Professorship Circular Economy
TUM Campus Straubing for Biotechnology and Sustainability
Technical University of Munich

Master's Thesis:

Green hydrogen economy: business models for electrolyzers

Background

A transition towards nearly 100% renewable energy sources is mandatory to fulfil the German climate neutrality in 2045. Hydrogen is attributed to be a game changer towards a zero-carbon emission energy industry. Generally, the German hydrogen demand is predicted to be 90 – 100 TWh by 2030 because of various industry and chemical application areas. Mostly with green hydrogen, Germany will provide a sustainable and economic profitable energy source in the near future. The flagship project *H2Giga* aims to scale-up the electrolyzer technology for green hydrogen production. In the subproject *ReNaRe* the focus lies on the end-of-life of electrolyzers and the implementation of an economic viable and sustainable recycling process of electrolyzers. Besides process engineering techniques, cross-sectional topics are relevant for a comprehensive national green hydrogen economy such as business models, legal acts and system analysis.

Research Tasks

At first, a literature review of sustainable and circular business models and the recycling structures of emerging technologies, is initially required. The main part of the work will be the methodological explanation, assessment and quantification of the recycling system of electrolyzers by the application of system dynamic approaches.

- Literature research on business models (circular, sustainable) and recycling structures
- Conducting semi-structured expert interviews
- Developing electrolyzer business models
- Simulation of the electrolyzer circuit within a system dynamics perspective

Requirements

- Research skills and the ability to work independently
- Strong interest in green hydrogen i.e., electrolyzers
- Experiences/Proficiency in system dynamics and business models
- Being enrolled at TUM SoM, TUM SoLS, or TUMCS

Please send your application, covering a short motivation letter, CV and a transcript of records, to **sarah.hasslacher@tum.de** until 2024/05/15. In case of any further questions, please use the contact information provided below.

Contact

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