CO_2 Emissions & Economics Explorer

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Objectives

- Show global per-capita CO_2 emissions with an interactive map, bar chart, and line chart.
- Let users pick countries and years to compare emissions, economy, and energy use.
- Reveal multivariate relationships via a parallel-coordinates plot.
- Rank ***greenness*** with a radar plot of normalized scores for renewables, CO_2 emissions, energy usage, and GDP.

Introduction

Climate and economic well-being are linked: richer nations often emit more carbon but also invest more in renewables. Our CO_2 Emissions Economics Explorer lets you:

- See which countries emit the most CO_2 per person
- Track emission trends over time
- Explore how emissions relate to GDP, energy use, and renewable share

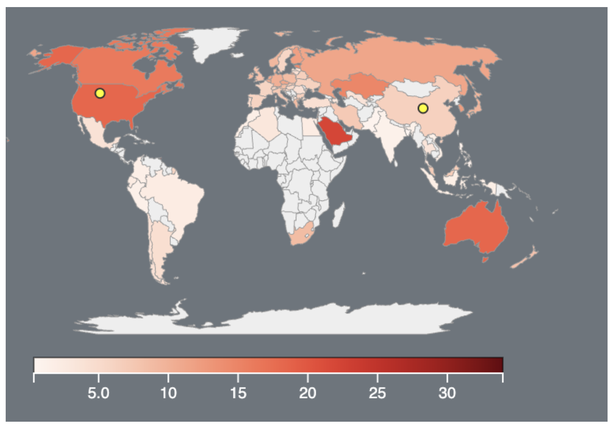
Data

We combined five open data sources by ISO3 country code:

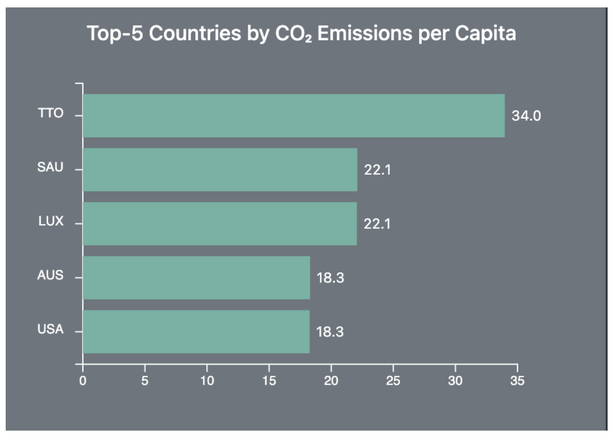
- CO_2 Emissions per Capita[1]
- GDP per Capita[2]
- Renewable Energy Share[3]
- Energy Use per Capita[4]
- Population[5]

Spatial & Temporal Charts

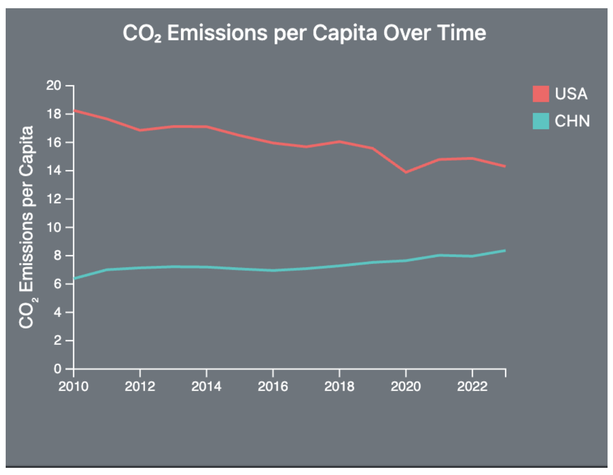
- **Global CO_2 Emissions Map**
  - A world map colored by per-person CO_2 emissions.
  - Use the *Year* dropdown to select any year (2010-2023).
  - Darker red = higher emissions per capita.



- **Top-5 Emitters Bar Chart**
  - Shows the five countries with the highest CO_2 per person in the chosen year.
  - Click a bar to highlight that country across all views.

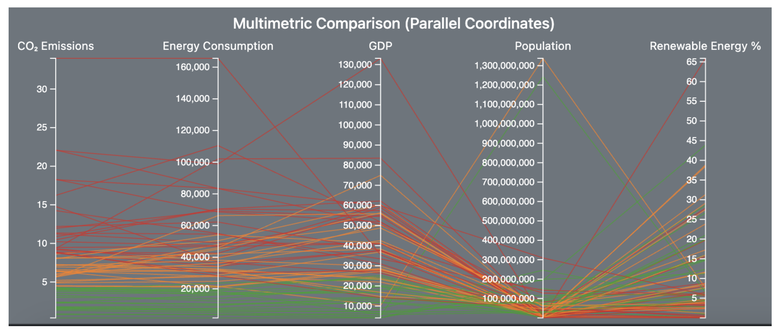


- **CO_2 Emissions Over Time**
  - A multi-line chart of per-person CO_2 emissions from 2010 to 2023.
  - *Brush* across years to zoom into a specific time range.

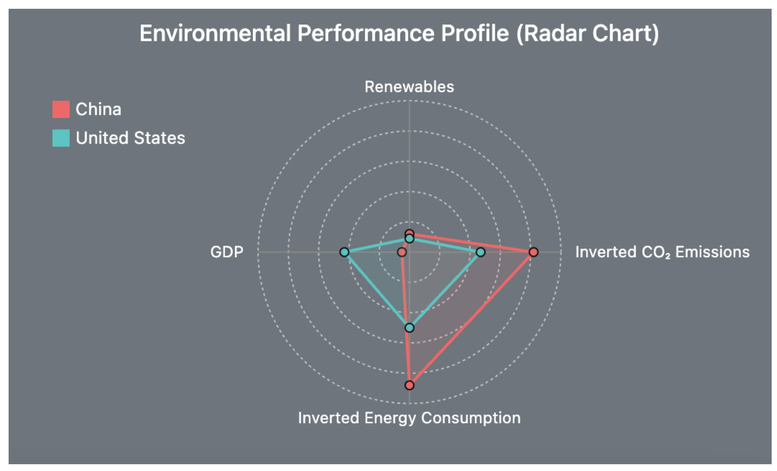


Multivariate Performance Charts

- **Parallel Coordinates Plot**
  - Compares countries on five axes: CO_2 emissions, renewables %, GDP, energy use, and population.
  - Lines are colored by low/medium/high carbon group.



- **Environmental Performance Radar**
  - Displays a ***greenness*** score for each country on four axes:
    - Renewable energy share
    - Inverted CO_2 per capita
    - Inverted energy use per capita
    - GDP per capita (capacity to invest in green tech)
  - Larger filled area = stronger overall environmental performance.



Insights

- **Regional Differences:** Europe and North America emit much more CO_2 per person than Africa or South America.
- **Top Emitters:** Small, wealthy states (e.g. Saudi Arabia, Trinidad Tobago) lead per-capita emissions.
- **Trend Patterns:** Many high-income countries peaked in the early 2010s and have since declined, while emerging economies continue to rise.
- **Cluster Insights:** Parallel coordinates show distinct groups-some high-emission countries also have low renewables, low GDP, and high energy use.
- **Green Leaders:** Radar plots highlight ***greener*** nations that combine moderate emissions, strong renewable shares, and healthy GDP.

References

[1] https://ourworldindata.org/co2-and-greenhouse-gas-emissions, .
[2] https://ourworldindata.org/economic-growth, .
[3] https://ourworldindata.org/renewable-energy, .
[4] https://ourworldindata.org/grapher/per-capita-energy-use, .
[5] https://api.worldbank.org/v2/en/indicator/SP.POP.TOTL, .