FINAL ASSIGNMENT

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ABSTRACT

CO2 emissions analysed

Data Analytics with Python

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Overview of the problem

This report will give an answer to the following three questions:

1. What is the biggest predictor of a large CO_2 output per capita of a country?

2. Which countries are making the biggest strides in decreasing CO_2 output?

3. which non-fossil fuel energy technology will have the best price in the future?

Data and modelling approach

1. To answer this question I've taken a look at the gdp per capita, the primary energy consumption, the population density and the amount of calories from both animal-based and plant-based food.

2. To find out which country made the biggest strides in reducing the CO_2 output per capita I looked at the CO_2 per capita in 2000 and in 2020. I'll need to find the relative CO2 output for each country to be able to calculate this. By looking to the CO_2 output per capita you correct for the increase or decrease in the population of a country.

3. To answer this question I've used a datafile with information about the price development of different kinds of fuel over the years. As only from 2010 there is information about all types of energy, I did not use the older data. As this is a general question I used the data describing the average prices in the world. With the data I calculated the trend of the pricing, using linear regression. I used the found regression to predict the pricing in the future.

Results of the data analyses

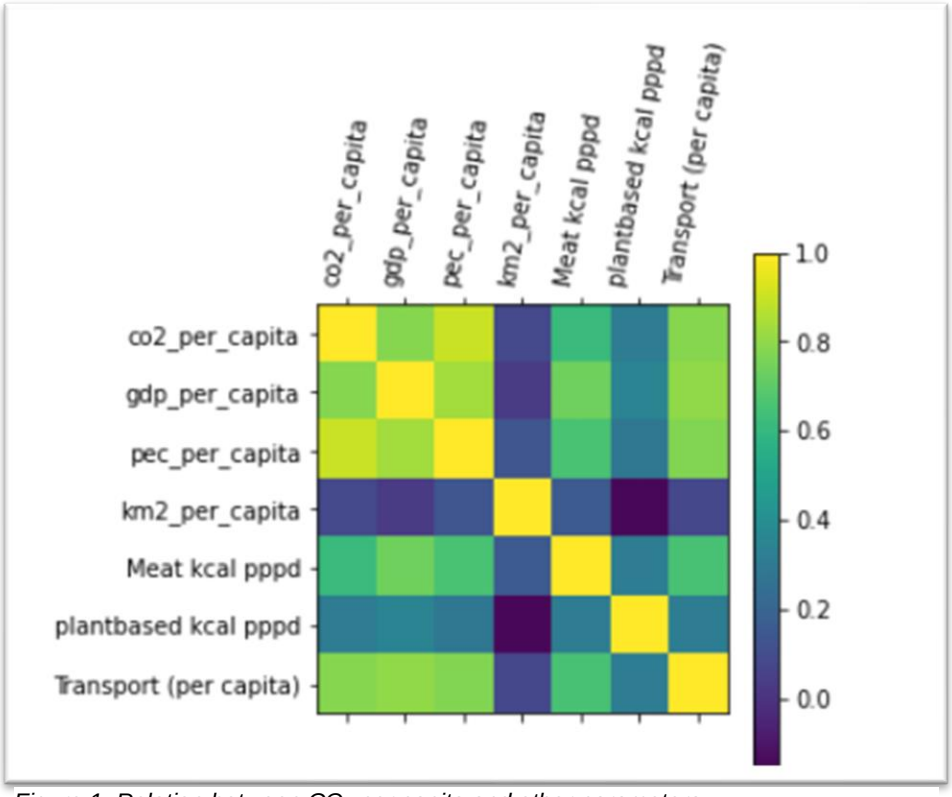

Figure 1: Relation between CO_2 per capita and other parameters

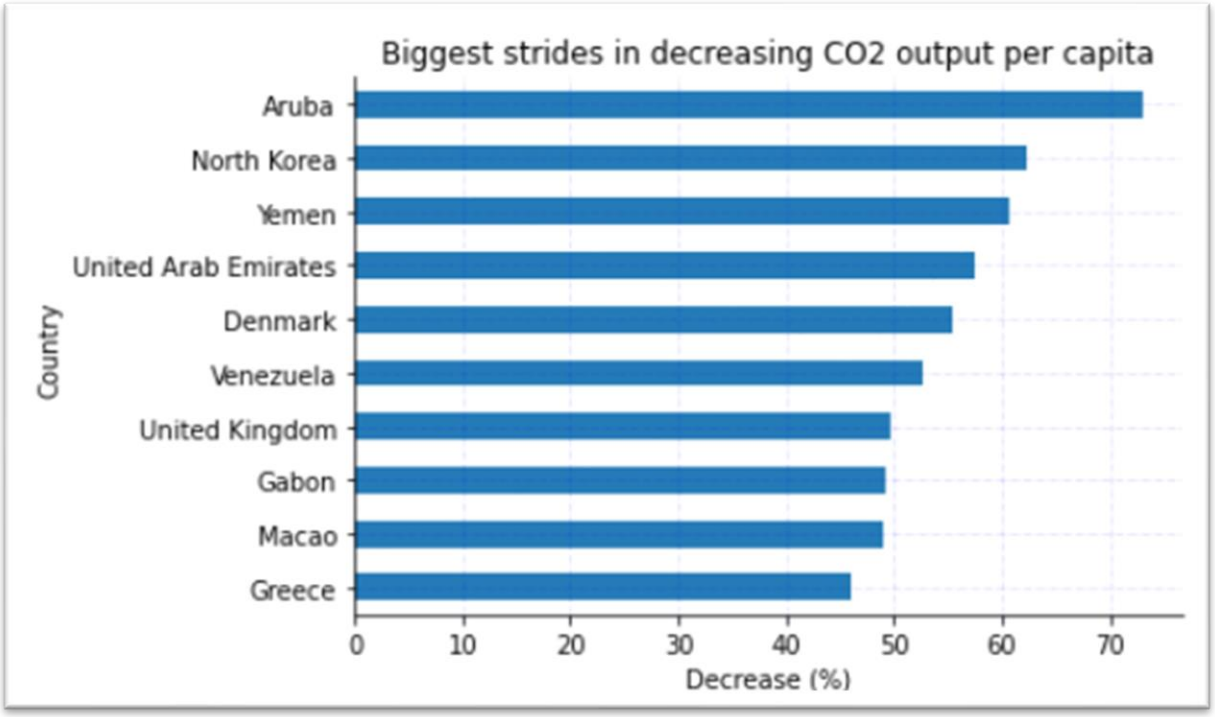

Figure 2: Countries with their % change in CO_2 output per capita

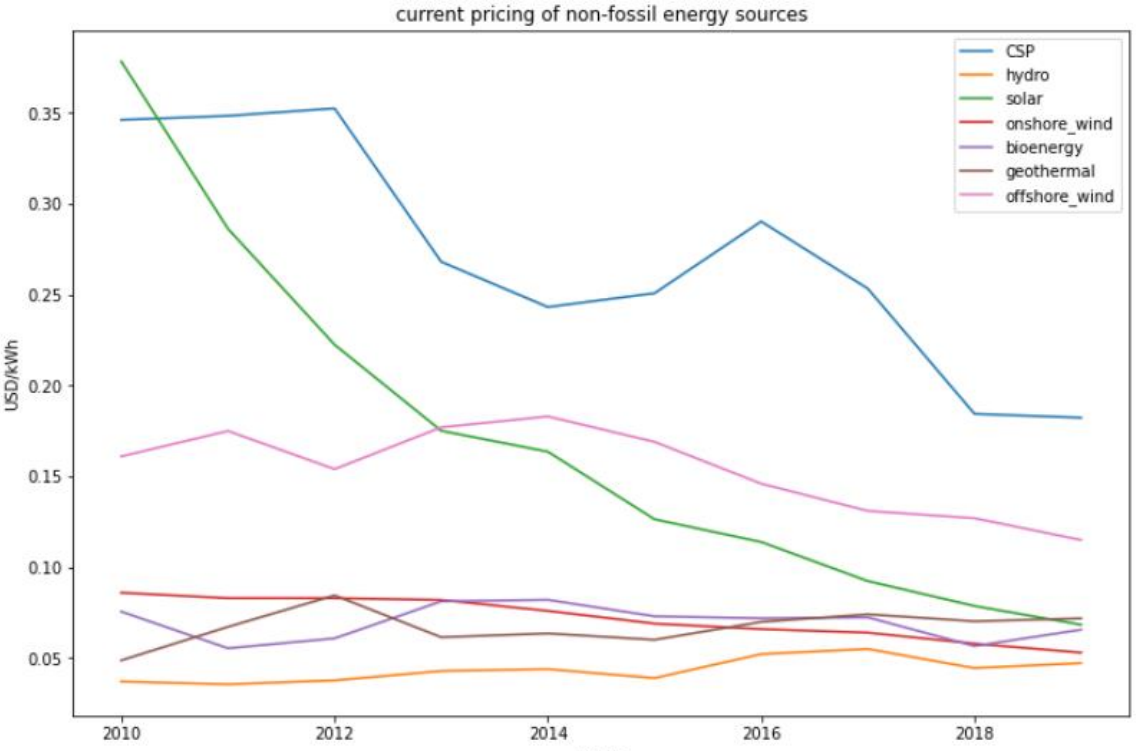

Figure 3: pricing of non-fossil energy sources

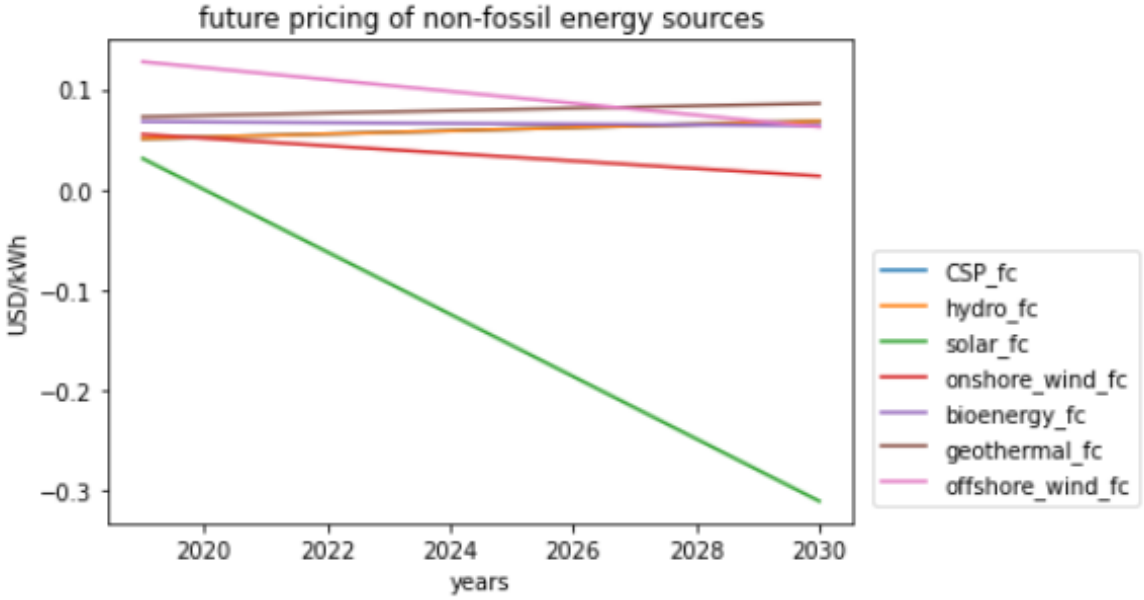

Figure 4: future pricing of non-fosil energy sources

Conclusions

1. The amount of CO_2 per capita that is released for transport seems to be a good predictor of the total amount of CO_2 that a country emits per capita, just like the amount of primary energy that is used per capita. There also appears to be a relationship between how many kcal from meat are consumed and the amount of CO2 per capita in a country.

2. Aruba, North Korea and Yemen showed the biggest decrease in CO_2 output per capita when you compare 2000 with 2020.

3. Based on the current decrease in costs of non-fossil energy sources solar energy will have the best price in the future.