



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!

Achieving a secure, greenhouse gas-neutral energy supply is one of the greatest challenges of the 21st century. At the Institute of Climate and Energy Systems - Jülich Systems Analysis (ICE-2) we are researching how possible cost-effective transformation strategies must be designed to achieve this. Become part of our research team and contribute your ideas and creativity to help shape what a future greenhouse gas neutral energy system could look like.

We offer you to the next possible date an exiting

Master Thesis - Techno-economic analysis of European offshore potential for green hydrogen production

Your Job:

The European Union aims to be climate-neutral by 2050. This ambitious goal requires significant efforts in all sectors to reduce emissions and switch to sustainable energy sources. Green hydrogen produced by electrolysis plays an important role in replacing fossil fuels in areas where electrification is not possible or economically viable. Production costs are a key driver of demand for green hydrogen. These costs are driven by local renewable energy conditions and the capital and operating expenses of offshore wind farms, electrolysers and associated infrastructure. These cost components vary depending on site-specific factors such as water depth, distance from shore, and associated infrastructure. An integrated assessment of these parameters is essential for a robust evaluation of the offshore potential and the development of effective strategies for a sustainable energy system. The aim of this thesis is to quantify the European offshore potential for green hydrogen production. Using a techno-economic optimization approach based on the Python-based open-source framework ETHOS.FINE, regionalized hydrogen cost potentials are derived to support decision making in industry, policy, and research. Specifically, this includes the following tasks:

- Literature and data review on offshore hydrogen production
- Familiarization with ETHOS.FINE

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



- Identification of relevant site parameters and spatial segmentation of offshore areas using GIS-based tools
- Development of an energy system model for the optimal design of offshore hydrogen production
- Analysis and evaluation of regionalized hydrogen cost-potential curves

Your Profile:

- Very good performance in your Master's degree in mechanical engineering, energy technology, engineering sciences, environmental sciences, renewable energy, economics, or a comparable field
- Strong interest in the energy transition, energy technologies, and the role of green hydrogen
- Initial experience in data analysis and programming using Python and GIS-based tools
- Fluent in written and spoken English or German
- High level of motivation, with a structured, analytical, and independent working style
- Excellent self-organization and time management skills

Our Offer:

We work on the latest issues affecting our society and offer you the opportunity to be an active part of the change! Here is what Forschungszentrum Jülich can offer you:

- Collaboration in a highly motivated and international working group in one of the largest research institutions in Europe
- An excellent scientific and technical infrastructure
- Continuous professional support from your academic supervisor
- The option to publish in a scientific journal as a co-author
- Ideal conditions for gaining practical experience during your studies
- · Excellent technical equipment for successful work in home office or on site in Jülich
- Flexible working hours and appropriate remuneration

The position is initially for a fixed term of 6 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: https://go.fzj.de/equality