# The Financial Implications of Climate Change.

**By MARIAM TOLANI, MALIKI (22060326)**

***GitHub Link: https://github.com/Mahtolaa/ADS1--Clustering-And-Fitting-Project***

University of Hertfordshire UH

## ABSTRACT

Global or regional climate patterns have undergone a significant and long-lasting shift, which is mostly ascribed to the increased atmospheric carbon dioxide levels brought about by the burning of fossil fuels in the post-industrial era. These climate changes have a wide range of effects, from altered precipitation patterns to rising sea levels and higher temperatures, all of which are extremely dangerous for human survival. Acknowledging the seriousness of these challenges, world leaders and decision-makers have held discussions targeted at reducing the negative consequences of climate change. Using World Bank statistics, this study examines the relationship between a country's economic success as indicated by GDP per capita and CO2 emissions, a key contributor to climate change.

## INTRODUCTION

"Climate change" is the phrase used to describe significant and prolonged changes in temperature and weather patterns brought on by an increase in industrial, commercial, and economic activities. Climate change's effects include altered rainfall patterns, rising sea levels, rising temperatures, and other natural phenomena that several experts have warned could have an impact on human life. Thus, it has been discussed frequently by world leaders in an effort to decrease the threats it poses to humanity and its way of life. This study attempts to examine CO2 emissions, one of the main contributors to climate change, and further connect it to a nation's GDP per capita.

## METHODOLOGY

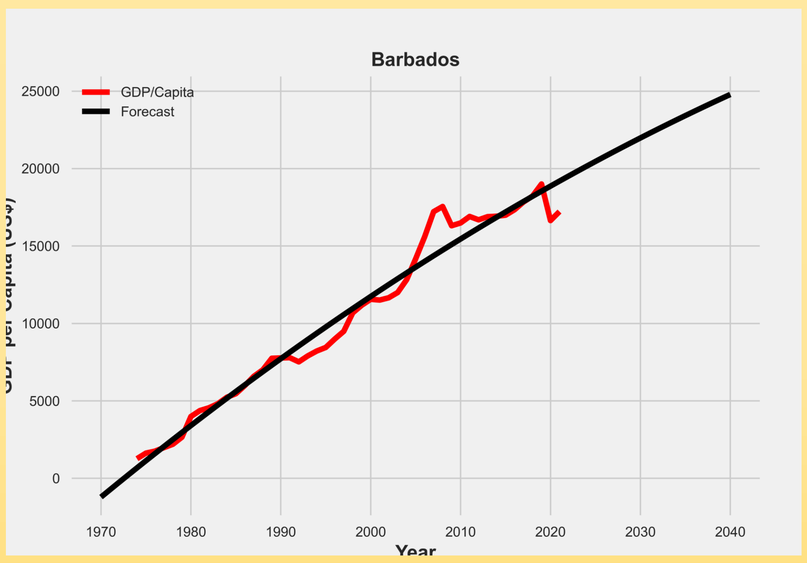
We investigated the relationship between GDP per capita and CO2 emissions using a data-driven methodology. We created a number of graphical representations using data from the World Bank to show trends and patterns across time and between various countries. In addition to scatter plots that group nations into clusters according to CO2 emissions and GDP per capita for the years 2009 and 2019, the visualisation also includes line graphs showing the historical and projected GDP per capita for Argentina, Barbados, and Honduras.

## EXPLORATORY DATA ANALYSIS

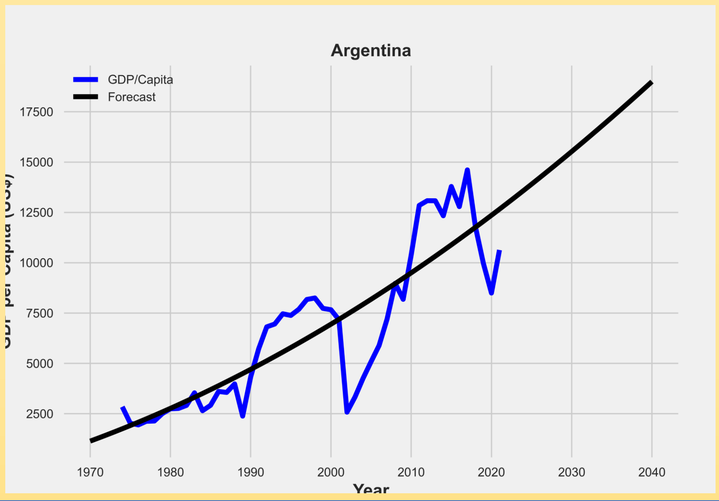
We looked at the connection between GDP per capita and CO2 emissions in the context of Latin America and the Caribbean, where economic development differs greatly throughout countries. It is noteworthy to acknowledge the income classes of the nations included in our investigation.

- Barbados is categorised as a nation with a "high income."
- Argentina falls within the "Upper Middle-Income" category of countries.
- Honduras is classified as a nation with "Lower Middle Income".

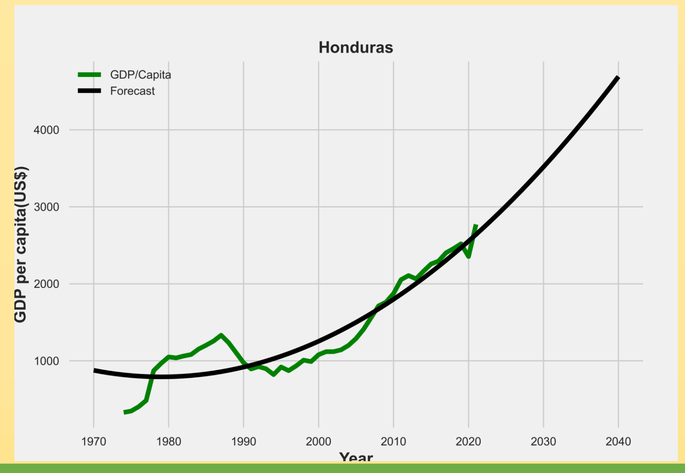
These nations' line graphs show how their GDP per capita has changed over time.



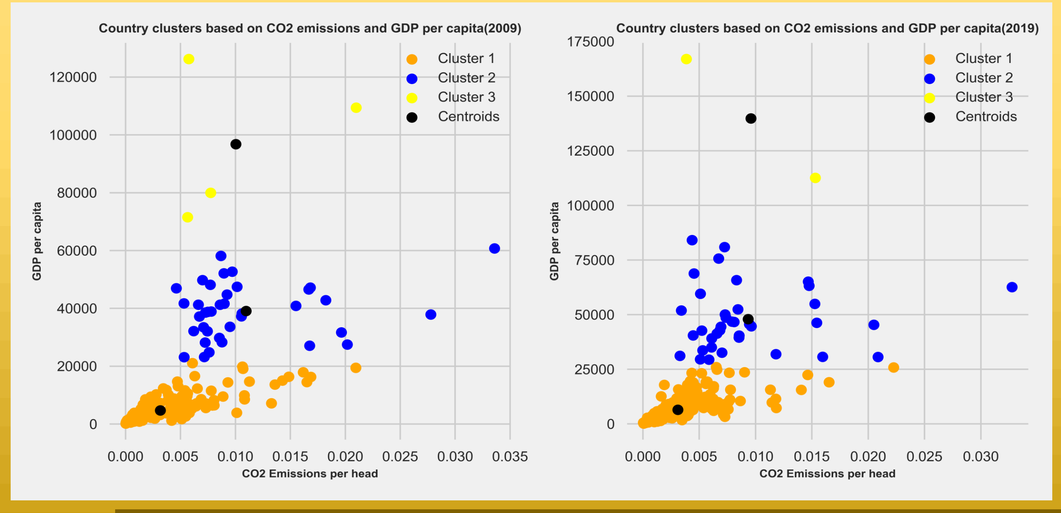

Barbados is a high-income nation that routinely has a greater GDP per person than Honduras and Argentina. This implies that Barbados's level of life and economic growth are higher.




Argentina, which is categorised as an upper middle-income nation, exhibits variations in GDP per capita, which are probably caused by a range of economic factors. The projected trend shows a gradual but moderate rise in GDP per person.




Compared to the other two countries, Honduras, which is classified as a lower middle-income country, has a lower GDP per capita. But it's crucial to remember that lower middle-income nations frequently confront particular economic difficulties, and that a lack of resources among other things may limit their ability to grow.




Turning our attention to the scatter plots, we see the clustering of countries in 2009 and 2019 based on CO2 emissions and GDP per capita. We can better comprehend the connection between environmental effects and economic performance thanks to these graphs.

A clustering of countries was seen in 2009, with high-income Barbados emerging as an anomaly due to its lower CO2 emissions per person relative to its high GDP per person. Argentina and Honduras fit into similar-looking groups based on how much money they make.

## CONCLUSION

This study emphasises that there is a clear correlation between a nation's economic performance and its CO2 emissions. The comparative cluster scatter plots and the temporal line graphs together imply that countries' CO2 emissions often rise with economic growth, indicating the environmental cost of development. The cluster movement over time, however, also suggests that this link may change in the future owing to advancements in technology, a drive towards renewable energy sources, or stricter environmental regulations. To completely comprehend the dynamics of this relationship and to determine methods for sustainable economic growth that have the least negative effects on the environment, more investigation and study are required.