The success of the energy transition is essential for our future. To support this energy transition, scenarios can help to develop strategies for decision-making already at an early stage. However, the development of these energy scenarios is constantly confronted with new challenges. Would you like to tackle these challenges together with us? Then send us your application!

We are offering a

**PhD Position - Replacing lost material flows within the energy transition**

**Your Job:**

The energy transition not only generates new demand for materials, but also phase out material flows such as gypsum production in coal-fired power plants. These lost material flows must be suitably replaced. To ensure that this replacement is compatible with the energy transition, substitution options must be systematically investigated with the help of energy scenarios. Therefore, this doctoral thesis will identify the phased out material flows and substitution options and integrate them into the institute’s own energy system model ETHOS.FINE (https://github.com/FZJ-IEK3-VSA/FINE) in order to find transformation scenarios without material gaps.

Your tasks in this context include:
- Researching, in particular, publicly available data on current and future phased-out material flows and substitution options within the energy system
- Implementing the phased-out material flows and their substitution options in our technology database and in our energy system model ETHOS.FINE
- Deriving demand projections for the phased-out material flows in order to quantify the need for substitution
- Analyzing and evaluating transformation scenarios without material gaps
- Contributing own creative ideas for the goal of the doctoral thesis
- Participation in conferences in Germany and abroad (incl. presenting your research results)
Preparing scientific publications and project reports

Your Profile:
• A successfully completed Master’s degree in the field of engineering or natural sciences or a related course of study
• Good knowledge of materials science and energy technology
• Basic programming skills (e.g. Python) and enjoy programming
• High degree of independence and willingness to show great commitment
• Very reliable and conscientious working style
• Fluent written and spoken English, knowledge of German is an advantage

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:
• Collaboration in a renowned ERC Starting Grant (“MATERIALIZE”)
• 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
• Opportunity to participate in (international) conferences
• Continuous professional support from your academic supervisor
• Best conditions for successful working from home (relocation to the Aachen-Düsseldorf-Cologne region is not absolutely necessary)
• 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 IEK-3: 2.7 - 3.4 years
• 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
• 30 days of annual leave and provision for days off between public holidays and weekends (e.g. between Christmas and New Year)
• 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

We wish you success in your future application!