



# Forschungskolloquium | Research Seminar

*Vortrag im Rahmen dieses Seminars*

Titel:

**Essays on the Economics of Low-Carbon Energy Commodities**

Autor:

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Abstract:

This research proposal consists of four proposed research projects in energy economics with a focus on low-carbon energy commodities, mainly hydrogen. First, I present the results of an already completed life cycle assessment of hydrogen production and transport. In a case study, we compare the GWP of renewable and low-carbon hydrogen supplied to Germany. Second, I present a novel global market model named ERIKSSON for renewable hydrogen and its derivatives with strategic behavior and detailed supply. With this model, we want to examine possible future market characteristics of hydrogen and its derivatives in different scenarios. Third, I present an approach to include steel and high-value chemical markets in ERIKSSON. This approach allows an analysis of global hydrogen allocation in a partial equilibrium of steel, high-value chemicals, and hydrogen derivative markets. Fourth, I present an approach using stochastic optimization and modeling to generate alternatives to find an optimal electricity and storage mix for hydrogen suppliers under different regulatory requirements.