

Master's Thesis

Modeling the Role of Hydrogen in the Latin American Electricity System: Assessing Feasibility and Impact

Background

Like many regions worldwide, Latin America faces the pressing challenge of transitioning towards a sustainable and decarbonized energy future, and hydrogen has emerged as a promising solution due to its potential to store and deliver clean energy. The integration of hydrogen within the electricity system holds immense promise for Latin American countries, enabling the efficient utilization of renewable energy sources, reducing curtailment, and decarbonizing sectors such as transportation and industry.

However, the successful integration of hydrogen into the Latin American electricity system requires a comprehensive understanding of its feasibility and impact. This necessitates the development of models that can simulate and assess the dynamic interactions between hydrogen production, storage, transportation, and consumption within the existing electricity infrastructure.

This master's thesis aims to explore the role of hydrogen in the different Latin American country's electricity systems through the optimization tool <u>urbs</u>. The primary objective is to assess the feasibility of hydrogen integration and evaluate its potential impact on critical aspects such as energy generation, infrastructure requirements, and emissions reduction targets. By analyzing various scenarios and policy interventions, this research seeks to provide valuable insights into the challenges, opportunities, and trade-offs associated with adopting hydrogen technologies in the Latin American Country context.

Requirements

- Analytical thinking and an independent structured way of working
- Strong interest in energy system modeling
- Good English and Spanish skills (Required for the literature research as most sources are only in Spanish)
- Programming experience is of advantage but not necessary (Python preferred)

Expected work

- Country electricity model in urbs of a specific Latin American Country.
- Implementation of the Hydrogen Roadmap within the electricity system.
- Comprehensive analysis of the results and comparison with the roadmap.

Contact

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