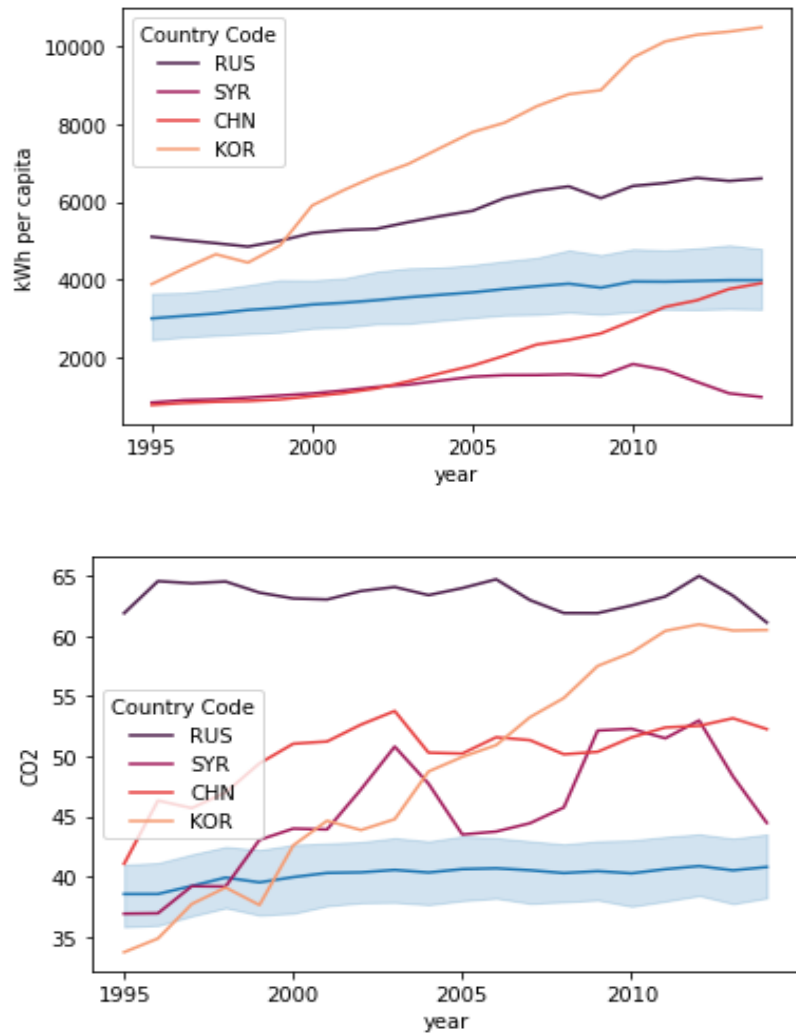


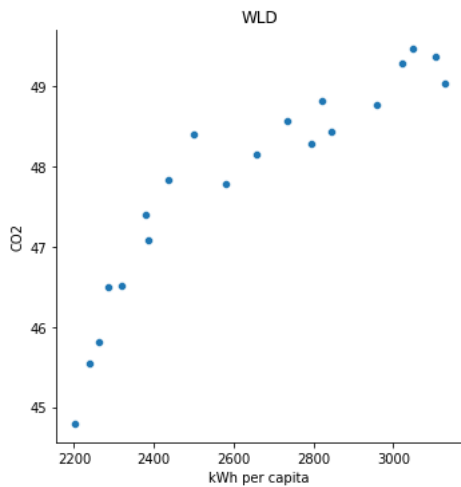
Analysis of The Relationship Between Electricity Consumption And CO₂

Two datasets were analysed in this report: electric power consumption and CO₂ emissions from electricity and heat production. After filtering the datasets, the studied data included the electricity consumption and CO₂ emissions from 179 countries over 20 years (from 1995 to 2014). Some of the interesting conclusions are shown below.

The first figure displays the electricity consumption of the world in comparison with four other countries which are: Russia, Syria, China, and Korea, while the second figure shows CO₂ emissions from electricity and heat production in these countries and the world's average. Line plot was used here as it helps visualize the comparison, and clarify the change over time. The world's average electricity consumption and CO₂ percentage are shown in the blue line with the 95% confidence interval in the first and second figures respectively. One can notice that the average world electricity consumption and the average world CO₂ percentage are slightly but steadily increasing overtime. In Korea and China the consumption ratio is rapidly increasing but the CO₂ percentage is increasing in Korea more rapidly than China. On the other hand, Russia's electricity consumption rate is increasing in a slower pace and Syria's rate started decreasing from 2010. As for the CO₂ percentage in Russia, it didn't change much in this time span, but in Syria it greatly decreased since 2011.



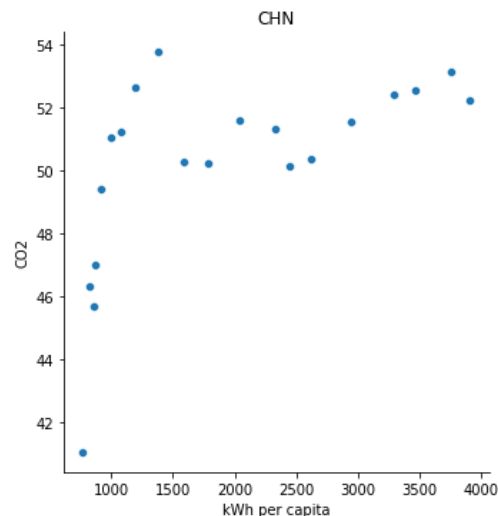
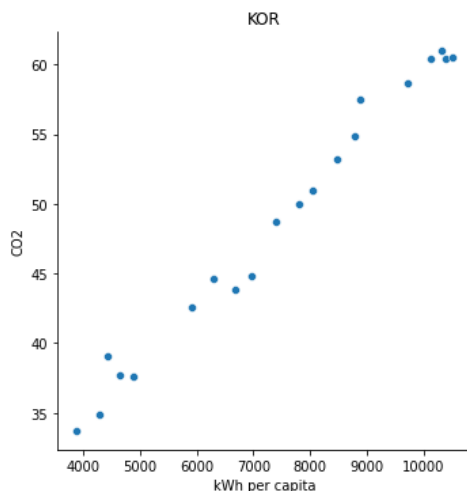
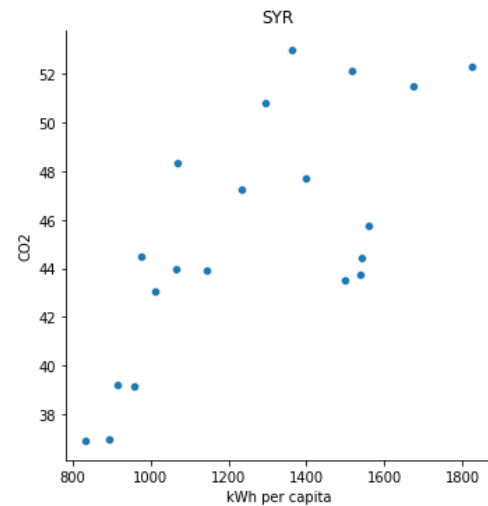
It is noticeable that a correlation between the two indicators exists, but the evidence are still lacking. Scatter plot between the two indicators was displayed to prove the correlation.



The figure on the left shows the relationship between electricity consumption and CO₂ emission percentage, each taken as an average of the world in each year from 1995 to 2014. That means each point represents the electricity consumption and CO₂ percentage averages in a single year. We decided to choose scatter plot as it helps us find whether a correlation exists or not. It can be easily noticed that the two indicators are directly proportional (i.e. CO₂ percentage increases with the increment of electricity consumption).

The following figures plot the same attributes for each country (Syria, Korea, and China). As we can see, the correlation between electricity consumption and CO₂ is clearly proportional in Korea. Furthermore, in Syria the relation isn't as clear as it is in Korea but can be considered proportional. Moreover, in it also the case in China.

To sum up, the evidence is clear that there is a direct proportion between electric power consumption and CO₂ emissions percentage, although there are some slight differences between the countries that were cross-compared in this analysis. These slight differences may be a result of some other factors that are connected to CO₂ emissions percentage, such as the geographical location, population density, and laws related to environment preservation in each country.



References:

- [1]: <https://data.worldbank.org/indicator/EG.USE.ELEC.KH.PC?end=2018&start=2018>
- [2]: <https://data.worldbank.org/indicator/EN.CO2.ETOT.ZS>