Evaluating Energy Transition Success: Insights from Global Energy Consumption Data

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Understanding Energy Transition Success

Goal

To assess whether countries with high historical energy consumption have successfully transitioned to sustainable energy sources

Key Questions

Which countries have historically consumed the most energy?

What are their individual energy usage trends?

How do these trends compare to other nations?

Dataset Overview

Source: Kaggle dataset based on "Our World in Data"
https://www.kaggle.com/datasets/whisperingkahuna/energy-consumption-dataset-by-our-world-in-data

Scope:

Evaluate annual energy consumption data from **1965 to 2023** for each country

Energy types

Fossil fuels, **nuclear**, and **renewables** (including **hydro**, **wind**, **solar**, and **biofuel**)

Energy Dataset Preprocessing Pipeline

1.Data Loading

- Use `pandas.read_csv` to load the energy dataset in CSV format

2.Data Cleaning

- Handle missing values
- onvert data types
- exclude non-country entities

3.Completeness Analysis

- Assess the availability and completeness of data across different countries and years to identify gaps and ensure comprehensive coverage.

4.Filtering and Transformation

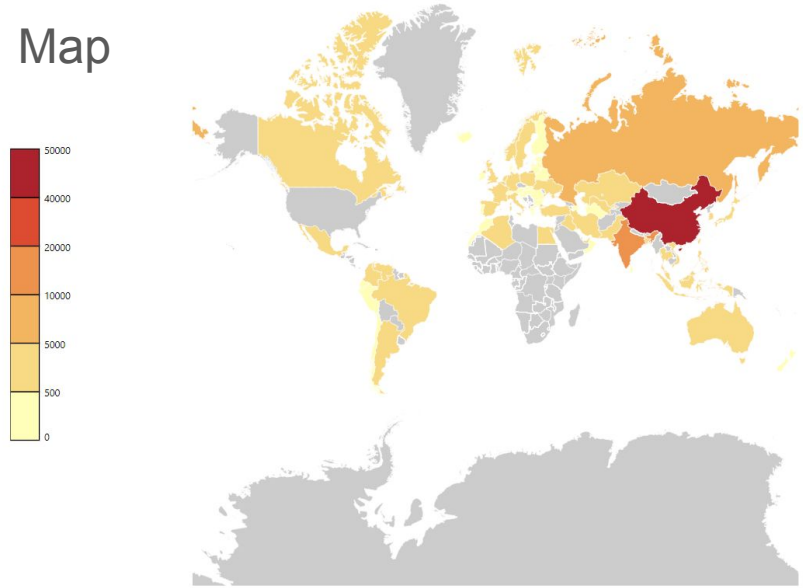
- Filter the data by specified year ranges
- Exclude non-country entities
- Ensure data completeness
- Restructure it by grouping countries
- Years to prepare for further analysis.

5.Conversion to JSON

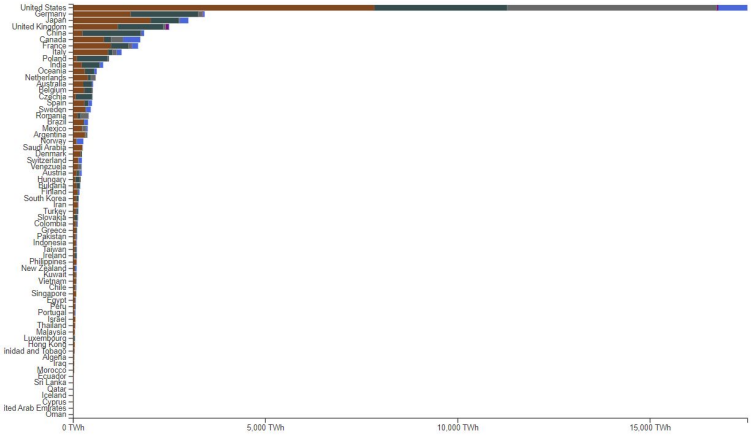
- Use the `json` module to serialize the cleaned
- structured data into a JSON format
- ensuring it is organized for seamless integration with visualization tools.

Overview of Visualization

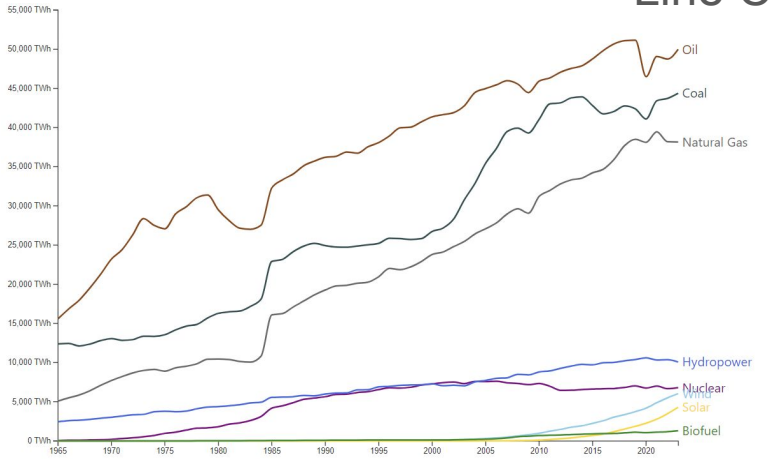
Map



Stacked Bar Chart



Line Chart



Live Demo