

16.11.2020

## Master's Thesis

# Techno-economic and environmental assessment of carbon dioxide hydrogenation technologies

### Background

Conversion of carbon dioxide has arisen as a necessary technology to mitigate anthropogenic greenhouse gas (GHG) emissions and to facilitate the implementation of a carbon and hydrogen circular economy. Techno-economic assessment (TEA) is a powerful tool to analyze both the technical and economic performance of a chemical process, and prepare subsequent research & development decisions. Moreover, it is imperative to include an environmental perspective in the assessment as society calls for technologies that contribute to a variety of Sustainable Development Goals (SDG).

### Scope of the work

The applicant will perform a techno-economic assessment (TEA) combined with an environmental assessment to identify the impact of different carbon dioxide hydrogenation processes by means of heterogeneous catalysts, including the production of dimethyl ether (DME). Key factors are the source of carbon dioxide, of hydrogen and the carbon footprint of the overall process. This project will be done in cooperation between the *Technische Universität Berlin (Institut für Chemie - Prof. Dr. Schomäcker)* and the *Technical University of Munich (Professorship Circular Economy - Prof. Dr. Fröhling)*. The applicant will be properly trained and guided throughout the project.

Duration: 6 months

Start: flexible

### Contact

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