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Future environmental impacts of hydrogen production and its use in container shipping

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Curriculum Vitae

Shijie Wei was born on 13 November 1994 in Taiyuan, China. After completing his studies at Taiyuan No. 5 Middle School, he enrolled in Inner Mongolia University of Science and Technology, where he pursued a Bachelor's degree in Mining Engineering from September 2013 to July 2017. From September 2017 to July 2020, he pursued a Master's degree in Mining Engineering at China University of Mining and Technology-Beijing. During this period, his research focused on the techno-economic assessment of low-carbon electricity technologies, including coal-fired power plants with carbon capture and storage (CCS) and renewable energy systems, as well as the assessment of CO₂ geological sequestration potential at both basin and city scales. Since February 2021, he has been pursuing a PhD degree at the Institute of Environmental Sciences (CML), Leiden University, under the supervision of Prof. Arnold Tukker and Associate Professor Bernhard Steubing. His research focuses on the life cycle assessment of hydrogen production and utilization in the maritime shipping sector.

List of publications

1. **Wei, S.**, R. Sacchi, A. Tukker, S. Suh and B. Steubing (2024). "Future environmental impacts of global hydrogen production." Energy & Environmental Science **17**(6): 2157-2172.
2. **Wei, S.**, F. M. Kanchiralla, F. Schulte, H. Polinder, A. Tukker and B. Steubing (2026). "Life cycle assessment of hydrogen-based fuels use in internal combustion engines of container ships until 2050." Resources, Conservation and Recycling **226**: 108671.
3. **Wei, S.**, F. M. Kanchiralla, H. Polinder, F. Schulte, A. Tukker and B. Steubing. "Environmental impacts of fuel cell use in deep-sea shipping towards 2050." Applied Energy. (Under Review)
4. **Wei, S.**, A. Tukker and B. Steubing (2026). "Decarbonizing potential of global container shipping with hydrogen-based fuels." Energy & Environmental Science **19**, 264 – 283.