Renewable Energy Development and Carbon Emission Reduction in Finland

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Motivation

As a graduate student, one of the very first things after arrived in Finland is to sign the electricity contract for the rented student apartment. In reviewing various electricity contracts, I noticed that the source of energy—such as hydro, wind, or coal—was specified. Typically, contracts featuring sustainable energy sources were priced higher. This observation sparked my curiosity about the real economic impact of different energy types and their broader implications for both individuals and society. To gain a deeper understanding, I have decided to analyze Finland's progress in renewable energy development and its impact on carbon emission reduction or perhaps the economy if data is sufficient. This investigation will provide insights into the economic and environmental consequences of energy choices, benefiting both individual decision-making and broader societal understanding.

Early Methods

1. **Data Collection**: Mainly from some authority both of Finland or the EU, such as Eurostat, International Energy Agency (IEA), and Energy Authority Finland.
2. **Data Processing and Analysis**:
    - Data Cleaning and Preprocessing
    - Python and Tableau.
    - Time series and regression analysis.
3. **Visualization Design**:
    - Trend Analysis
    - World map

(Probably as a bonus) How to select your electricity contract:

- **Data Crawling**: Crawl down all types of electricity contract in Finland. Also, analyze and combine the data piece together as a whole.
- **Data Visualization**: Develop visualizations to illustrate how different types of contracts —particularly those involving renewable energy—affect pricing and highlight the trade-offs between cost and sustainability.

Expected Results

- **Insights**: The analysis and visualization are expected to clearly demonstrate Finland's advancements in renewable energy and its specific effects on carbon emissions reduction.
- **Comparative Analysis**: By comparing Finland with other European countries, the project will reveal Finland's relative strengths and weaknesses in renewable energy development. This comparative approach will offer empirical evidence for other countries to formulate effective policies and foster international collaboration.
- **Electricity Contract Recommendations**: The findings will offer insights into how different types of electricity contracts affect pricing and sustainability, providing practical guidance for individuals in selecting energy sources.

This project aims to leverage detailed data visualization to showcase Finland's achievements in renewable energy and offer valuable support for family energy decisions and environmental policies, contributing to broader climate action and sustainable development goals in UN SDGs .