RED-RES-GH2: Reducing the risk generated by extreme droughts in the Chilean power system with optimal shares of variable renewable energy sources including green hydrogen storage

The core of the Project is to evaluate the potential of variable renewable energy sources, including green hydrogen storage, to balance energy generation during severe drought periods. This evaluation will not only be performed for the first time in Chile but will also include a set of multidimensional indicators for risk management of energy systems customized to the Chilean case, which will serve for policy-making and evaluation.

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Eckdaten

Kurztitel

RED-RES-GH2

Forschungsschwerpunkt

Sustainable Production, Energy Technologies and Smart Materials

Laufzeit

01.04.2024 - 31.03.2027

Fördergeber

ANID

Projektträger

Pontificia Universidad Católica de Valparaíso

Projektleitung

Prof. Dr. Javier Valdes

Ziele

- Evaluate global re-analysis data sets to find the best suitable for the modelling purposes of the Project.
- Propose a replicable methodology to calculate locations, sizes, and penetration rates of variable RES and green hydrogen storage that compensate for energy generation from hydroelectric during extreme meteorological events.
- Develop a framework that prioritizes equity and sustainability in approaches to secure resilience, contributes to clarifying the connections between different policy agendas by positioning risk management as a potential bridging concept to link priori disconnected policy processes as economic development policy, energy security, and resiliency, as well as sustainability and climate change mitigation.
- Propose an indicator for system security, including climate change mitigation and disaster risk management dimensions.
- Propose a RES and green hydrogen development roadmap for Chile that contributes to minimizing the loss of power supply probability in the country during extreme meteorological events based on multicriteria decision-making indicators.
- Evaluate if the Renewable Energy Sources and Green Hydrogen Storage delivered from the model are coherent with the current policy objectives of the country