

7PAM2000 Applied Data Science

Assignment 2

Climate Change Data Analysis

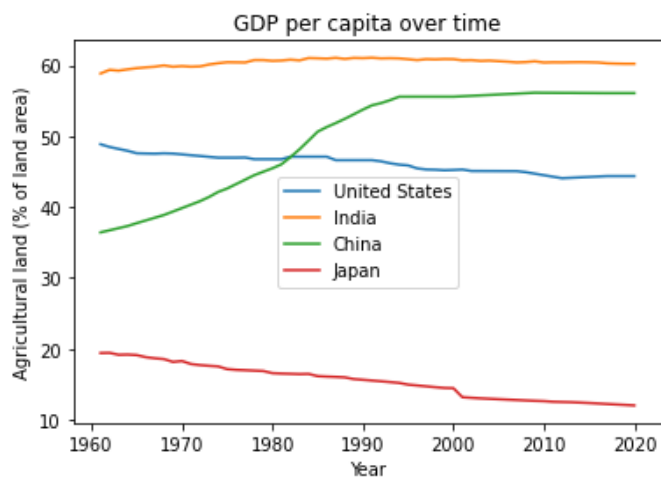
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Repo Link: <https://github.com/Naveenbsm/ADS-Assignment2.git>

ABSTRACT: This assignment shows the comparison of various factors like agricultural land (% of land), CO2 emissions and Electricity access and it's production and how they effect climate change. The data is taken from World Bank for the countries, India, China and United States of America for the years 1960 to 2010

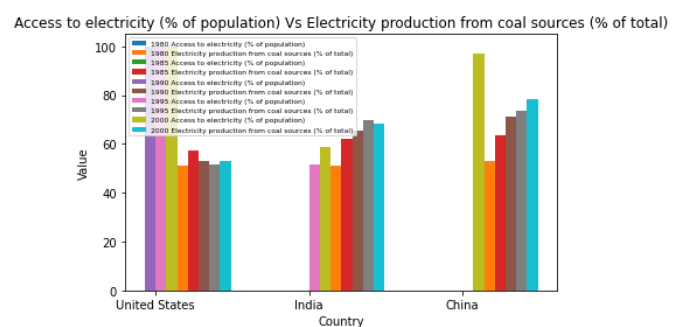
For this analysis the interrelations between various factors like: “Population”, “Agricultural land %”, GDP per Capita for the countries USA, India, China and Japan are chosen to observe the various changes and how it has effected climate change over a period of 20 years.



The above line plot was constructed for the percentage of agricultural land versus GDP per capita for 4 different countries from the year 1960 to 2020. It can be observed that the country with the highest percentage of agricultural land is India. India is known for it's agriculture and there is a lot of need for food consumption because of it's population. There is a complex relationship between agricultural land and GDP per capita, as these factors are influenced by a range of social, economic and environmental factors.

In India agriculture plays a significant role in the economy and it remains an important source of employment and income and from the above graph we can see that in agriculture can accounted for India's GDP consistently from the year 1960.

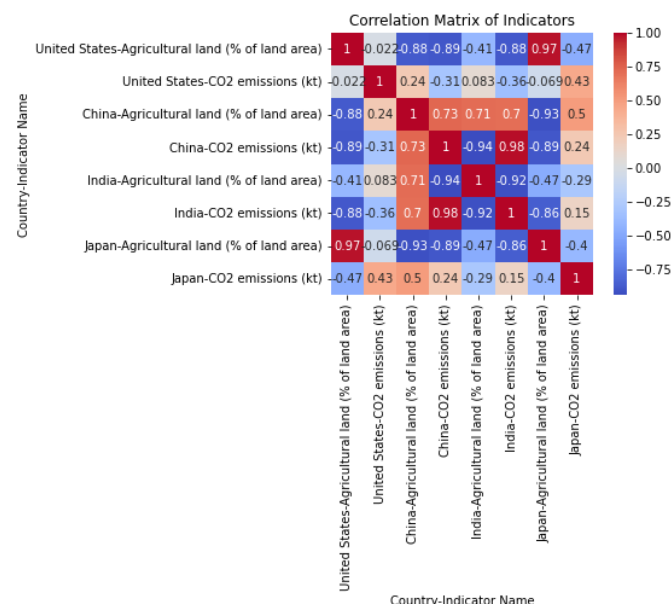
At the same time it can be observed that there is a decline in the proportion of agricultural land in Japan over the years. This is due to the fact that the country has undergone urbanization in the past few years. While the decline in agricultural land has reduced some source of emissions other sectors of economy remain major contributors of climate change.



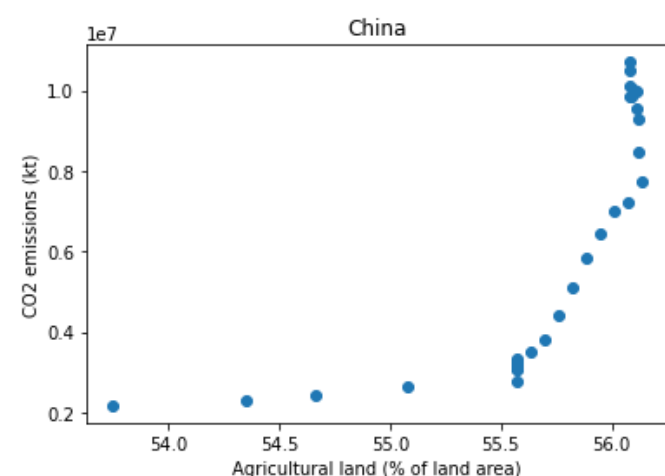
The above shows a multi-bar graph to show a comparison between the percentage of people who have access to electricity and Electricity production from coal sources for India, China and United States. It can be observed that Access to electricity (% of population) Vs Electricity production from coal sources (% of total) are closely related in China. Coal is the primary source of electricity in China. According to the data access to electricity has greatly improved over the years with 99% of the population having access to electricity in the year 2018. The high dependence on coal has a huge impact on the climate change because production of electricity from coal releases large amounts of green house gases.

In the United States over 99% of the population have access to electricity. Although

coal is still one of the major producers of electricity it can be observed that there is a decline in the graph in the recent years leading to a reduction of emission of the greenhouse gases which is a positive sign.

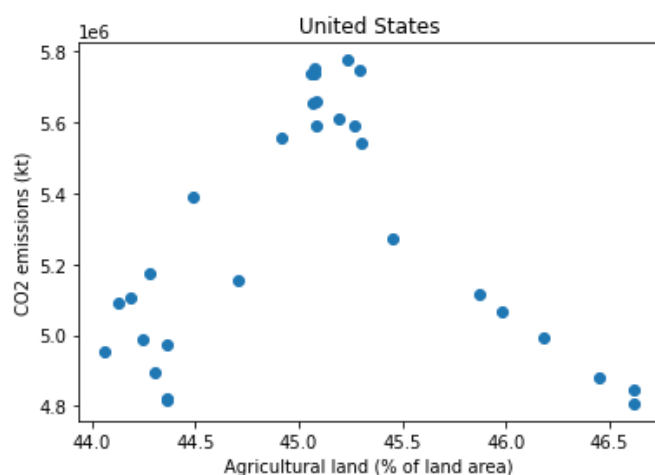


Based on the above heatmap we can see some relationship between agricultural land and CO2 emissions for India, China and USA. India has the highest amount of agricultural land among those three countries but it's CO2 emissions per capita are the lowest.



China has similar percentage of agricultural land as India but it's CO2 emissions per capita

are high. This may be due to the higher amount of coal usage for electricity production.



USA has the lowest percentage of agricultural land among the three countries but it's CO2 emissions per capita are the highest. From these observations we can say that both agricultural land and CO2 emissions both contribute to climate change. Agricultural land use can contribute to climate change by soil degradation, deforestation and green house emissions. CO2 emissions on the other hand are the major sources of climate change due to the release of harmful gases into the atmosphere.