

APPLY 68-2022

Researcher - energy system and material flow modeling

IIASA ENERGY, CLIMATE, AND ENVIRONMENT (ECE) PROGRAM, INTEGRATED ASSESSMENT AND CLIMATE CHANGE (IACC) RESEARCH GROUP AND SUSTAINABLE SERVICE SYSTEMS (S3) RESEARCH GROUP

We are looking for a strong candidate to support advancing the integration of material flows and stocks into the MESSAGEix integrated assessment modeling framework as a key aspect of this broader research agenda. The successful candidate will work with a team of international scientists in the [Energy, Climate, and Environment \(ECE\) Program](#) and with other programs and groups at IIASA to further develop the [MESSAGEix framework](#) and in particular the open-source [MESSAGEix-GLOBIOM model](#).

OVERVIEW

The ECE Program hosts one of the world's leading Integrated Assessment Modeling (IAM) teams focusing on systems transformations toward environmental, social, and economic sustainability. The Program employs a diverse set of cutting-edge systems engineering, macroeconomic and agent-based tools. The research focuses on trade-offs and synergies between multiple policy priorities and objectives, typically across multiple sectors and scales (global, regional, national, and subnational). The work informs international and national policy efforts related to climate change (e.g., the assessment reports of the Intergovernmental Panel on Climate Change, IPCC) as well as the Sustainable Development Goals (SDGs).

The successful researcher will contribute to developing modeling methods and data to study the characteristics of transitions towards GHG neutrality. This research will include, but is not limited to:

- Development and application of the MESSAGEix-Materials model, the open source MESSAGEix modeling framework, and related software and data sets.
- Complementary, quantitative analysis of the industry sector with a focus of material cycles and linking material demand to the underlying energy services (e.g., housing, mobility).
- Analysis of the impacts of material efficiency, reuse and recycling strategies on energy use and GHG emissions.
- Analysis of the implications of sharing economy approaches and behavioral change (e.g., modal shift in transport) on demand for materials.
- Development of low energy and material demand scenarios, through narratives incorporating all of the above phenomena.
- Design and execution of model-to-model linkages, such as between sectoral models and IAMs.

TASKS AND RESPONSIBILITIES

- Perform in-depth literature reviews of existing technologies and investigate novel mitigation approaches
- Contribute to the development of the global MESSAGEix-GLOBIOM model, the open source [MESSAGEix](#) modeling framework, and related software tools and data sets
- Analyze, process, and utilize large-scale panel and geospatial datasets
- Investigate, prepare, and analyze integrated assessment model scenario campaigns in conjunction with senior researchers within the [IACC](#) and [S3](#) research groups
- Develop and document version-controlled collaborative modeling code that allows to re-process data and analyze datasets and model results
- Maintain and disseminate relevant datasets according to FAIR data principles
- Publish relevant results in peer-reviewed journals and actively engage in dissemination efforts such as scientific conferences and workshops, stakeholder, and policy events.
- Contribute to ongoing and future projects and related deliverables, reports, stakeholder communication and capacity building activities.
- In line with the team spirit that prevails at IIASA, the incumbent may occasionally work on other tasks assigned by their superiors, that might not be directly related to this appointment but where the post holder has relevant experience and skills, and/or a shortage of immediate personnel capabilities requires such.

SKILLS AND QUALIFICATIONS, AND EXPERIENCE

- Master's degree (or equivalent) in a field related to integrated assessment modeling including natural sciences, economics, engineering, environmental science or mathematics.
- Demonstrated experience in tools and systems used by the ECE program (cf. [MESSAGEix documentation](#)) including
 - Experience in a modern programming language, preferably Python, is essential
 - Experience with an optimization framework (e.g., GAMS, pyomo, JuMP, etc.) is strongly preferred
 - Experience with integrated assessment or energy systems modeling is an asset.
- Knowledge of and experience with industrial ecology methods and data, including lifecycle assessment, material flow analysis and input-output analysis is an asset.
- Demonstrated ability to contribute to open-source projects, data provision and code-development, using git and GitHub.
- Demonstrated ability to develop, collaborate on, and publish scientific research through peer-reviewed publications

APPOINTMENT TERMS

The selected candidate should be available to take up the position as soon as possible in 2023. We offer an initial fixed-term, one year, full-time (40 hours per week) employment contract, with the possibility of extension after the first years' work. Eligible applicants wishing to work part-time hours will also be considered.

Duties will be carried out at the IIASA premises in Laxenburg, near Vienna in Austria (up to 100 days per year home office working within Austria possible). Some travel will be required.

The successful candidate will be hired in accordance with their corresponding profile in the [IIASA Researcher profiles](#).

WE OFFER

A gross annual, full-time salary of:

Minimum EUR 33,924.00 for R1 researchers

Minimum EUR 44,204.00 for R2 research scholars.

The advertised salary is:

- Exempt from income tax in Austria
- Negotiable, based on the qualifications, skills and experience of the selected individual.
- Subject to deductions for health insurance and/or social security.

- A degree of flexibility and willingness to travel
- Fluency in English and excellent presentation skills
- IIASA offers an interdisciplinary and international workplace, and the possibility to interact with researchers of different nationalities, with strong ties to a world-wide network of research institutions engaged in environmental systems research. The successful candidate must be able to work in, and have respect for, an intercultural environment, and [IIASA core values](#).

- Not directly comparable with other employers in Austria, due to the unique legal status and privileges granted to IIASA.
- Subject to the principle of income aggregation (Progressionsvorbehalt in German).

IN ADDITION:

- Educational subsidies for children of school age enrolled in private schools in Austria.
- A generous annual leave allowance.
- Moving and settlement allowances and paid home leave for employees in scientific and professional categories hired from international locations.
- Assistance for newcomers to Austria with visa, work and residency permit applications.
- Support finding accommodation in Austria.

Further details [here](#).

About IIASA

IIASA is committed to a working environment that promotes equality, diversity, tolerance and inclusion within its workforce. This is reflected in our [IIASA core values](#). We encourage qualified candidates from all religious, ethnic, and social backgrounds to apply. In the case that candidates are equally qualified, preference will be given to applicants from countries where IIASA has a [Member Organization](#).

Further Information

For further information about this opportunity please contact:

[Dr. Volker Krey](#), IACC Research Group Leader or

[Dr. Bas van Ruijven](#), S3 Research Group Leader

For general information about working at IIASA: recruitment@iiasa.ac.at

Applications

To apply for this opportunity, you will need to provide the following documents in English:

- A cover letter outlining your motivation for and fit to the position
- A detailed Curriculum Vitae
- An example of an existing software (coding) project or application
- The names, addresses (including e-mail), and telephone numbers of two work-related reference givers.

Review of applications will begin immediately.

Deadline for receipt of applications: until filled

APPLY

