7PAM2000 Applied Data Science 2

Assignment 2

For the analysis purpose I have chosen the year in the range of 2010 to 2018. For the individual country analysis purpose, I have chosen the United Kingdom. For the return of the country column-based data frame I have chosen the United Kingdom, United States of America, Australia, New Zealand, Canada, India, Japan, Russia, China, Germany for the year of 2018. Since there is a lot of data in the World Bank API, I have chosen some of them like forest area, Greenhouse gas emissions, energy production, electricity produced by oil, coal, natural gas, CO2 generated etc.

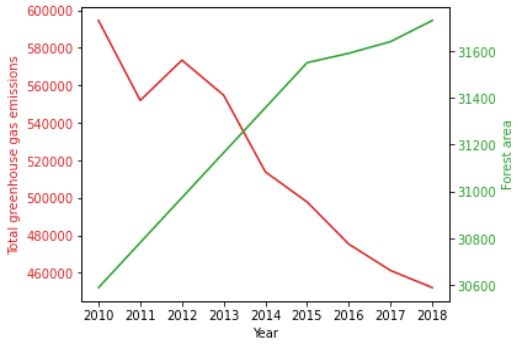

Fig 1 - Forest area and greenhouse emission according to the years.

From Fig 1 we can clearly see that forest areas in the United Kingdom keep increasing over the years but when considering the greenhouse gasses, they keep reducing over the years. It is clearly shown that we can reduce the impact like climate changes due to the greenhouse gasses by increasing the areas of forest.

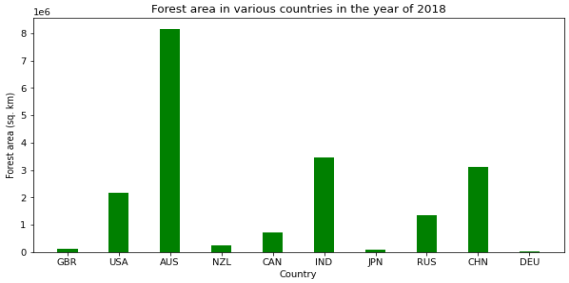

Fig 2 - Distribution of forest areas in various countries in 2018

Fig 2. Shows the distribution of the forest areas in various countries around the world according to the year of 2018. It clearly shows that Australia has higher forest areas when compared to other countries. In the next level both India and China are there.

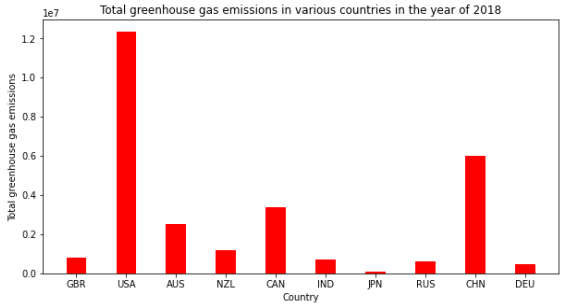

Fig 3 - Forest area and greenhouse emission according to the year of 2018

In Fig3. shows that emission of greenhouse gas for the year of 2018 in various countries. It is clearly shown that the USA emits higher amounts of greenhouse gas when compared to others. China is in next place. Most of the developed countries play a key role in emitting these greenhouse gasses. It clearly shown that some country has less forest areas and produce a smaller number of harmful gases. Mainly developed countries are dominating in producing greenhouse gas and developing country have higher amount of forest area when compared with developing countries.

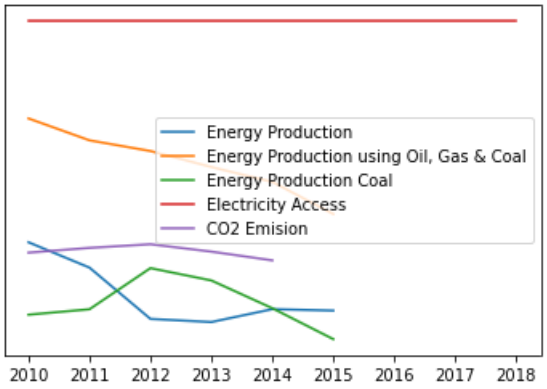

Fig 4 - Trend of various energy producing techniques and CO2 emission over the years in United Kingdom

The United Kingdom has various methods to generate electricity and energy like oil, coal, natural gas etc. From Fig4. The trends are shown in a very understandable manner. Electricity access over the years found to be in a fixed trend. In energy production we can notice that from 2010 to 2012 there is decreasing nature but after 2012 it began to increase. Electricity production using oil, coal and gas are in decreasing trend. It is clearly seen that the United Kingdom started to reduce these methods which are harmful for the environment. Anyhow CO2 emission is approximately the same amount over the years.

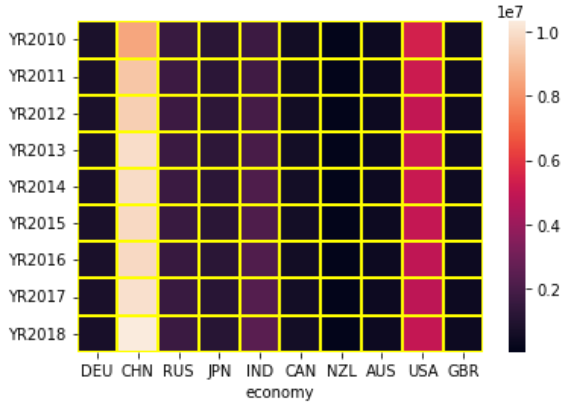

Fig 5 - Heatmap of total CO2 emission based on years and various countries

According to Fig5. It illustrates how the total amount of CO2 behaves according to the years and other various countries. It shows that China is emitting a huge amount of CO2 every year from 2010 to 2018 when compared with other countries. When we consider only China Fig5. further shows that the total amount of CO2 produced by China is increasing yearly (China's total amount of CO2 in 2010 is less than the total amount of CO2 in 2018). The United States is next to China in emitting CO2 to the environment. When we study the CO2 number of countries individually, it is clearly seen that the total amount of CO2 is increasing. Only China and the United States are the main contributors for the emission of CO2 when compared to other countries. Not only CO2 but also for greenhouse gas these two countries produce more.

According to this study, it is clearly shown that most of the developed countries are contributing more to these climatic changes happening around the world in various ways like producing greenhouse gasses, emitting CO2. These gasses are generated because of excessive use of coal, oil, gas for producing electricity and energy. Countries like Australia, India and China have many forest areas when compared to other countries which helps to reduce the content of these harmful gasses that cause climatic changes by absorbing those gasses and emitting oxygen.