



Internship Proposal: Analysis of Renewable Hydrogen Use under New EU Regulations

Background

Irex Consulting is a business engineering consultancy company specialized in the energy & utility sectors. We are experts in tackling operational business challenges across the entire value chain – production, sourcing & trading, grids, and supply.

Assignment

The European Union has recently implemented new regulations aimed at promoting the use of renewable energy sources, significantly impacting the hydrogen market. Under these regulations, particularly the Renewable Energy Directive III (RED III), there is a growing emphasis on decarbonizing various sectors through the adoption of green technologies, including renewable hydrogen. This shift presents a unique opportunity for industries to explore renewable hydrogen as a viable energy alternative.

The primary objective of this internship is to develop a comprehensive understanding of the potential applications and economic viability of renewable hydrogen within a selected industry, through the development of a renewable hydrogen production forecasting model.

- Industry Selection and Needs Assessment:
 - Select an industry with high potential for renewable hydrogen use.
 - Analyze the industry's energy needs and evaluate how renewable hydrogen can meet these requirements.
 - Analyze regulatory context and drivers for adoption of renewable hydrogen in the selected industry.
- Renewable energy sources (RES) analysis:
 - Study various types of RES (solar, onshore & offshore wind) and the impact of their production profiles and capacity factors in the context of renewable hydrogen production.
 - NOTE: if relevant the RES scope can be extended to involve other energy sources (hydro, biomass, nuclear, ...).
- Economic analysis:
 - Expand irex Consulting's renewable hydrogen production model to encompass aspects of economic analysis.
 - Utilize this enhanced model to conduct a comprehensive economic evaluation of the entire renewable hydrogen production process, which means:
 - Analyze the cost of production for the different scenarios
 - Calculate the cost of produced renewable hydrogen, factoring in initial investment, operational costs, and potential revenue streams.

Objectives

- A comprehensive report outlining the conducted research.
- A conclusive presentation to irex Consultants aimed at augmenting their understanding of renewable hydrogen production, guided by insights from the research.
- An upgraded hydrogen production model designed for reuse in future economic analyses.

Schedule Beginning of July -- End of August

Supervisor

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