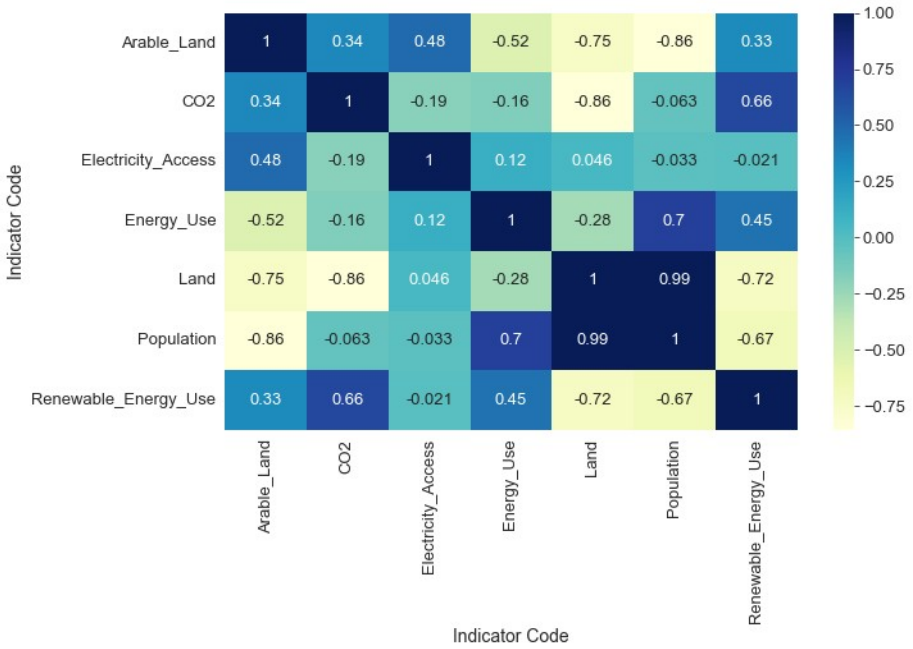
Analysis of Climate Change and Effects for the past 50 years

The climate change data set used for this analysis is derived from the World Bank website. In this analysis, we have selected seven different indicators that affects the climate change from 10 different countries Population, CO2, Emission, Energy, Consumption, Renewable Energy Use, Electricity Access Land Area & Arable Land. Extensive analysis was conducted and some interesting correlations were found between the data. Those are discussed below.

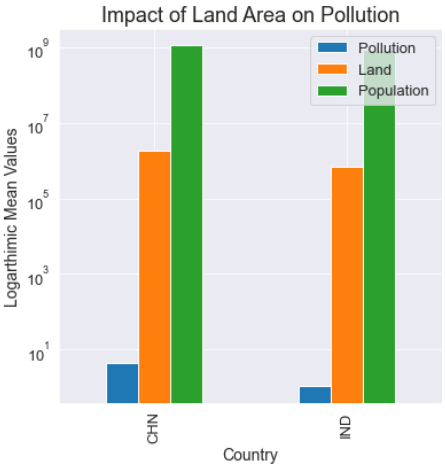


The above visualization illustrates the correlation between all the climate change indicators from the world bank data. Heat map plot is best for displaying the correlation. Below are the correlations identified from the heat map.

- The population increase is directly impacting the use of Energy
- When the population increases, the arable land area tends to be reduced
- The land area derived from the forest is highly correlated to the population
- Renewable Energy Usage is negatively correlated to Electricity Access. In other words, If the people have lesser access to electricity tends to use more renewable energies.

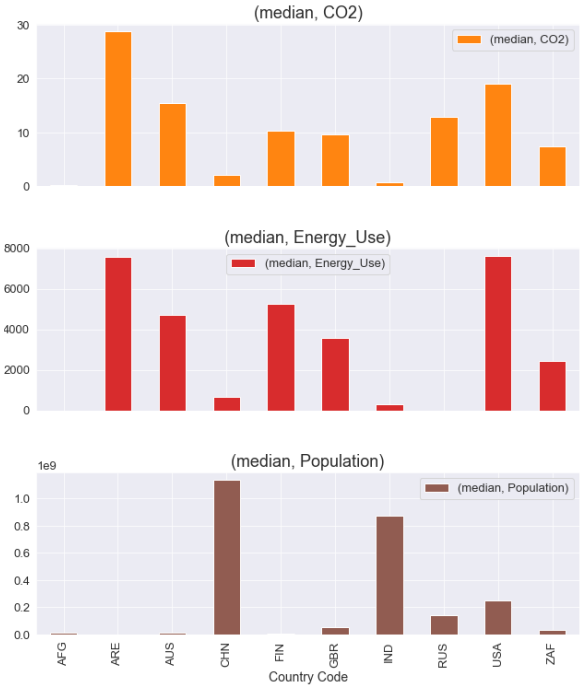
Impact of Land area on Pollution

China has the largest population in the world. Obviously, we may think about they have the highest carbon emissions and less air quality. This is evident from the last 50 years of the data that we analyzed too. We have used multiple bar plot with logarithmic scale on the Y axis to fit the three indicators together. The land areas are derived from the forest. This deforestation also has a great impact on the pollution.

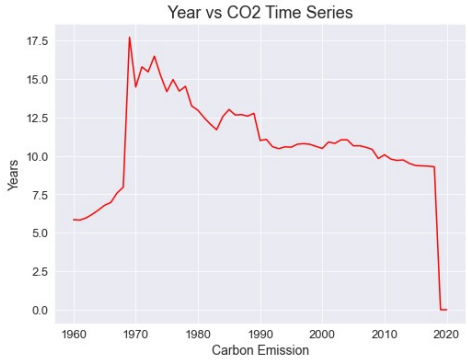


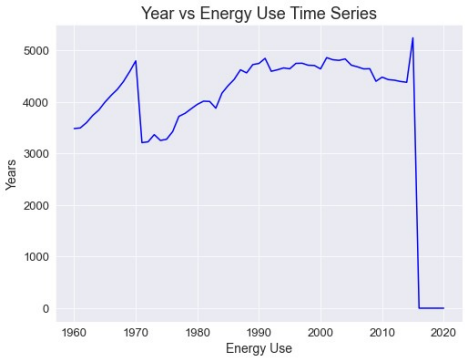
Reference: World Bank Data: climate change: https://data.worldbank.org/topic/climate-change

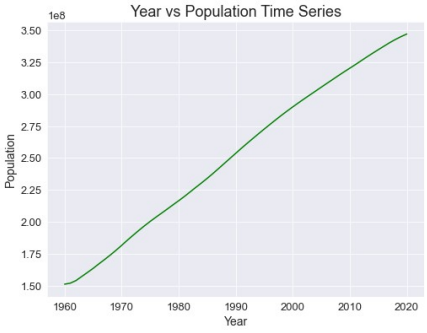
Highest Energy Consumption, Carbon Emissions and Energy Use



When we taken the median of the whole indicators over the 50 years, we analyzed and interpreted the data using the Bar Plot. The highest energy consuming country is from the Middle East Regions for example UAE. This is because of the easy availability of the conventional petroleum resources and the cheap oil prices. From the Population median graph, it is evident that China is leading the population. The Carbon Emission (CO2) is more in the UAE than any other country regardless of the population. This is because of the same reason that we mentioned before, the easy availability of the Oil and Gas with cheaper price. So, the people are more tends to use the vehicles and this leads to the emission of more carbon.

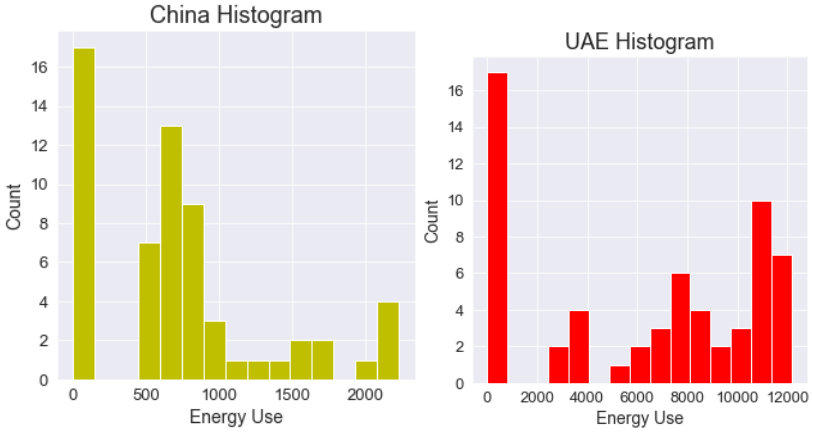






Using the time series plot, we examined the full time series (1960-2020) data of different indicators. From the above time series plot, it is evident that the population is increasing linearly, as the CO2 emission is reducing gradually. The CO2 emission is reduced because of the increase in the public awareness towards the CO2. The energy usage also increasing over the time.

In conclusion, we have used the histogram to plot the energy use over the years. From the histogram, we understand that the highest population country China is falls behind the UAE. The Middle East countries are using the Oil and gas products without any limitation because of the price and availability. This in turn increased the CO2 emission over the years.



Reference: World Bank Data: climate change: https://data.worldbank.org/topic/climate-change