24-Month PostDoc on Modeling Urban Bioeconomy

INRAE – Montpellier or Narbonne

Work Environment and Context - The National Research Institute for Agriculture, Food and Environment (INRAE) is a public research institution under the dual supervision of the ministries responsible for agriculture and research. It is a major player in research and innovation, created on January 1, 2020, through the merger of INRA and Irstea. INRAE brings together a community of 12,000 people, with 268 research, service, and experimental units located in 18 centers across France.

Description of the Proposed Position - This position is open as part of the ASECT project (Systemic Approach to Circular Economy in the Territory: transversal representation of the circular economy) funded by the "Circulades" Key Challenge led by the Occitanie Region (https://circulades.univ-toulouse.fr). The mission of this two-year post-doc is to build a spatially explicit multi-agent model to represent flows and stocks of bio-resources in a virtual city (food, bio-products, agro-materials, bio-waste, water, and bio-energy) and to develop scenario transitions towards greater circularity. Such work will be conducted with a multidisciplinary team (socio-economics, urban planning, engineering, biotechnology) and city stakeholders (elected officials, waste services, water, planning, etc.).

The model will have two functions: (1) it will quantitatively compare the impact of different scenarios of transition towards greater circularity on key variables such as metabolic balance, contaminant flows, costs for households, and local finances, (2) if this model is sufficiently detailed, it will ultimately be able to be calibrated on existing cities and serve as a decision support tool.

Required Skills
- Skills in modeling and computer programming. Expertise in multi-agent models is appreciated.
- Demonstrated interest in bioeconomy, circular economy, and social sciences.
- Experience in urban planning is appreciated.
- Autonomy and initiative-taking ability.
- Proficiency in English.
- Teamwork skills.

Desired Degrees: PhD in applied mathematics, or PhD in process engineering, or PhD in economics/territorial planning.

Salary: Depending on experience, the salary will range from €2604 to €3293 gross/month (INRAE salary scale). INRAE also guarantees the following working conditions :
- 30 days of leave per year (+15 in case of time recovery).
- Telecommuting (up to 3 days per week) possible.
- Support for parenthood.
- Access to skills/knowledge development activities (courses, advice, etc.).
- Affordable collective restaurants.

Workplace: The selected person can be based at CEE-M in Montpellier (https://www.cee-m.fr/) or at LBE in Narbonne (https://www6.montpellier.inrae.fr/narbonne/). The position is available from 01/01/2024 and is open until 31/12/2024 for a duration of 24 months.

Contacts: Send CV and cover letter to Sophie Thoyer (sophie.thoyer@inrae.fr) and Jean-Philippe Steyer (jean-Philippe.steyer@inrae.fr). Candidate interviews will take place on an ongoing basis.