

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

Postdoctoral Research Associate

Sustainable Bioengineering Pathways: Spatial Dimensions of Global Biomass Flows and Their Ecological Impacts (COE Project PD 4.3)

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

(Reference code 202)

Extent of employment: 20 hours per week

Duration of employment: 1st of November 2025, 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:

Background: Bioengineering can support a socio-ecological transformation if it is implemented in sustainable terms. However, global databases remain limited in scope, the spatial and cross-sectoral aspects of production, processing and consumption systems and their scale-dependency are not well explored in this context. Thus, their potential role to minimize ecological trade-offs and enhance resource efficiency remains a knowledge gap. The Project addresses this challenge by assessing the cross-scalar aspects of the current global state of biomass flows, with a focus on spatial characteristics and their relation to ecosystem functioning. It will assess the spatial and ecological dimensions of biomass production, consumption, and trade, 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 4.4)

Research Objectives:

- Contribute to the expansion of the existing Biomass Balance Model, focusing on the integration of agricultural and forestry biomass flows

- Link socioeconomic biomass flows to ecosystem dynamics, e.g. carbon stocks and flows, turnover times, biodiversity. A particular focus is on the conceptualization and empirical analysis of biophysical opportunity costs of biomass harvest
 - Perform scenario analyses to quantify the local, regional, and global ecological impacts of upscaling bioengineering pathways, identify efficient and effective strategies in terms the links of bioengineering and climate and biodiversity protection
 - Develop methods to assess biophysical cost curves of biomass uses, with a focus on land competition including restoration/rewilding necessities
 - Assess the role of trade in determining cost curves and ecological impacts
- Methods: The project is deeply rooted in Social Ecology and applies and further develops methods like Material and Energy Flow Analysis (MEFA), including carbon and land-use accounting, and land-use, carbon cycle and biodiversity modelling. In the centre is the further development of the biophysical model BioBaM-GHG and the development of improved input datasets

Required skills and qualifications

- Doctoral degree/PhD in Environmental Sciences, Social Ecology, Ecological Economics, Interdisciplinary Sustainability Sciences or a related field
- Language skills: very good English skills
- Strong experience in global / economy-wide biophysical accounting and modelling with a focus on agricultural and forestry stocks and flows
- Programming skills
- Experience in interdisciplinary research bridging social and natural sciences
- Proven ability and skills for working in teams
- Scientific writing and presentation skills. Proven ability to publish in international journals

Desirable skills and qualifications

- Wide thematic profile
- Programming skills in R and Matlab
- Proficient in German or willingness to learn German

Applications can be submitted until: 24th of October 2025

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: 202)

- 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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