A COMPREHENSIVE ANALYSIS ON Climate Action and Carbon Emissions

R sandeep kumar W Rexlin S Shakthisurya| Dr Asnath Phamila | SCOPE

Motivation/Introduction

Climate change is a major global threat, driven by human activities like burning fossil fuels, deforestation, and industrialization. It leads to global warming, extreme weather, and rising sea levels. SDG 13 urges immediate action to cut emissions, boost resilience, and transition to sustainable energy to ensure a livable future.

SCOPE of the Project

This project uses exploratory data analysis (EDA) on a global dataset to:

- Track carbon emissions and climate indicators across countries and years.
- Identify major contributors and trends in emissions.
- Explore links between emissions, renewable energy, forest area, and extreme weather events.
- Provide insights for future modeling and policy aligned with SDG 13.

Methodology

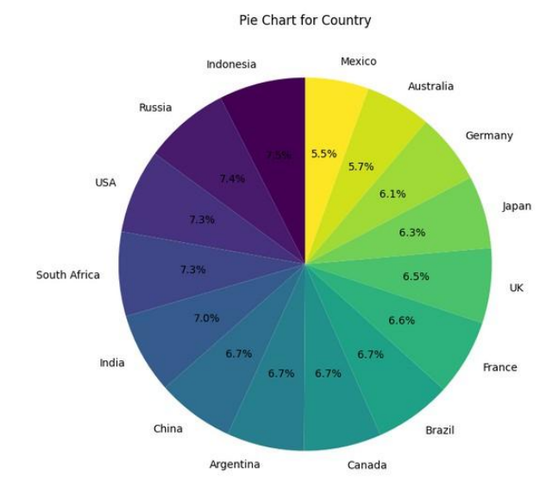
- Data Preparation: Cleaned and organized data on emissions, temperature, rainfall, population, and more.
- Analysis: Used visualizations (scatter plots, line charts, heatmaps) and statistical methods to uncover patterns and correlations.
- Interpretation: Highlighted key findings and their policy relevance.

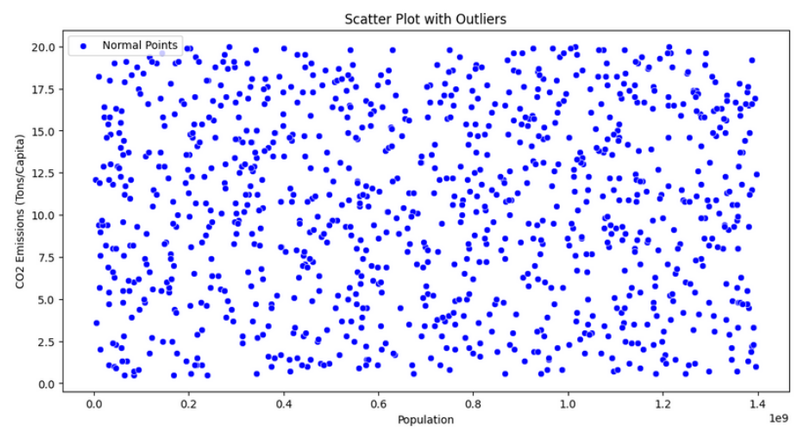
Tools: Python, Pandas, Seaborn, Statsmodels, Scipy

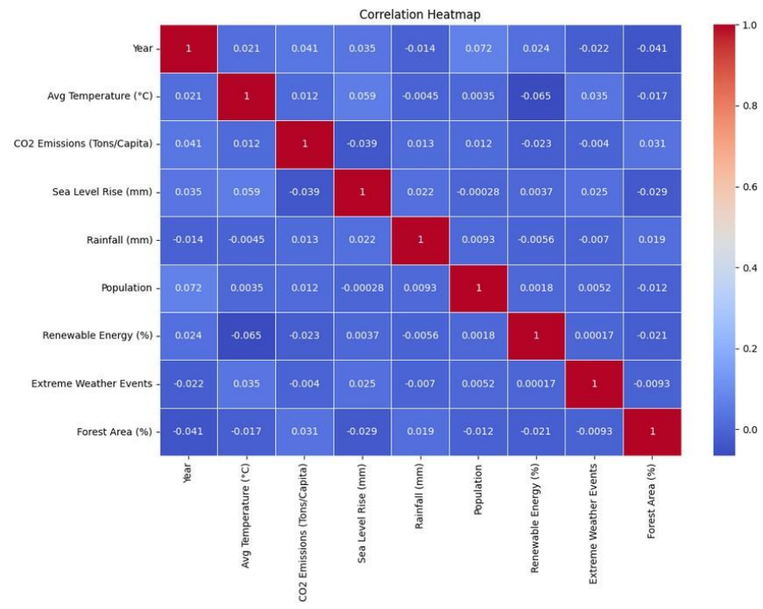
$$MAE = \frac{1}{n}\sum_{i=1}^{n}|y_i - \hat{y}_i|$$

$$MSE = \frac{1}{n}\sum_{i=1}^{n}\left(Y_i - \hat{Y}_i\right)^2$$

Key Visuals & Results







Conclusion

The analysis shows rising emissions and temperatures, with notable differences among countries. Greater renewable energy use and forest area help lower emissions. The results underscore the need for urgent action, sustainable practices, and strong policies to achieve SDG 13 and combat climate change.

Reference

1. United Nations SDG 13: Climate Action
   Source: https://sdgs.un.org/goals/goal13
2. IPCC (Intergovernmental Panel on Climate Change) Reports
   Source: https://www.ipcc.ch

Contact Details

shakthisurya.s2023@vitstudent.ac.in
rexlin.w2023@vitstudent.ac.in
sandeepkumar.r2023@vitstudent.ac.in