

Master's Thesis:

Decarbonizing steelmaking: Assessing the social impacts of green steel production

Background

The steel industry faces the need to adopt decarbonization strategies to lower its greenhouse gas emissions. The direct reduction of iron ore using hydrogen and the subsequent further processing in an electric arc furnace is a promising approach ("H-DRI-EAF" route).

In order to analyze the impacts in terms of the triple bottom line (economic-ecological-social), it is necessary to assess the social impacts along the H-DRI-EAF route. The Social Lifecycle Assessment (SLCA) is a tool that can be used in this regard. Although the production of green steel is gaining increasing attention, the current state of research in this field is scarce.

Research Tasks

In addition to clarifying the theoretical and methodological background of steel production and the SLCA method, a review of SCLA in the field of steel production is initially required. The main part of the work will be the assessment and quantification of the social impacts for a case study of green steel production - using SLCA according to the UNEP SETAC Guidelines.

- Literature research on hydrogen steel production and SLCA
- Assessment of the social impacts using SLCA

Requirements

- Research skills and the ability to work independently
- Experiences/Proficiency in Social Life Cycle Assessment/Life Cycle Assessment, e.g. SHDB
- Strong interest in steel production
- 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 inka.hahn@tum.de and sarah.hasslacher@tum.de until 2024/04/30. In case of any further questions, please use the contact information provided below.

Contact

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