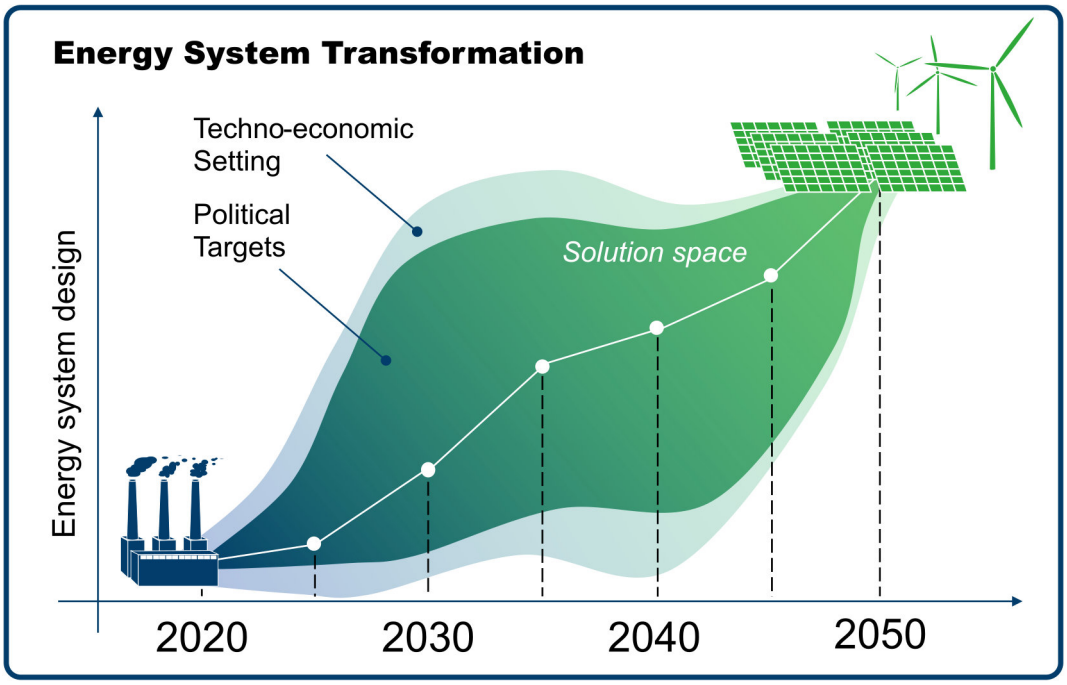

Conducting research for a changing society: This is what drives us at Forschungszentrum Jülich. As a member of the Helmholtz Association, we aim to tackle the grand societal challenges of our time and conduct research into the possibilities of a digitized society, a climate-friendly energy system, and a resource-efficient economy. Work together with around 7,500 employees in one of Europe's biggest research centres and help us to shape change!

The research focus of Jülich Systems Analysis is the unbiased, scientific investigation of technologies, technology paths, value chains and market ramp-ups in future energy systems, considering material requirements, sector coupling and framework conditions in policy and society. The addressees are science, decision-makers from politics, industry and social actors. To answer the research questions, Jülich Systems Analysis creates complex models to analyze and evaluate technologies, infrastructures and resources for future energy systems using an open-science approach. This is done in an interdisciplinary approach that considers the interaction of energy technologies with economic, ecological and social systems and thus focuses on security of supply, economic efficiency and environmental protection. An integral part of the research work is the creation of a consistent and sustainably usable data basis in accordance with the open data.

We are offering a

PhD Position – Benchmarking of Emerging Energy Technologies with Natural Language Processing and System Optimization

Your Job:
Your research will explore the integration of emerging energy technologies into future energy systems and assess their potential contributions toward a greenhouse gas-neutral Europe. A key objective is to identify under what technical and economic conditions innovative technologies—such as fusion energy or perovskite solar cells—can be effectively incorporated into the energy system. You will support the development of a European energy system model by benchmarking future technologies and optimizing their representation within the FINE optimization modelling framework (https://github.com/FZJ-IEK3-VSA/FINE) . Furthermore, you will use and extend existing lightweight Large Language Models (LLMs) to assess future technological

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!**

Questions about the vacancy?
Get in touch with us by using **our contact form.**
Please note that for technical reasons we cannot accept applications via email.
www.fz-juelich.de

characteristics. Your tasks in detail:

- Using/Extending methods for the automatic generation of future energy technology scenarios based on LLMs, patent data, and scientific literature
- Investigating the system-level conditions under which future technologies like fusion and perovskite solar cells become viable contributors
- Supporting European-level technology assessments and contributing to the development of a European Energy System optimization model
- Providing insights to support strategic energy planning and policy development at national and European scales

Your Profile:

- Master's degree in the field of natural sciences, engineering, industrial engineering or a related field of study
- Interest in energy technology and energy economics
- Experience in energy system modelling is an advantage
- Basic programming skills, ideally in Python
- Independent and analytical way of working
- Reliable and conscientious working style
- Fluent written and spoken English; German language skills are advantageous

Please also apply if you do not yet have all the required skills and knowledge. We may be able to teach you missing skills during your induction.

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 offer ideal conditions for you to complete your doctoral degree:

- A highly motivated working group as well as an international and interdisciplinary working environment in one of the largest research institutions in Europe
- Excellent scientific and technical infrastructure
- Continuous professional support from your scientific supervisor
- The opportunity to complete a doctoral thesis within 3 years through professional supervision and internal support services –time taken to submit the final thesis for the last 16 doctoral students at ICE-2: 2.7-3.4 years
- Best conditions for successful work in a home office
- 30 days of annual leave and provision for days off between public holidays and weekends (e.g. between Christmas and New Year)
- Further development of your personal strengths, e.g. through an extensive range of training courses; a structured program of continuing education and networking opportunities specifically for doctoral researchers via JuDocS, the Jülich Center for Doctoral Researchers and Supervisors: https://www.fz-juelich.de/en/judocs
- Targeted services for international employees, e.g. through our International Advisory Service

In addition to exciting tasks and a collaborative working atmosphere at Jülich, we have a lot more to offer: https://go.fzj.de/benefits

The position is initially for a fixed term of 3 years. Pay in line with 75% of pay group 13 of the Collective Agreement for the Public Service (TVöD-Bund) and additionally 60 % of a monthly salary as special payment („Christmas bonus"). The monthly salaries in euros can be found on page 66 of the PDF download: https://go.fzj.de/bmi.tvoed Further information on doctoral degrees at Forschungszentrum Jülich including our other locations is available at: https://www.fz-juelich.de/gp/Careers_Docs

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: https://go.fzj.de/equality