Climate Change Data Report

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Applied Data Science Assignment 2

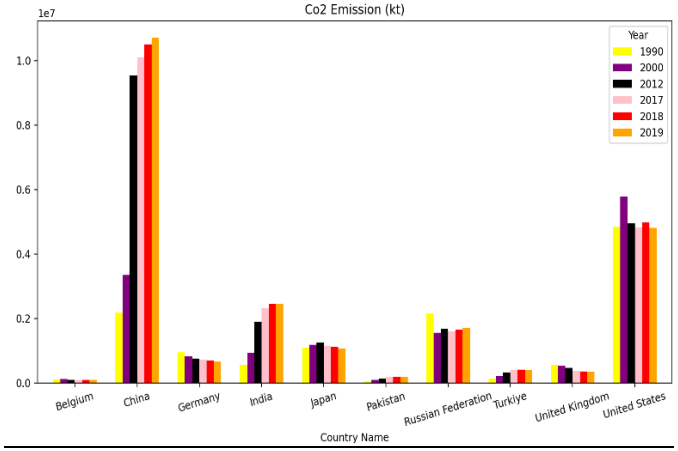
In this report, some data about Climate Change taken from Worldbank (link is below the page) is analysed. Climate change is one the most important issue that affects our lifestyles and causes serious damages to our world. People and countries need to take precautions to deal with this important issue. This report shows and compare the effect to climate change of some countries.

This github link includes the phyton file which includes the codes of data mining and creating plots, png files which include all the graphs shown in the report and pdf file which contains this report.

Main data includes some series about climate change between the years of 1960-2021 for all countries. However, in this report Series are chosen as CO2 Emissions (kt), total population, urban population, rural population, energy use (kg of oil equivalent per capita) and renewable energy consumption (% of total final energy consumption) in Turkiye, Japan, Russian Federation, India, China, Pakistan, United States, United Kingdom, Germany and Belgium in the years of 1990, 2000, 2012, 2017,2018 and 2019.

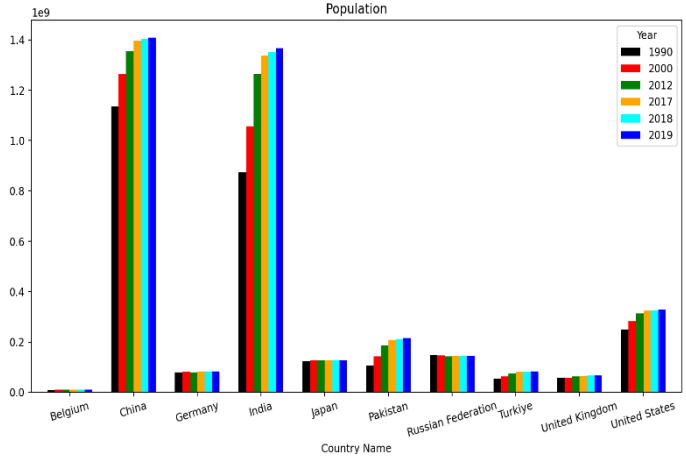
https://github.com/ibrahimbal7/Assignment-2

https://data.worldbank.org/topic/climate-change

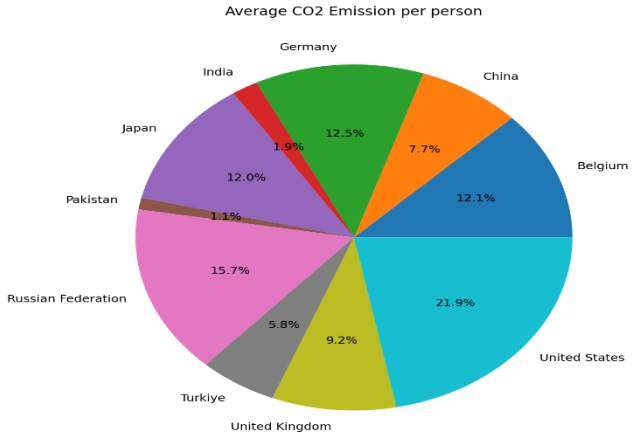


In the bar chart above, Co2 emissions (kt) are shown for 10 countries in the years of 1990, 2000, 2012, 2017,2018 and 2019. It is clear to see that China makes the most emission by almost more than the total of other countries in the last 3 years. If we compare China and USA with other countries, they slightly harm the climate by Co2 emission. However, even USA has more emission than China in 1990 and 2000, It shows a downward trend over the last years compared to China's upward trend.

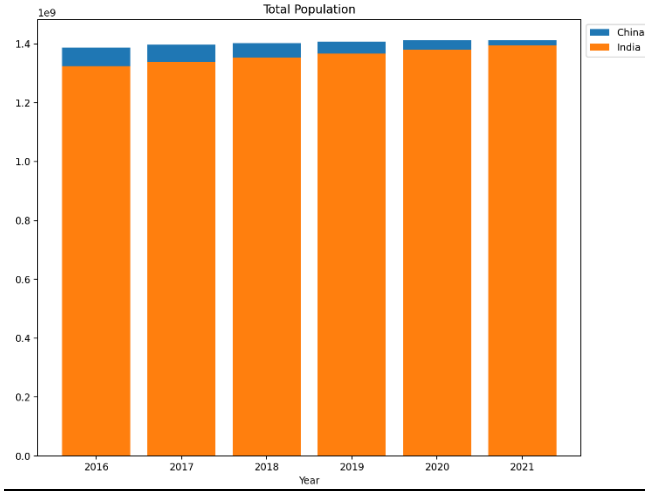
The following second bar chart shows the population of these countries in the same years. From this graph, it can be resulted that population is not the main result of Co2 emission since the population of China and India is almost the same but India's Co2 emission is almost the quarter of China's over the years. However, there is a correlation between population and Co2 emission for other countries. Also, despite the slight growth in population in Germany they made a drop in Co2 emission over the years.



The pie chart shows the Co2 emissions per person in the same countries between selected years. It demonstrates that even though the total value of emission in Russia does not even close to China, by 8 percent different a person in Russia makes more emission than a person in China. The maximum discharge per person made from United States by almost 22% between these 10 countries. It is again clear to see that by 1.9%, India has the second least percentage of Co2 Emission per person even the total population is the second highest.



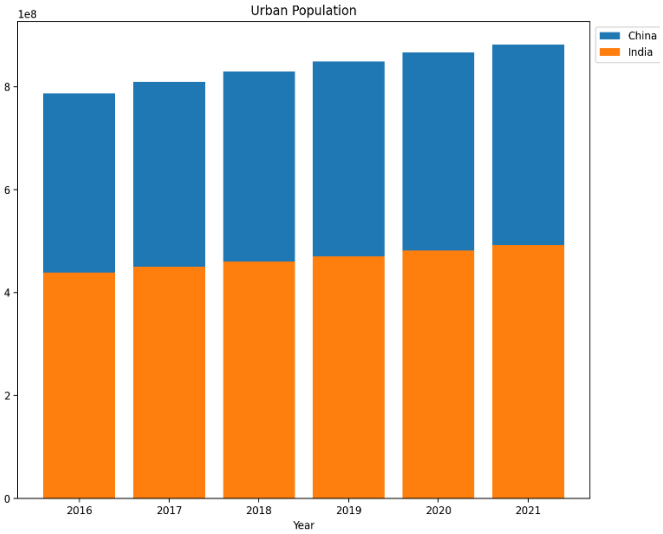
There are 3 different stacked bar charts below represents total, urban and rural populations between the years of 2016-2021 to examine India and China which have similar population in total but unlike Co2 Emissions. From the first graph, it is obvious that these 2 countries have almost same number of populations in these 6 years. However, there is a big difference of rural and urban population numbers.

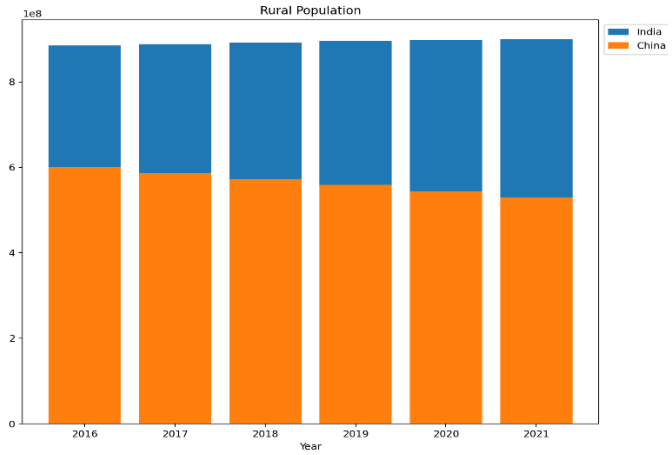


Second and third graphs shows that urban population in China is almost double as in India between these years and shows upward trend for both countries. However, there is a drop in China's rural population in all years. It can be concluded that people attend to move to city life from agricultural life.

Unlikely, rural population in India does not show any upward or downward trend and kept same over the 6 years. It shows that increasing population did not affect rural life but increased urban population in India.

From these bar graphs, it can be concluded that more urban population causes more CO2 emissions.





The two line plots on the right represent the energy use and renewable energy consumption for these countries. Since there was no update data in the years of 2017,2018 and 2019, these years are eliminated on energy use graph.

From the first graph, it can be concluded that United States, Belgium and United Kingdom shows similar attribute by increasing the usage of energy from 1990 to 2000, but decreasing it on 2012. Also, evaluate the second graph, it is clear to see that these countries increased using renewable sources between these years. Therefore, we can conclude that they focused on using renewable resources for the energy rather than other sources.

Besides that, China and India which shows upward trend on CO2 emissions, they also increased using energy sources rather than renewable sources.

Lastly, it is obvious that using renewable energy reduces the CO2 emission rather than using other energy sources. Therefore, countries must attend to increase their renewable sources to prevent climate change.