



## Internship Proposal: BE imbalance modelling; correlation between RES forecasting errors & its neighbors on imbalance prices.

### 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

As renewable energy penetration increases, forecasting errors in wind and solar generation create greater uncertainty in electricity markets, leading to price volatility and imbalance costs. Understanding how these forecasting errors translate into observed imbalance prices is crucial for improving market efficiency and risk management.

This internship will focus on establishing a foundation for modeling the BE imbalance market by analyzing the link between renewable energy forecasting errors and imbalance price fluctuations. The research will also examine cross-border correlations with neighboring markets to assess how deviations in renewable generation influence overall market imbalances.

Through this research, the intern will gain valuable insights into:

- The impact of renewable forecasting errors on imbalance prices and market stability
- The role of cross-border energy flows in mitigating or exacerbating imbalances
- Key methodologies for modeling imbalance markets and improving forecasting accuracy
- Strategies for long-term imbalance management to support a more resilient electricity system

By exploring these dynamics, the findings will contribute to developing more effective forecasting models and long-term imbalance management strategies, helping market participants navigate the evolving challenges of a renewable-driven electricity system.

### Objectives

- A brief market study on Elia Imbalance trends and renewables penetration;
- A detailed review correlating past imbalance price volatility with installed production capacity, in Belgium and its neighboring countries;
- A comprehensive report outlining the conducted research;
- A conclusive presentation to irex Consultants aimed at augmenting their understanding on trends for imbalance market volatility and its correlation with the penetration of renewable energy sources, guided by insights from the research.

### Preparation Material

- <https://www.elia.be/en/grid-data>
- <https://www.elia.be/en/grid-data/balancing/imbalance-prices-15>
- Relevant irex training material will be provided

**Schedule** Beginning of July -- End of August (Flexible)

### Contact

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