Project: Life Cycle Assessment of CO_2 Capture Technologies: Inventory Development and Environmental Impact Evaluation

Vacant: 6-9 months

This master's thesis focuses on the environmental assessment of carbon dioxide (CO_2) capture technologies using the Life Cycle Assessment (LCA) methodology. The work begins with a comprehensive review of the current CO_2 capture technologies, including their operating principles, maturity levels, and environmental challenges. Based on this review, the student will identify and compile the life cycle inventory (LCI) data required to model representative CO_2 capture systems. The thesis will provide practical experience with LCA methodology, including system definition, inventory modelling, and impact assessment using appropriate software and databases. Finally, the developed LCA models will be applied to quantify and compare the environmental impacts of selected CO_2 capture technologies, highlighting the main environmental hotspots and discussing opportunities for improving their sustainability.

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