Case Study Energy Economist – Power Demand Forecast for the German Industry until 2035

Dear Andrea,

As already mentioned, we would like to use this case study to see how you can contribute with your extensive economic expertise to our daily work in a fruitful way. That's why we would like to see how you tackle the challenge to forecast the annual electricity consumption of the German industry until the year 2030. We have prepared the following questions for this purpose:

- **Data analysis & economic indicators**
  - We would like to forecast the production of energy-intensive industries in Germany and the associated electricity demand from 2025 to 2035 in yearly granularity. The following data sets are available as starting points:
    - Historical data set (2014-2024)
      - Targets
        - Power_Demand_DE_Industry (TWh)
        - Industrial_Production_Index_DE (%, indexed)
      - Features
        - Power_DE_Prices (Euro/MWh)
        - Gas_TTF_Prices (Euro/MWh)
        - CO2_EUA_Prices (Euro/t)
        - Coal_API2_Prices (Dollar/t)
    - Forecasts data set (2025-2035)
      - Features (nominal prices)
        - Power_DE_Prices (Euro/MWh)
        - Gas_TTF_Prices (Euro/MWh)
        - CO2_EUA_Prices (Euro/t)
        - Coal_API2_Prices (Dollar/t)
  - Familiarize yourself with the data and create a list of possible additional features / indicators that you would like to test/use for the prediction problem. What are the economic thoughts behind your choice for additional model input features?
  - How do you see the evolution of the German industry in the future in general?
- **Modeling framework**
  - What kind of modeling framework would you like to use for this research question? Why? What alternatives do you see?
  - If possible, create an initial forecast in Python using the data provided and potentially supplemented by additional predictive features you have researched.
  - What project blocks & timeline would you suggest extending the model to all European countries (EU27 + CH + NO + UK) when working as economist in our team in the future?
- **Presentation**
  - Present your findings from the questions in an appealing way on a few slides.
  - You can present your work to the entire team in a maximum of 20 minutes. It would be great if at least part of the presentation could be given in German.

Please send us the **presentation and the Python code (e.g. repository link)** you might have created **by 08.07.2025 17:00 at the latest**. We don't want you to spend more than 5 hours on the task. If you have any questions, do not hesitate to contact us.

We are really looking forward to meeting you!
Team Strategic Market Analysis