DATA SCIENCE PROJECT CANVAS

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Title: Equity and Trends in Global CO_2 Emissions per Capita

1. Problem Statement

What problem are you trying to solve? What larger issues do the problem address?

Countries have very different CO_2 emissions per capita. Developed countries often show decreasing trends, while developing ones are still increasing. This raises the issue of carbon equity: Who should bear greater responsibility?

2. Outcomes/Predictions

What prediction(s) are you trying to make? Identify applicable predictor (X) and/or target (y) variables.

- Forecast CO_2 emissions per capita trends
- Cluster countries into High / Medium / Low emitters

Target(y): Annual CO_2 emissions (per capita)

3. Value Propositions

What are we trying to do for the end-user(s) of the predictive system? What objectives are we serving?

- Policy makers: comparative insights for climate negotiations
- Public: awareness that some small rich countries emit more per capita than large developing ones

4. Data Acquisition

Where are you sourcing your data from? Is there enough data? Can you work with it?

Carbon (CO2) Emissions , population and total CO_2 datasets from public dataset.

1. Our World in Data, https://ourworldindata.org/
2. Kaggle

5. Modeling

What models are appropriate to use given your outcomes?

- Clustering: KMeans / Hierarchical
- Forecasting: Linear Regression/ARIMA
- Visualization: Choropleth maps, Bubble charts, Line graphs

6. Model Evaluation

How can you evaluate your model performance?

- Forecasting → RMSE, MAE

7. Data Preparation

What do you need to do to your data in order to run your model and achieve your outcomes?

- Clean dataset
- Normalize/scale data
- Aggregate by OECD vs Non-OECD or by regions
- Create new features: decade averages, growth rates

Modified from Bill Schmarzo's Machine Learning Canvas and Jasmine Vasandani's Data Science Workflow Canvas for CP-DSAI @AIT