

Analyzing Climate Change Based on World Bank Data (1990-2010)

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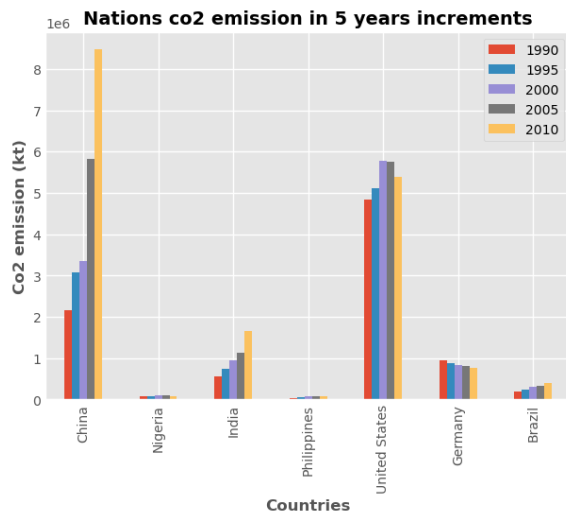
GITHUB LINK: <https://github.com/seyifalope/Statistics-and-Trends>

Abstract

This project aims to investigate climate change using data obtained from the World Bank. Seven countries across different continents were selected, and the relationship between the following factors on climate change were studied: CO2 emissions (kt), urban population, electric power consumption (kWh per capita), and forest land (% of land area).

The analysis of the factors contributing to climate change revealed that there are some relationships between these factors in emerging countries such as Brazil, China, and India.

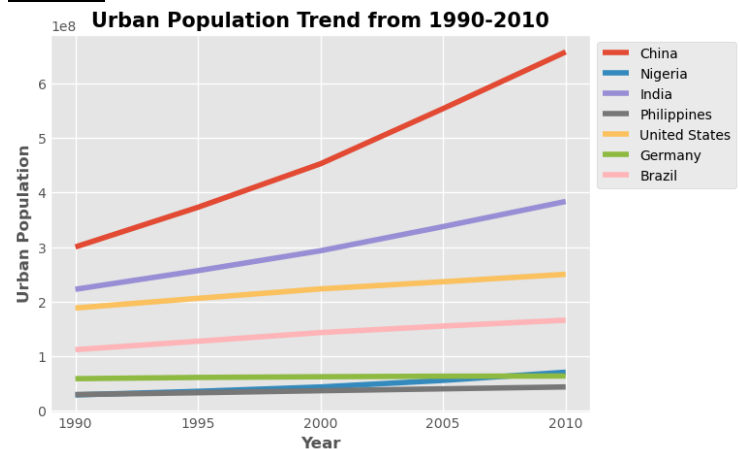
Chart. 1



The bar graph in Chart 1 above displays the CO2 emissions (kt) for seven selected countries from 1990 to 2010, in five-year increments. The chart clearly indicates that China is the largest emitter of CO2, with over a 400% increase in emissions over a 20-year period. India and Brazil also show an upward trend in CO2 emissions over the

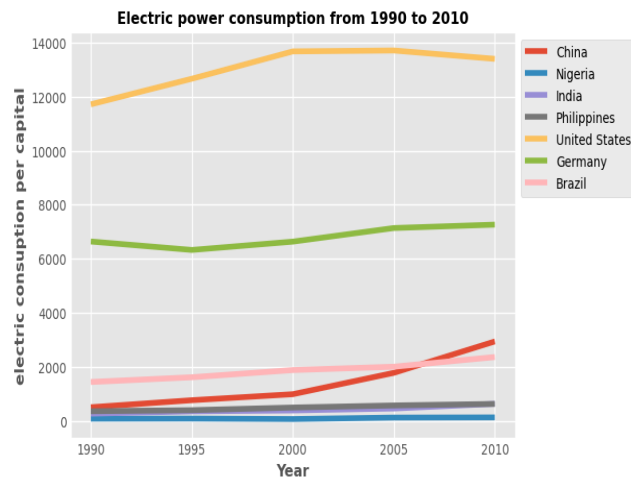
years. This upward trend is also reflected in the urban population trend for these countries, as shown in Chart 2. There is a positive relationship between CO2 emissions and urban migration in China, India, and Brazil.

Chart 2



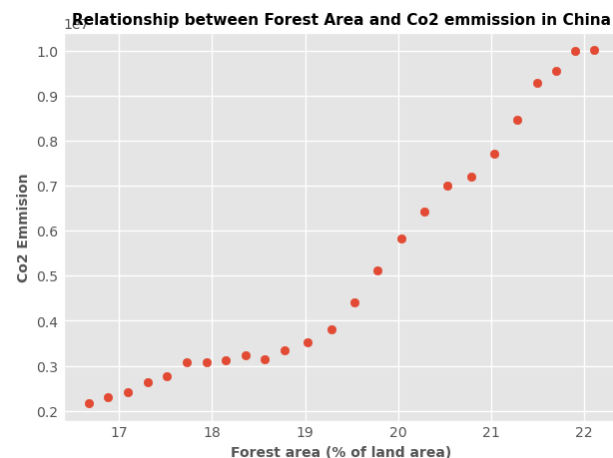
The line plot in chart 2 provides a clear illustration of the population trends for the selected countries over time and provides insights into the growth of urban populations. By examining the plot, we can observe that China had the highest population growth of over 200%, from 300 million in 1990 to 658 million in 20 years. This was followed by India, the United States, and Brazil. By comparing the CO2 emission and urban population charts, we can see that China and Brazil exhibit similar upward trends.

Chart 3



By examining the electricity power consumption data for the selected countries, we can observe that at China, India, and Brazil have seen a steady increase in electricity consumption over the years. When comparing this trend with the other trends shown in the charts above, it suggests that the upward trend in electricity consumption per capita is driven by and urbanization, particularly in emerging economies such as China, India, and Brazil.

Chart 4



Surprisingly, the scatter plot in Chart 4 shows a positive relationship between forest area and population for China, despite the upward trends in CO2 emissions and urban growth, which are often associated with deforestation and

environmental degradation. This suggests that China may be implementing effective measures

to protect its forest area and maintain sustainable development.

However, this is not the case for Brazil, which has a similar upward trend in urbanization and CO2 emissions as China as seen in chart 5

Chart 5

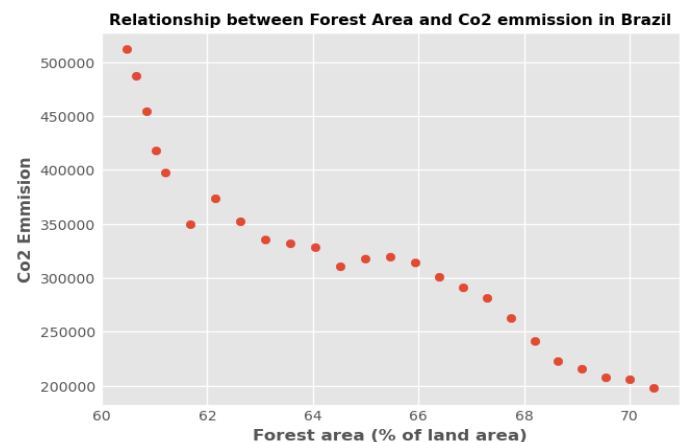


Chart 5 shows a negative relationship between forest area and CO2 emissions in Brazil, which suggests that the increase in CO2 emissions is negatively affecting the forest area. This could be due to various factors such as deforestation, urbanization, and land development to accommodate a growing urban population, as shown by the positive relationship between these variables.

Conclusion.

When analyzing climate change in Brazil, it becomes clear that there is a correlation between CO2 emissions, urban migration, and electricity consumption per capita. However, there is also a negative relationship between CO2 emissions and forest area. This suggests that emissions resulting from human activities such as urbanization and land development lead to deforestation, which has a negative impact on the environment and climate. Brazil is home to the Amazon rainforest, which plays a critical role in regulating the global climate thus, efforts must be taken to reduce emissions from human activities while promoting sustainable land use practices that protect and restore forest land