# University of Hertfordshire UH

## Climate Change Data Analysis Based on World Bank Data

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**GitHub Repository:** https://github.com/srashid95/ads-assignment-2.git

**Abstract:**

In this data analysis project, I have used the world bank data to get some useful information about climate change. I studied and used some parameters (indicators) to get to know about the effect of these indicators in the change of climate. To support my research graphically, I used Python's Matplotlib library to plot the graphs. I have found that emission of $CO_2$ is inversely proportional to the Forest area (sq. km). Through another comparison, I got to know that the agricultural land is inversely proportional to the access of electricity. In countries where the agriculture system is enormous, the percentage of people having access to electricity is subsidiary in comparison with other nations. The limitation of this research is that I am only using the data of some of the countries in the world.

In terms of specific data on climate change, there are a number of different metrics that are often used to measure the impact. One of the most commonly cited metrics is the $CO_2$ emission in different countries, which has been increasing. This increase in $CO_2$ emission is also leading to other effects, including rising temperature.

Some of the countries were selected to compare the change in climate from the world bank data. I will mainly discuss the factors of $CO_2$ emission, electricity usage, Forest area, GDP, and population growth to analyse the average climate change.
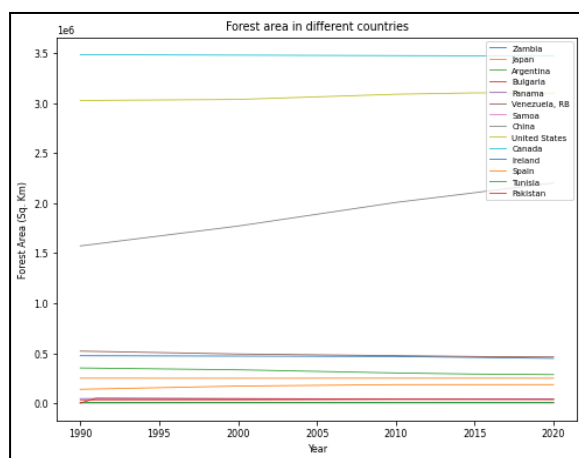




The preceding plot shows the trend of increase/decrease in the area of Forest in different countries. We can see that Canada has a stable trend about the Forest area. The country China has the trend upward and its trend is comparatively higher than other countries. The United States of America has the second position in the area of Forest.
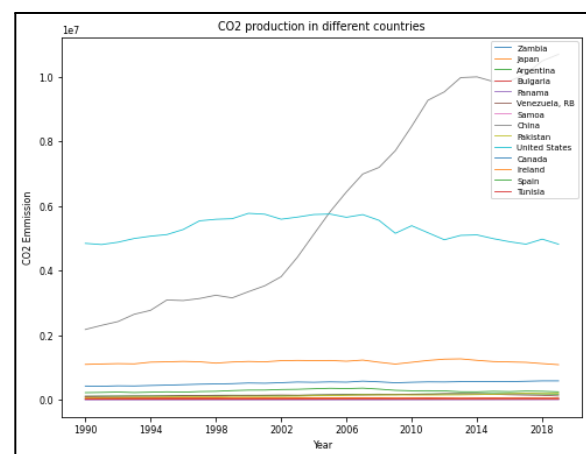
The preceding line graph represents the emission and production of Carbon dioxide gas in different countries. This data graph represents the data from the year 1990 to 2019. In this plot, we can observe that China is the main country in the production of Carbon dioxide ($CO_2$) gas. The United States of America holds the second in the emission of this gas. We can also observe that China's trend about gas production is still upward but on the other hand, the United States is approving and its trend is downward.

After analysing the above time series graph, in most of the countries, $CO_2$ production is inversely proportional to the Forest area whereas China is an exceptional case.
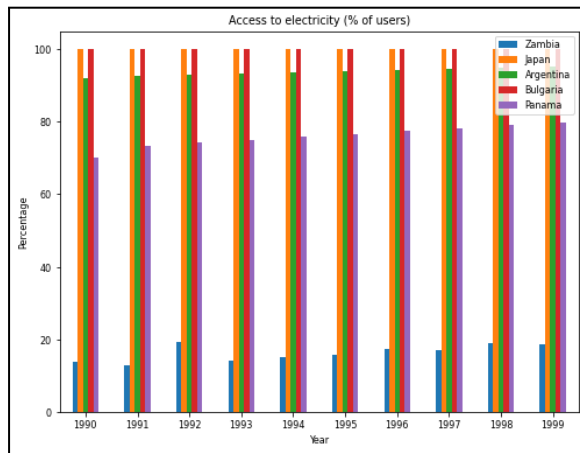


We can see that in most of the countries 80% to 100% of the population was able to consume the electricity till 1999.
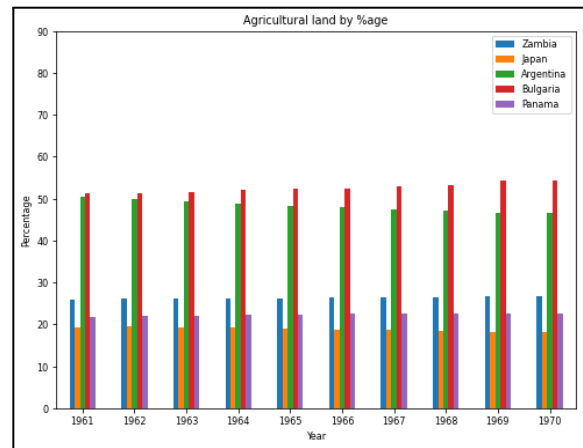


In the preceding graph of agricultural land, we can see that Bulgaria has 50% agricultural land.

In the preceding two plots, we can deduce that there is no major relation between access to electricity (% of the country population) and agricultural land.



The heatmap displays the relationship between different indicators of climate change in the year 2010. We can deduce that the population growth has a great impact on the production of $CO_2$ gas.

To compare some statistical data, I have used a box plot for the life expectancy at birth time for the Country Pakistan.