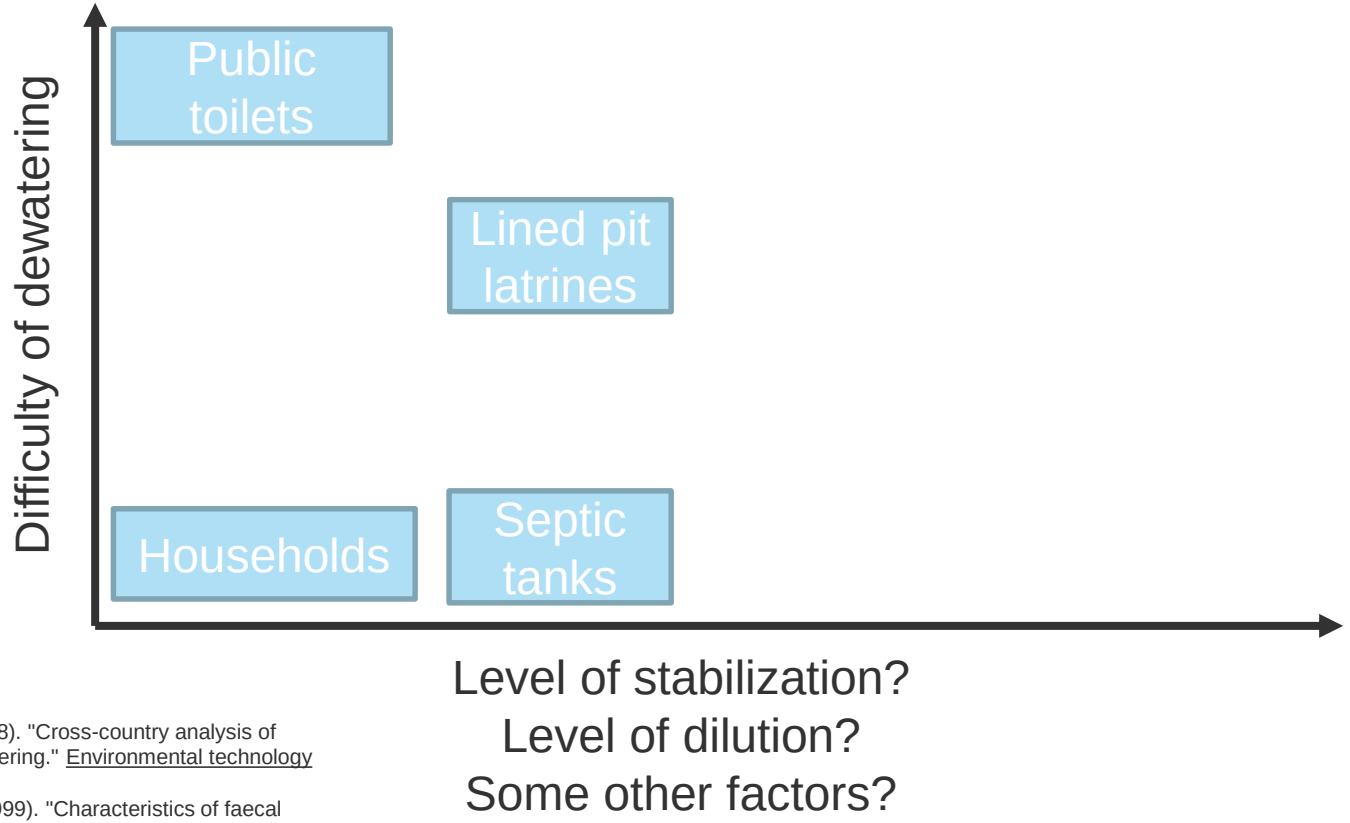

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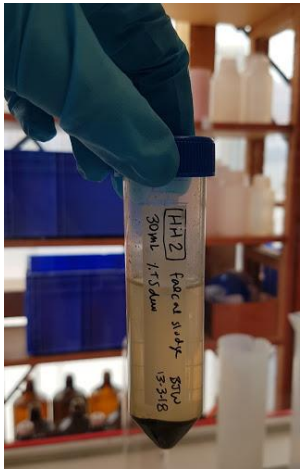
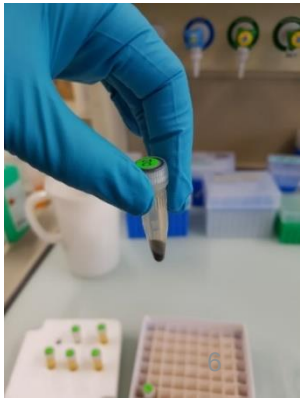
Methods: sampling and characterization in Dakar, Senegal

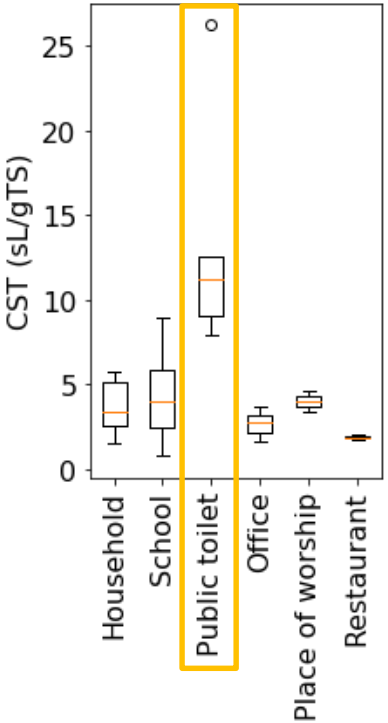


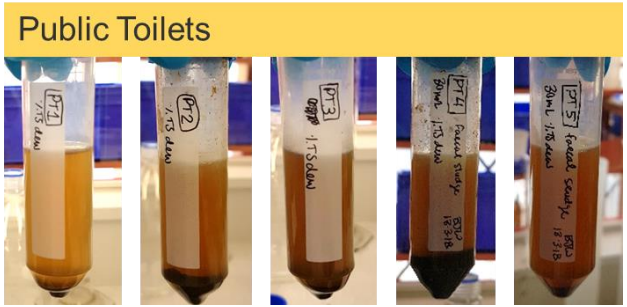


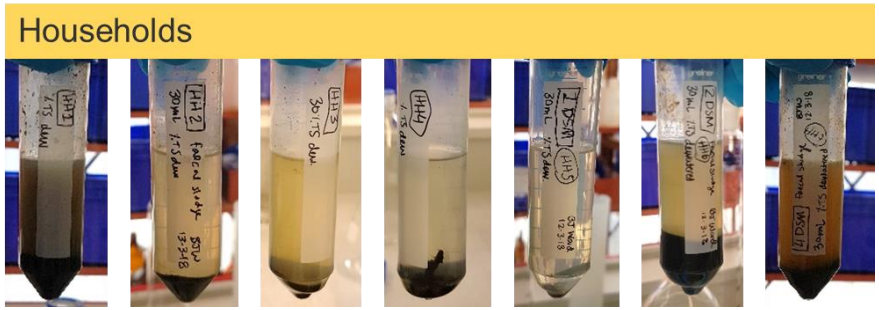
Results: Dewatering time and turbidity

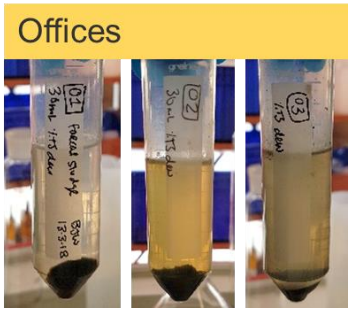
Dewatering time and turbidity related to source

- Public toilet faecal sludge slowest to dewater, most turbid









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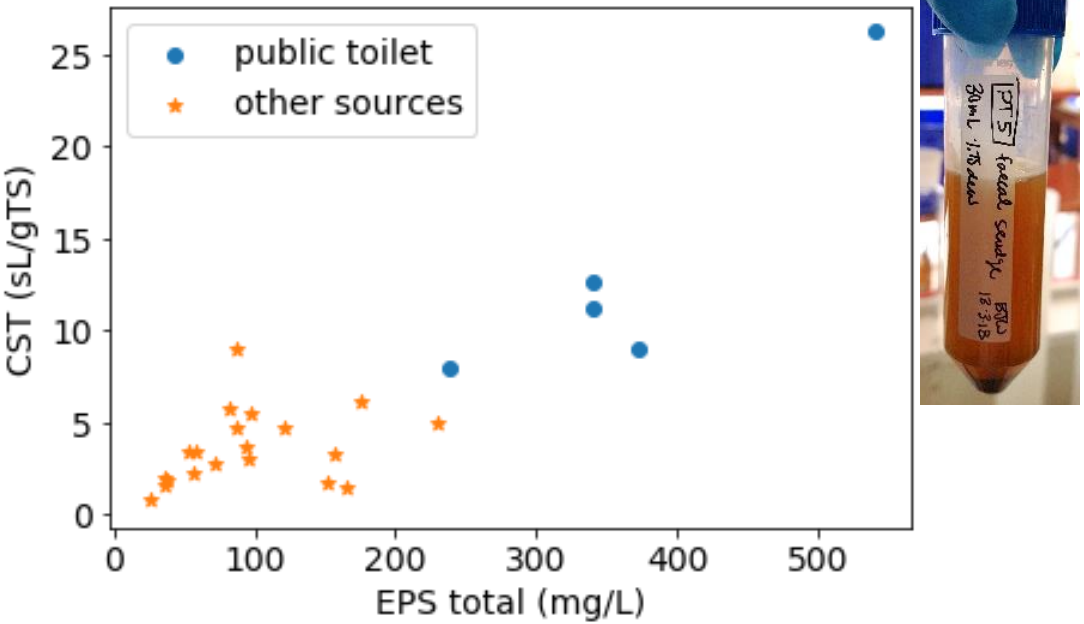
Results: Dewatering time and turbidity

Extractable polymeric substances (EPS) = undegraded organic material that clogs pores



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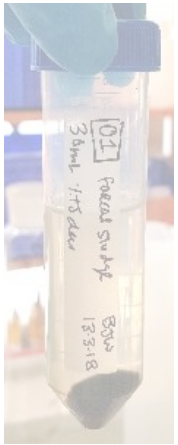

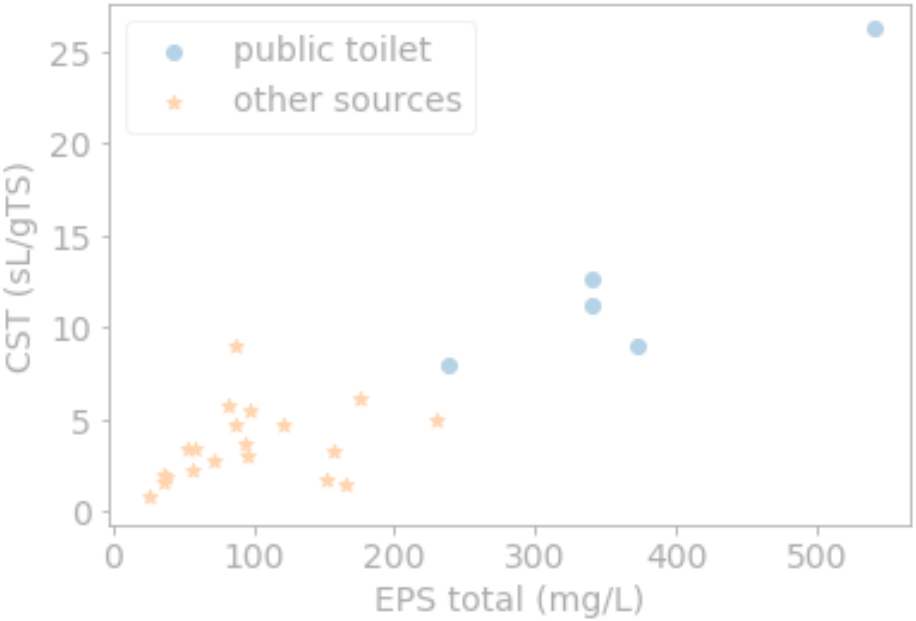

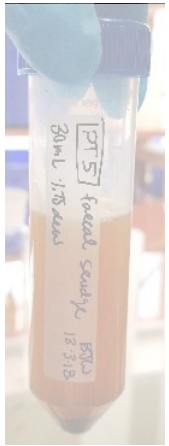

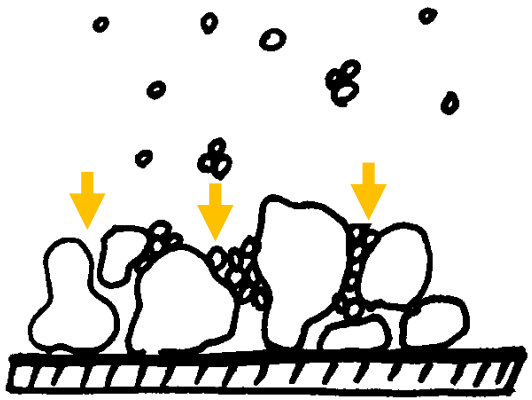

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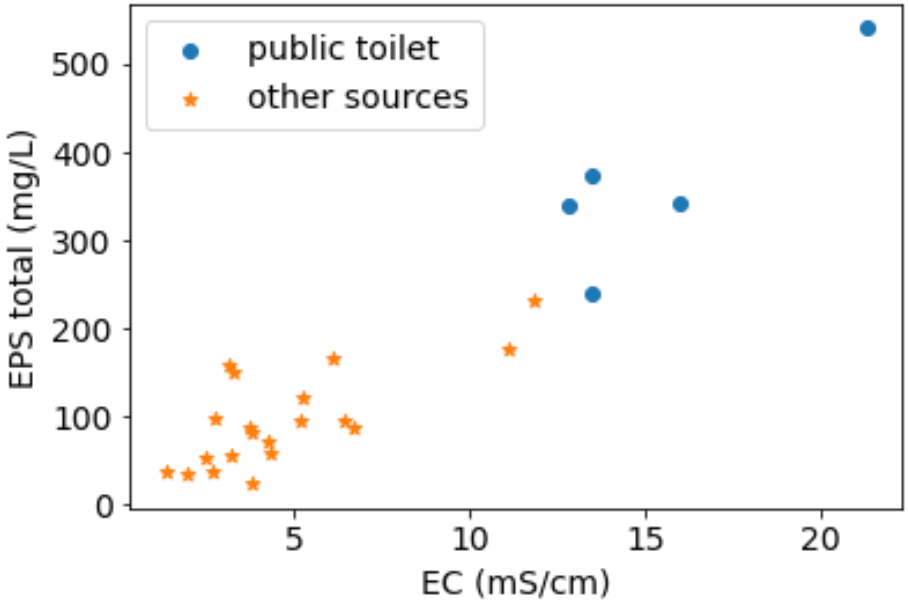
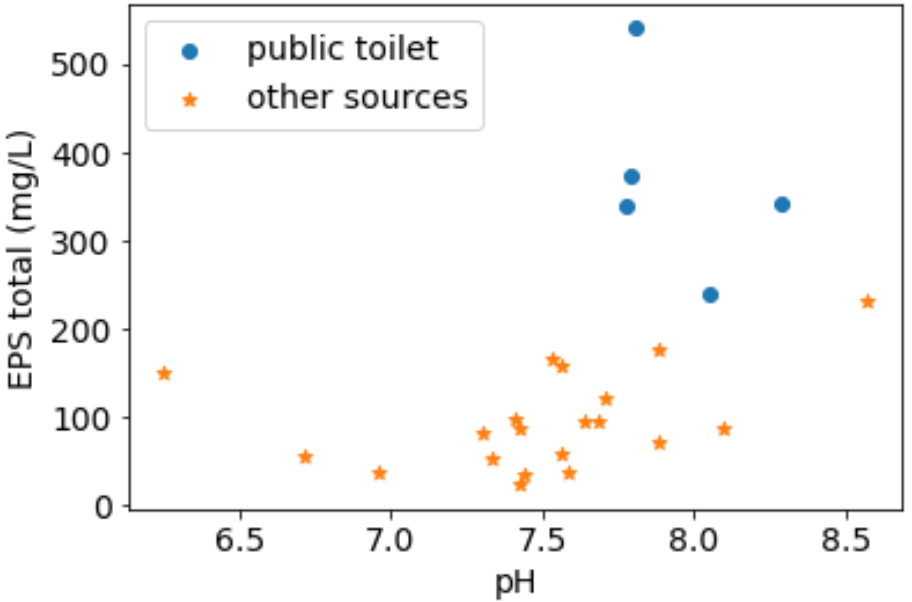
Results: Dewatering time and turbidity

Correlations with EPS and physical-chemical properties





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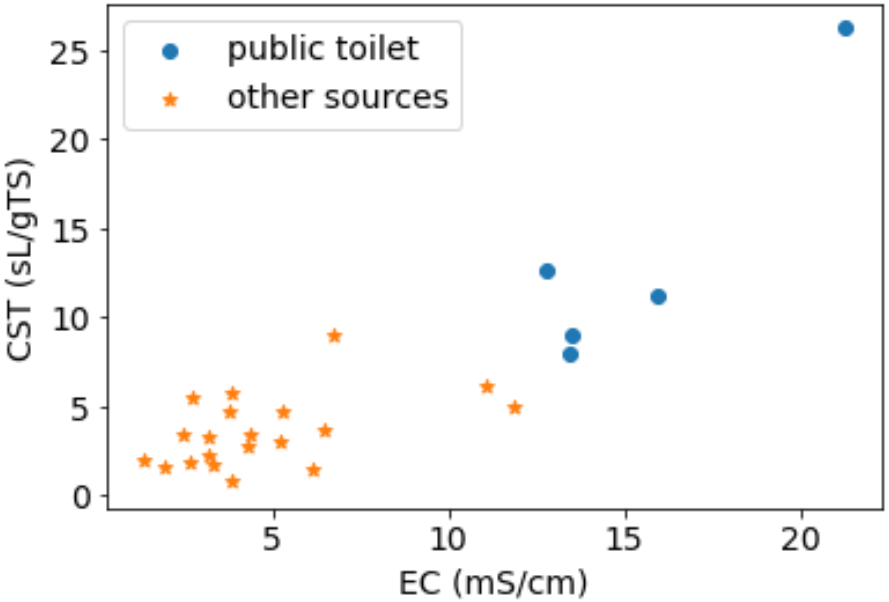
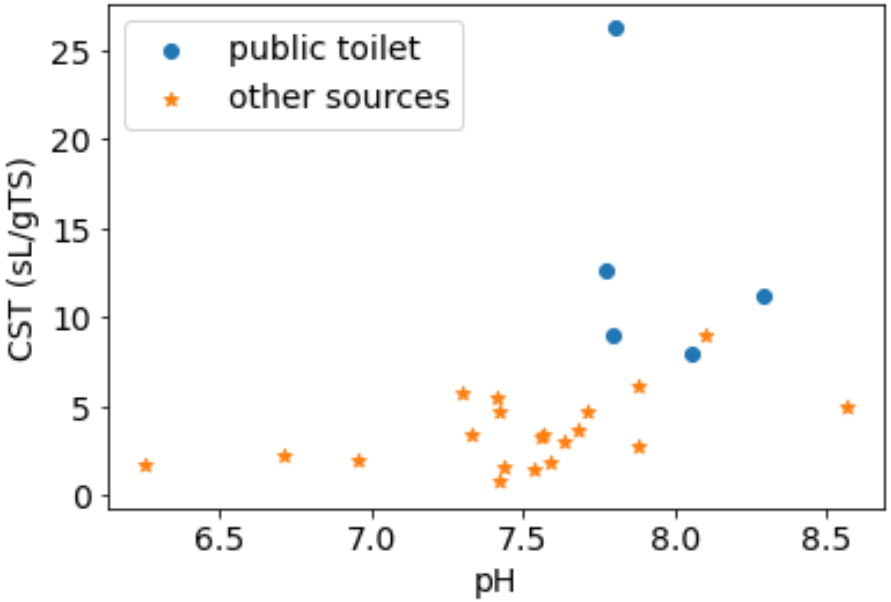
Results: Dewatering time and turbidity

Correlations with CST and physical-chemical properties





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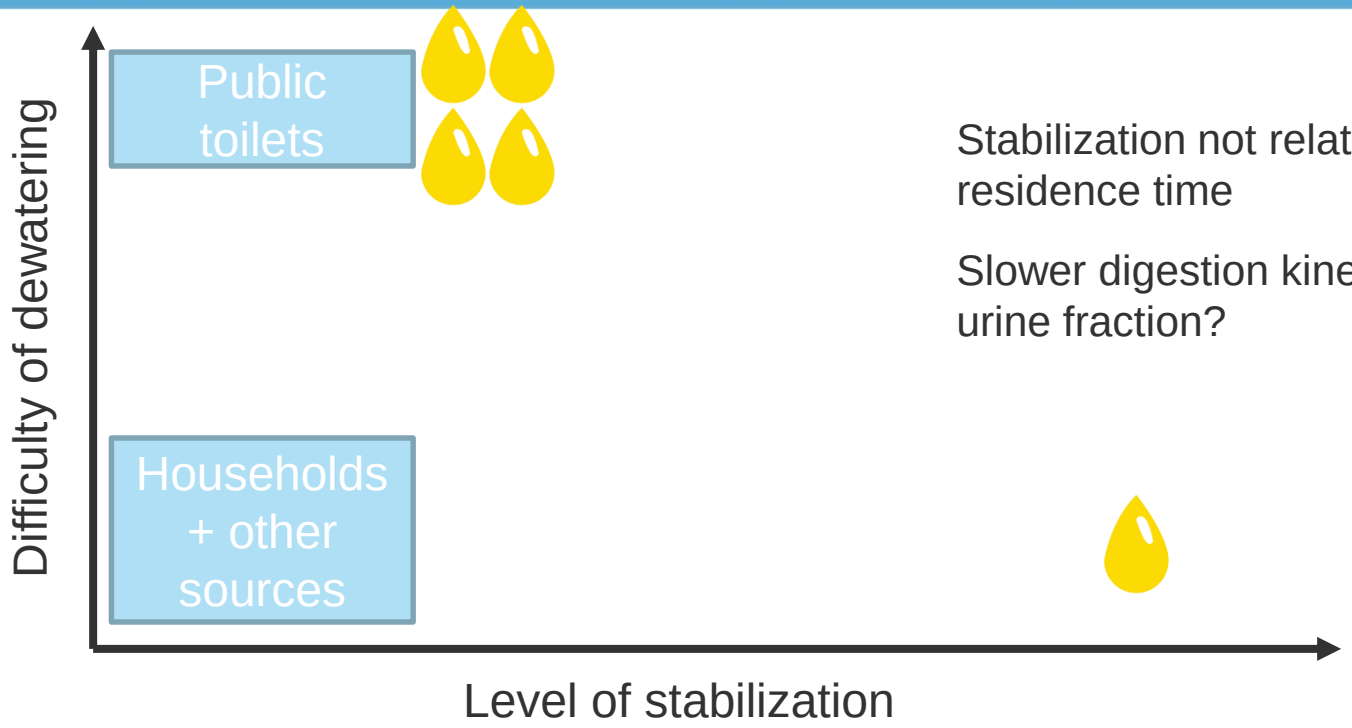
How this fits within our current understanding



Stabilization not related to residence time

Slower digestion kinetics due to higher urine fraction?

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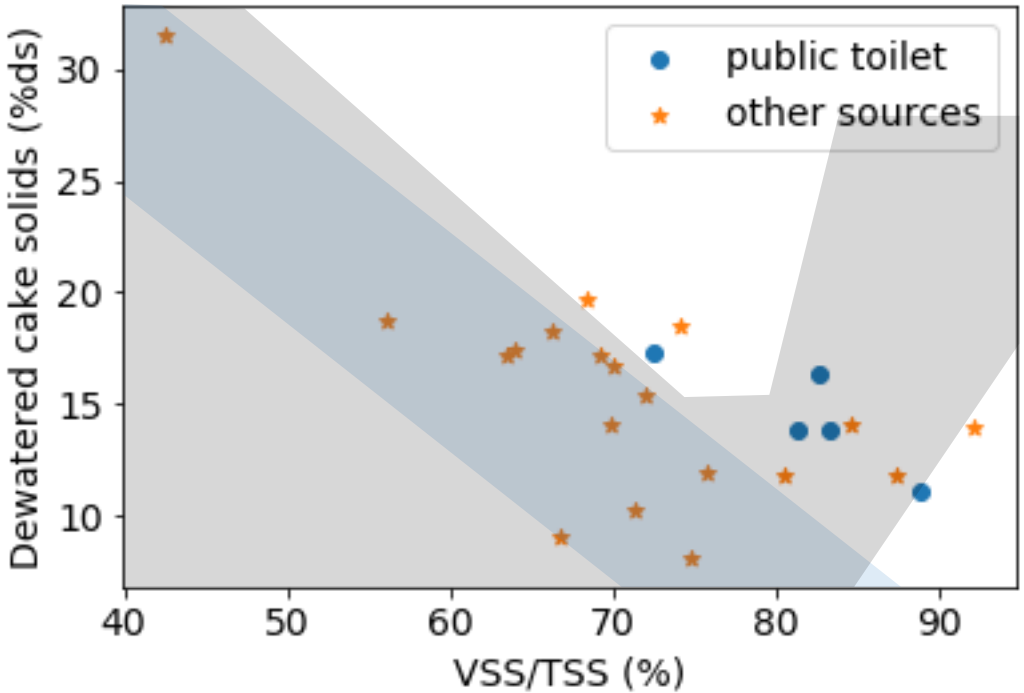
Results: Dewatered cake solids



Existing trends for:
Wastewater sludges
Faecal sludges

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Gold, M., et al. (2018). "Cross-country analysis of faecal sludge dewatering." Environmental technology **39**(23): 3077-3087.
Skinner, S. J., et al. (2015). "Quantification of wastewater sludge dewatering." Water Research **82**: 2-13.

Applications for Future Research






www.sandec.ch/fsm_tools

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