JÜLICH
Forschungszentrum

Conducting research for a changing society: This is what drives us at Forschungszentrum Jülich. As a member of the Helmholtz Association, we aim to tackle the grand societal challenges of our time and conduct research into the possibilities of a digitized society, a climate-friendly energy system, and a resource-efficient economy. Work together with around 7,600 employees in one of Europe's biggest research centers and help us to shape change!

The transformation of the energy sector is a major challenge of the 21st century. The Institute of Climate and Energy Systems – Juelich Systems Analysis (ICE-2) uses large models to investigate the question of which technologies energy systems need to be composed in order to become both cost-efficient and environmentally friendly. Become part of our international research group and gain insights into the future of the energy sector. Not only can you use your expertise to create prognoses on the future capacity expansion, but you can also get an overview of different technologies and their synergies.

We offer you at the next possible date an exiting

Master Thesis – Assessing Renewable Energy Potential under Disruptive Events

Your Job:

The energy transition in Germany relies on large-scale deployment of renewable energy. However, disruptive events caused by environmental or climate-related factors may significantly affect resource availability and infrastructure. This thesis will explore how disruptive scenarios impact renewable energy potentials across Germany by combining Python-based GIS workflows with energy system optimization. The aim is to quantify vulnerable regions and evaluate the resilience of the energy system under such conditions.

Your tasks:

- Processing regional-scale renewable energy potential datasets based on existing data
- Developing Python-based GIS workflows (GeoPandas, Shapely) to identify renewable sites / potentials within environmentally constrained areas and to quantify affected renewable potential areas under disruptive environmental events at regional scale

- Analyzing the implications of reduced renewable potentials on system design, storage, and resilience

Your Profile:

- You are a master's student in engineering, renewable energy, sustainable energy systems, environmental engineering, or a related field
- Strong skills in Python
- Experience with energy system optimization modeling (e.g., Pyomo or similar)
- Experience in geospatial analysis (e.g., GeoPandas) is highly advantageous
- Fluent speaking and writing skills in English
- A high degree of autonomy and commitment
- A thorough and reliable working style

Our Offer:

We work on the very latest issues that impact our society and are offering you the chance to actively help in shaping the change! We support you in your work with:

- **Meaningful tasks:** Your thesis deals with a future-oriented, socially relevant topic with direct practical relevance in an international environment.
- **Practical relevance:** With us, you will gain valuable practical experience alongside your studies and actively participate in interdisciplinary projects.
- **Scientific environment:** You can expect excellent scientific equipment, modern technologies, and qualified support from experienced colleagues.
- **Onboarding and teamwork:** You can look forward to working in a dedicated, international, and collegial team. It is important to us that you quickly settle into the team and are given structured training for your tasks. We also support you from the very beginning and make your start easier with our Welcome Days and Welcome Guide: **https://go.fzj.de/welcome**.
- **Work-life balance:** We offer flexible working hours to help you balance your professional and personal life. You also have the option of flexible working (in terms of location), which is generally possible after consultation and in line with upcoming tasks and (on-site) appointments.
- **Flexibility:** Flexible working hours make it easier for you to balance work and study.
- **Fair remuneration:** We will pay you a reasonable remuneration for your thesis.
- **Fixed-term:** The position is initially for a fixed term of six months.

In addition to exciting tasks and a collegial working environment, we offer you much more: **https://go.fzj.de/benefits**.

We welcome applications from people with diverse backgrounds, e.g., in terms of age, gender, disability, sexual orientation / identity, and social, ethnic, and religious origin. A diverse and inclusive working environment with equal opportunities, in which everyone can realize their potential, is important to us.

Further information on diversity and equal opportunities can be found at **https://go.fzj.de/equality**.

The job will be advertised until the position has been successfully filled. You should therefore submit your application as soon as possible. We look forward to receiving your application via our **Online Recruitment System**!

Contact Form:

If your questions have not yet been answered via our **FAQs**, please send us a message via our **contact form**.

Please note that for technical reasons we cannot accept applications by e-mail.

www.fz-juelich.de

WE HAVE BEEN AWARDED