Exploratory analysis of World Bank Data using Pandas

The hypotheses are as follows and these will be investigated in this report and discussed in the correlation analysis

1. Higher the population growth higher is the use of electricity power consumption
2. Developing countries have more CO2 and methane emissions compared to the developed countries
3. Higher the electricity consumption higher is the CO2 and methane emissions in the developing nations due to the use of non-renewable resources like coal and water

The data is obtained from https://data.worldbank.org/topic/climate-change

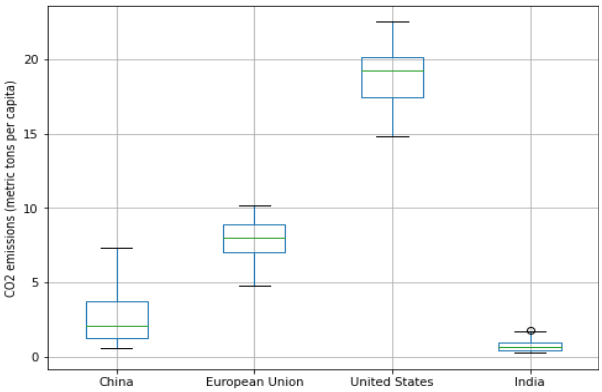
The following indicators have been selected for the analysis

1. CO2 emissions
2. Population growth
3. Electric power consumption
4. Methane emissions

The following countries have been considered for analysis based on developing and developed scenarios.

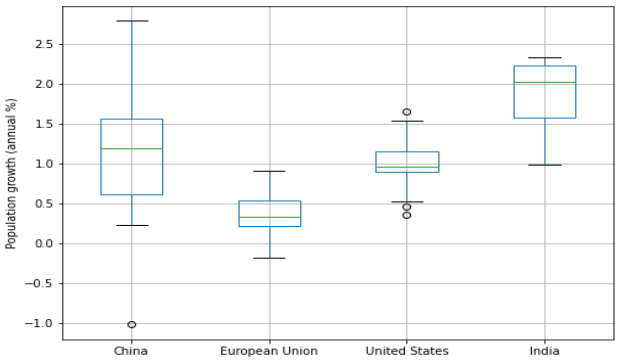
1. China 2. European Union
3. United States 4. India

CO2 emissions



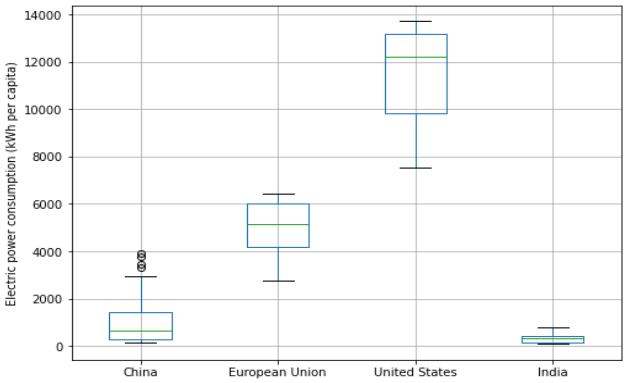
Statistics on the CO2 emission by country shows that United states has higher mean CO2 emission than any other country. While the India's population is very high compared to the US has low CO2 emissions

Population growth



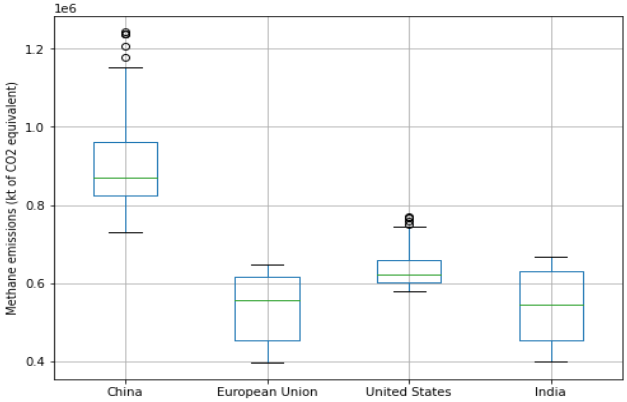
Statistics on the population growth by country. India has higher mean population growth than any other country. China and EU have recorded negative growth rate.

Electric power consumption



Statistics on the Electricity consumption by country. United states consume 10 times higher electricity compared to china and 5 times compared to the EU and 20 times more compared to India.

Methane emissions



Statistics on the methane emission by country shows that China has higher mean methane emission than any other country followed by US and India. EU on the other hand has comparatively lower methane emissions compared to the other countries in the analysis.

Correlation between the Indicators across different countries

Population correlation with Electricity

Correlation Analysis of Population growth and electricity consumption. All the countries have recorded negative population growth in recent years and at the same time growing need for electricity. This is reflected with the negative correlation results. EU has the higher correlation between the growing population and electricity needs, followed by India

Population correlation with Methane

Correlation Analysis of Population growth and methane emissions. All the countries have recorded negative population growth in recent years however, India and China have been emitting higher methane. This is reflected in the negative correlation. EU has positive correlation

Population correlation with CO2

Correlation Analysis of Population growth and methane emissions. All the countries have recorded negative population growth in recent years however, India and China have been emitting higher CO2. This is reflected in the negative correlation and their score is higher compared to US and EU. US has positive correlation. India has higher correlation about -95% followed by china at -66%

Electricity correlation with Methane

Correlation Analysis of electricity and methane emissions. All the countries have recorded positive growth in usage of electricity in recent years. However, India and China have been emitting higher methane emissions. EU has negative correlation, meaning lower methane emissions and higher usage of electricity. EU is using cleaner ways to generate electricity. India has higher correlation about 95% followed by china at 69% and US at 63%. India probably using coal and other non-renewable sources to produce electricity.

Methane correlation with CO2

Correlation Analysis of CO2 emissions and methane emissions. India has a very strong correlation between CO2 and methane emissions followed by China. US and EU have very low correlation.

Electricity correlation with CO2

Correlation Analysis of electricity and CO2 emissions. All the countries have recorded positive growth in usage of electricity in recent years. However, US and EU have decreasing CO2 emissions recorded while India and China have been emitting higher CO2 emissions. US is using cleaner ways to generate electricity. India has higher correlation about 98% followed by china at 90% and EU at 58%. India and China have very strong correlation between CO2 emissions and Electricity consumption.

Summary

From the analysis, the hypothesis 1 is not right as the world population growth is in negative trend but the electricity needs were rising. Hypothesis 2 was right as developing countries like India and China have more CO2 and methane emissions compared to the developed countries like USA and EU. Final hypothesis was correct as well, as higher the electricity consumption higher is the CO2 and methane emissions in the developing nations due to the use of non-renewable resources like coal and water (Hydel and thermal powers).