Global CO_2 Emissions Tracker by Sector

Introduction

Carbon dioxide (CO_2) emissions are a major contributor to global climate change. Tracking these emissions across sectors such as energy, transport, and industry is vital for developing effective climate policies. This project focuses on building a dashboard that visualizes CO_2 emissions by country and sector to support data-driven policy decisions.

Abstract

This project utilizes publicly available multi-year CO_2 emissions datasets to create a Tableau-based global dashboard. The dashboard displays emissions by sector and allows users to filter data by country and year. Additional calculations such as emissions per capita and per GDP provide a more accurate view of national contributions. The final deliverables include an interactive dashboard and a policy brief highlighting top emitters and emission trends.

Tools Used

- **Python**: Data cleaning and transformation using pandas.
- **Excel**: Supporting calculations and exports.
- **Tableau**: Visualization of global and sector-specific emissions.

Steps Involved in Building the Project

1. **Download Emissions Datasets**: Acquire multi-year emissions data from Kaggle:
   - CO_2 Emissions by Sector (Datamavenx)
   - International Greenhouse Gas Emissions (UN dataset)
   - Global CO_2 and Greenhouse Gas Emissions (Our World in Data)

2. **Data Cleaning and Merging**: Use Python (pandas) to clean datasets, handle missing values, and standardize column formats.

3. **Metric Calculations**:

   o Compute CO_2 emissions per capita using population data.

   o Calculate emissions per unit of GDP to assess economic efficiency.

4. **Dataset Preparation**: Finalize the dataset with relevant columns and export to CSV/Excel for Tableau.

5. **Dashboard Creation**:

   o Use Tableau to build a global map showing country-wise emissions.

   o Create bar graphs for sector-wise comparisons.

   o Add filters for country and year.

6. **Policy Brief**: Draft a concise PDF summary of key findings, including a list of top polluters and trend insights.

Conclusion

The project enables easy monitoring of global CO_2 emissions by sector and country. With dynamic visualization tools and standardized metrics, the dashboard provides a strong foundation for climate strategy and awareness campaigns. This tool is expected to assist policymakers, researchers, and environmental advocates in making informed decisions based on reliable emissions data.