Project Brief: Analysis of CO2 Emissions, Population Growth, and GDP in Nigeria

Project Title
Analysis of CO2 Emissions, Population Growth, and GDP in Nigeria: Understanding Trends and Implications for Sustainable Development

Project Objective
The objective of this project is to analyze the interrelationships between CO2 emissions, population growth, and GDP in Nigeria. The aim is to uncover trends, calculate year-over-year growth rates, and understand the correlation between economic performance and environmental impact. The insights gained will inform policy decisions and promote sustainable development.

Scope of Work
1. Data Collection and Preparation
   - Collect historical data on population, GDP, and CO2 emissions (including land use change) for Nigeria.
   - Ensure the data set includes records from 1850 to 2023.
   - Handle missing data using appropriate methods, such as forward filling.

2. Data Analysis
   - CO2 Emissions per Capita: Calculate CO2 emissions per capita to understand the average carbon footprint.
   - Year-over-Year Growth Rates: Calculate the year-over-year growth rates for population, GDP, and CO2 emissions.
   - Correlation Analysis: Analyze the correlation between GDP and CO2 emissions to understand their relationship.

3. Visualization
   - Created line plots to visualize CO2 emissions per capita, population, and CO2 emissions over time.
   - Generated scatter plots to illustrate the relationship between GDP and CO2 emissions.

4. Insights and Interpretation
   - Interpret the trends and correlations to derive meaningful insights.
   - Discuss the implications for sustainable development and environmental policies.

Methodology
- Data Sources: Utilize reliable sources such as Our World in Data, Global Carbon Project for data on population, GDP, and CO2 emissions.
- Tools: Use Python and libraries like pandas, matplotlib, and seaborn for data analysis and visualization.
- Statistical Analysis: Apply statistical techniques to calculate growth rates and correlation coefficients.

Conclusion

This project will provide valuable insights into the dynamics of CO2 emissions, population growth, and GDP in Nigeria. The analysis aims to support informed decision-making for sustainable development and effective environmental policies. By understanding these interrelationships, Nigeria can continue to grow its economy while minimizing its environmental impact.