The Department of Economics and Social Sciences, Institute of Social Ecology, is currently seeking a

Postdoctoral Research Associate

Cross-Sectoral Linkages of Novel Bioengineering Pathways for Climate and Biodiversity Protection (Project PD 4.4)

assigned to research program *Green Cycles of Renewable Materials* of **Cluster of Excellence (CoE) Circular Bioengineering** https://www.circularbioengineering.at

(Reference code 228)

Extent of employment: 20 hours per week
Duration of employment: as of now, limited to 31st of October 2029
Workplace: BOKU University, 1070 Vienna, Schottenfeldgasse 29
Allocation in compliance with the Collective Agreement for University Staff to job group: B1 lit. b
Gross monthly salary: (depending on previous eligible experience) at least: € 2.466,50 (payable 14 times per year)

Description of project:

Bioengineering as a key element of the bioeconomy can support a socio-ecological transformation if it is implemented in sustainable terms. However, global databases on biomass production, processing and consumption remain limited in scope and the cross-sectoral aspects are not well depicted. In particular, the thematic resolution of databases is too coarse. This limits the assessment of substitution and cascading use potentials and results in a low analytical capacity to assess options for the minimization of ecological trade-offs and the enhancement of resource efficiency from a socio-ecological perspective. The project addresses this challenge by significantly expanding current global biomass flows accounts by the quantification of cross-sectoral interrelations and increasing the resolution of end uses and end users of biomass streams. The improved databases will be exploited to assess the biophysical potentials of cascadic biomass chains, biomass-related circular economy approaches, as well as the potentials for the substitutability of biomass-derived materials for fossil-fuel derived material etc. to reduce ecological impacts. The project will assess social and political barriers to implementation, and contribute to scenario-based analyses of promising bioengineering pathways in terms of the need for climate change mitigation and biodiversity protection (in close collaboration with PostDoc 4.3)

Research Objectives:

- Contribute to the establishment of a global biomass flow database with a focus on discerning qualitative aspects of biomass flows (chemical, mechanical properties, conversion processes and efficiencies, etc.)
- Improve the representation in biomass flow databases with regard to end uses (food, feed, fibers, industry, energy) and sectors, with a focus on increasing thematic detail in industry utilizations
- Perform scenario analyses to identify promising, viable pathways of circular bioengineering in terms of substitution and ecological performance, with a focus on the potential of utilizing waste streams and increasing cascadic uses and biomass-based circular economy approaches
- Evaluate global bioengineering rollout strategies in terms of their socio-ecological implications, taking biophysical and social constraints into account

Methods: The project is deeply rooted in Social Ecology and applies and further develops methods of economy-wide Material and Energy Flow Analysis (MEFA) for the assessment of biomass flows at the global scale with high thematic resolution. Scenario analysis will be based on the expansion of the biophysical land-system model BioBaM-GHG and will include qualitative analyses of relevant policy narratives and measures as well as options for future bioeconomy/bioengineering development.

Required skills and qualifications

- Doctoral degree/PhD in Environmental Sciences, Social Ecology, Industrial Ecology, Interdisciplinary Sustainability Sciences or a related field
- Language skills: very good English skills
- Strong experience in biophysical accounting and modeling with a focus on agronomic and material flow databases
- In-depth knowledge of bioeconomy principles, sectors and policy and agri-food and land systems
- Wide thematic and methodological profile, experience in interdisciplinary research bridging social and natural sciences
- Experience in linking qualitative and quantitative data for scenario analyses
- Proven ability and skills for working in teams
- Scientific writing and presentation skills. Proven ability to publish in international and interdisciplinary journals
- Experience in sectorial and economy-wide, biophysical as well as social/political analysis

Desirable skills and qualifications

- Experience in scientific programming: R and MatLab
- Proficient in German or willingness to learn German

Applications can be submitted until: 6th of January 2026

University of Natural Resources and Life Sciences Vienna seeks to increase the number of its female faculty and staff members. Therefore qualified women are strongly encouraged to apply. In case of equal qualification, female candidates will be given preference unless reasons specific to an individual male candidate tilt the balance in his favour.

People with disabilities and appropriate qualifications are specifically encouraged to apply.

Please send your job application to Personnel Management, University of Natural Resources and Life Sciences, Peter-Jordan-Straße 70, 1190 Vienna; E-Mail: recruiting@boku.ac.at. **(Reference code: 228)**

- Please use this **Application form – Postdoc-positions**
- Please note that we will not be able to process your application without this form and unless it is sent to recruiting@boku.ac.at
- Following additional documents have to be submitted as .pdf files:
  - Curriculum vitae
  - Copy of certificates from the applicant's bachelor, master/diploma and doctoral studies
  - A translation of the documents is necessary if the original documents are not in English or German

For information on the further application procedure – online hearing and interviews – see https://www.circularbioengineering.at/jobs

We regret that we cannot reimburse applicants travel and lodging expenses incurred as part of the selection and hiring process.

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