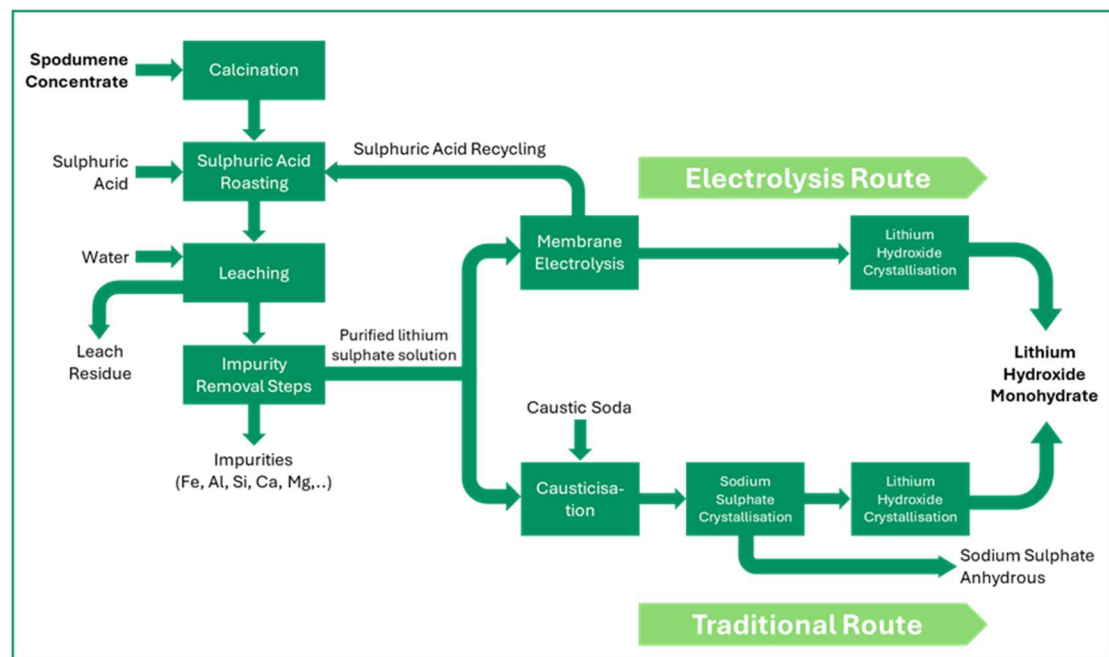


## Simulation-based LCA: Lithium production from spodumene via membrane electrolysis

Lithium is an important critical raw material required for sustainable energy transition. Spodumene, the primary hard rock ore from which lithium is sourced, is mined, concentrated, and refined to battery-grade lithium hydroxide monohydrate (LHM) via different processing steps. Sulphation, followed by causticisation, is the industry-standard process. During causticisation, low-valued sodium sulphate anhydrous (SSA) is generated as a by-product, which increases process complexity and production cost. However, a novel process route is being developed to convert lithium sulphate solution to lithium hydroxide solution via electrolysis. This process avoids the usage of caustic soda and the generation of SSA by-product. As a promising technology, its environmental impact should be investigated.



This thesis will conduct a simulation-based life cycle assessment (LCA) of the membrane electrolysis process. To achieve this, the following will be carried out:

- Literature study on the membrane electrolysis process for LHM production,
- Process modelling with HSC Chemistry simulation tool,
- LCA with OpenLCA or SimaPro,
- Comparison of the membrane electrolysis process for LHM to the industry-standard causticisation process route (process modelling and LCA).

Bei Interesse an diesem Thema wenden Sie sich bitte per Mail an  
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