



**Job opportunity - 18 months post-doctoral position TBI-LEESU**

## **Understanding environmental innovation trajectories: the case of urine source-separation in France**

- **Context**

This 18 months postdoctoral position is focused on actor networks analysis, with the aim to understand the institutional dynamics and innovation trajectories of urine source-separation. It takes place in the REV:EU project (2026-2028, Driving Urban Transitions).

- **The REV:EU project (Regenerative Vital Water for European Cities)**

The limitations of centralized wastewater systems are becoming increasingly apparent due to water scarcity and environmental eutrophication. These challenges reveals the need to shift from the current linear approach to urban wastewater management to a new paradigm that adopts a regenerative approach to urban water management systems. In this regard, source separation systems for wastewater represent a promising innovation. They enable the efficient recycling of water and nutrients while reducing freshwater consumption, eutrophication, and greenhouse gas emissions.

The objective of the REV:EU project is to support the transformation of urban water management systems toward more circular and resilient approaches, leveraging source separation techniques targeting two specific streams: urine for nutrient recycling and greywater for water reuse.

REV:EU involves a wide range of partners (research laboratories, local authorities, and companies driving technical innovations) from three European countries: France, Sweden, and Norway. The work is organized around three regions designated as “living labs”: the Île-de-France region and the metropolitan areas of Stockholm and Oslo (Norway).

The project has several objectives: to broaden the involvement of local stakeholders in a regenerative approach to water management; to bring various techniques for source separation of urine and greywater to maturity; to study the socio-technical transition pathways toward source separation; and to produce policy and strategic recommendations for local authorities.

## ● Working environment

The position will be located in France, either in [TBI](#) (INRAE / INSA, Toulouse) or in the [LEESU](#) (ENPC/UPEC, Champ-sur-Marne, east of Paris). You will work with Tanguy Fardet (complex systems scientist, TBI) and Marine Legrand (anthropology and environmental studies, LEESU) in a very interdisciplinary setting including people from various disciplines related to sanitation, human excreta, wastewater and biomass management in a circular bioeconomy context.

## ● Research objectives

This project aims at developing a better understanding of environmental innovation trajectories, based on the case of urine source-separation at the national level in France as well as the European level.

- What are the key institutional actors related to urine source-separation in France?
- Where do they stand regarding emerging supply chains, urine treatment and fertilization techniques?
- What specific issues, obstacles and levers to the development of urine source-separation do they face today?

To answer these questions, the goal will be to identify and map these actors and their relations to other actors, existing supply-chains and techniques through surveys of grey literature and semi-structured interviews.

Ultimately, the goal will be to provide an actionable overview and understanding of the current socio-technical configuration surrounding urine source-separation in France. A method to provide a concise visual representation of this configuration will be developed, extending previous work on this topic.

A European perspective can be added to the project through specific case studies, namely large-scale pilot projects in urban settings.

## ● Training and required skills

- PhD in environmental studies with a background in social sciences (qualitative sociological studies, semi-structured interviews, textual data analysis).
- Interest in collaborative methods
- Familiarity with interdisciplinary setting
- Basic skills in social network analysis or computational social sciences are required, advanced skills will be considered a bonus.
- Fluency in English

## ● Relevant literature

Heiberg J., B. Truffer, and C. Binz, "Assessing transitions through socio-technical configuration analysis – a methodological framework and a case study in the water sector," *Research Policy*, vol. 51, no. 1, p. 104363, Jan. 2022, doi: 10.1016/j.respol.2021.104363.

Joveniaux, A., Legrand, M., Esculier, F., De Gouvello, B., 2022. [Towards the development of source separation and valorization of human excreta ? Emerging dynamics and prospects in France](#). *Frontiers in Environmental Sciences*. 10:976624. doi: 10.3389/fenvs.2022.976624.

Kvarnström, E., Emilsson, K., Richert Stintzing, A., Johansson, M., Jönsson, H., af Petersens, E., Schönning, C., Christensen, J., Hellström, D., Qvarnström, L., Ridderstolpe, P., Drangert, J.-O., 2006. *Urine diversion : one step towards sustainable sanitation*. Stockholm: Stockholm Environment Institute. EcoSanRes Publications Series. Report 2006-1

Larsen, T. A., Gruendl, H., & Binz, C. (2021). The potential contribution of urine source separation to the SDG agenda—a review of the progress so far and future development options. *Environmental Science: Water Research & Technology*, 7(7), 1161-1176.

Martin, T. M., Esculier, F., Levavasseur, F., & Houot, S. (2022). Human urine-based fertilizers: A review. *Critical Reviews in Environmental Science and Technology*, 52(6), 890-936.

McConville, J. R., Kvarnström, E., Aliahmad, A., & Lennartsson, M. (2023). Legitimacy of source-separating wastewater systems with Swedish water utilities. *Journal of Environmental Management*, 347, 119108.

McConville, J. R., Kvarnström, E., Jönsson, H., Kärrman, E., & Johansson, M. (2017). Is the Swedish wastewater sector ready for a transition to source separation?. *Desalination and Water Treatment*, 91, 320-328.

Starck, T., Fardet, T., Esculier, F., 2024. [Fate of nitrogen in French human excreta: Current waste and agronomic opportunities for the future](#), *Science of The Total Environment*, 912:168978.

## ● Remuneration

Remuneration based on the ENPC's current pay scale and experience.

## ● Involved research units

LEESU (Laboratoire Eau, Environnement, Systèmes Urbains) /ENPC-U-PEC,  
ENPC, 77455 CHAMPS-SUR-MARNE

TBI (Toulouse Biotechnology Institute, Bio & Chemical Engineering) INSA/CNRS/INRAE  
INSA, 135 Avenue de Rangueil 31077 TOULOUSE CEDEX 4

- **Contacts**

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The candidate should send us their C.V., a summary of their thesis, and a cover letter.

- deadline for applying: July 1st 2026
- starting date: October / November 2026