(ROGER)- INTEGRATED RENEWABLE ENERGY SYSTEMS FOR HYDROGEN PRODUCTION IN CONGESTED TRANSMISSION GRIDS

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Main goal

The main goals of the project are to determine a sustainable hydrogen production technology integrated with wind and solar energy. This involves conducting a comprehensive comparative technical and economic analysis of hydrogen production through different pathways to understand the most viable options. Factors such as technical and economic variabilities, the impact of carbon pricing, optimum plant size, CO2 avoidance, logistics, and storage will be analyzed to assess the sustainability of green hydrogen technologies.

To achieve this, the project aims to develop data-driven and digital twin dynamic models for analyzing integrated energy systems for hydrogen and fuel production. The integration of multiple energy sources and components will be optimized to reduce installation costs and prevent grid congestion.

The models will consider all aspects related to dynamic behavior and optimization, including emerging technologies and various forms of energy flow scenarios. Ultimately, the project seeks to design integrated energy systems that effectively match energy systems with one another to ensure efficient and sustainable hydrogen production.

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