Energy Usage and CO2 Emissions

Overview

CO2 is one of the harmful gas that can toxify the atmosphere if the percentage will be incraesed. In nature, there is a balance of all gasses such as Oxygen, Nitrogen, CO2 etc. The atmosphere will be healthy if the correct ratio will be maintained. From the human perspective, the energy is required to drive the machine and other things that aer essential for human welfare. All of the industries, offices etc are run through the electricity that comes in the form of electrical energy. The energy is largely produced by burning thje combustible leemets suchj as coal. It produces the energy that are circulated to a different location to meet the requirement. Additionally, that operation is also responsible for the emission of a higher amount of CO2 that in turn pollutes the atmosphere.

Aim

The main motivation of this task is to analyze and evaluate the statistic of the energy consumption and the emission of CO2 thereby in the nature of the selected countries. Hence, the statistics will be checked for the countries such as Fiji, India, Iraq, Italy, Nepal, and Switzerland. The analysis and the results will be presented in the next sections.

Statistical Analysis

The data has been selected from World Bank concerning climate change and the relevent inducators have been chosen. The average of the energy consumption and the CO2 emissions have been done and shown below:

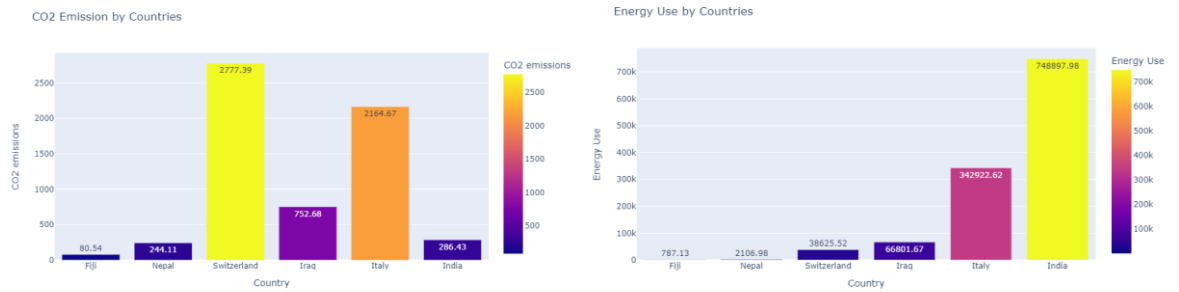
The statistics of average energy consumption by the countries are as follows:

- Fiji has the Energy Use of 80.54
- India has the Energy Use of 286.43
- Iraq has the Energy Use of 752.68
- Italy has the Energy Use of 2164.67
- Nepal has the Energy Use of 244.11
- Switzerland has the Energy Use of 2777.39
- The world has the Energy Use of 1157.35

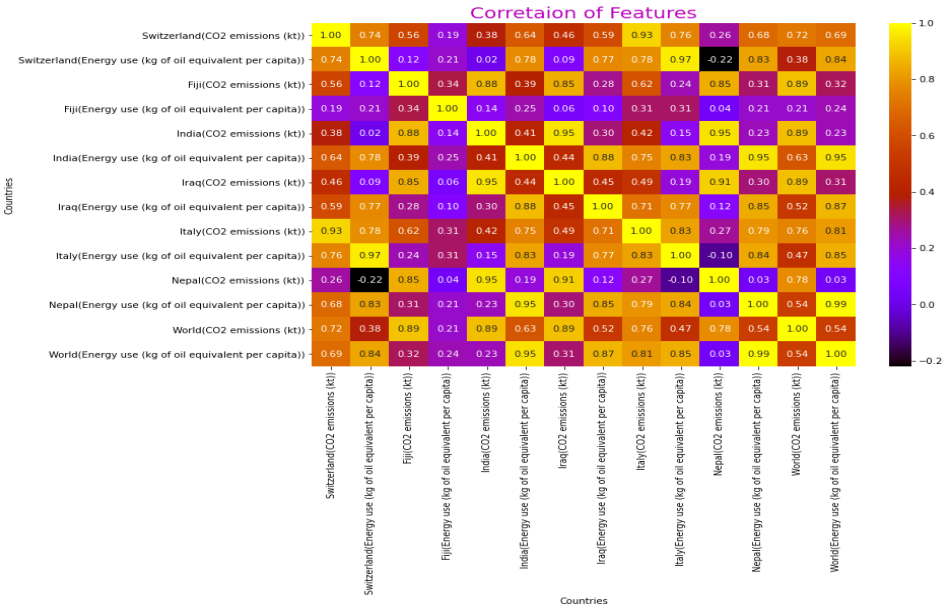
The statistics of average CO2 emissions by the countries are as follows:

- Fiji has the C02 Emission of 787.13
- India has the C02 Emission of 748897.98
- Iraq has the C02 Emission of 66801.67
- Italy has the C02 Emission of 342922.62
- Nepal has the C02 Emission of 2106.98
- Switzerland has the C02 Emission of 38625.52
- The world has the C02 Emission of 20998838.87

Now, to visualize the statistic, the interactive bar chart has been chosen. The reason behind the choice of the bar chart is that it can visualise the value of the features by the countries (in this context). So, the statistic of the average energy consumption and the CO2 emission can eb understood more precisely. The visualizations are shown below:



From the statiotuca aspect and application, it can be seen that the highest CO2 has been emitted from Switzerland and the highest energy has been consumed by India followed by Italy. Now, to understand the relationship between the consumption of energy and CO2 emission, the correlation has been applied and visualized in a heatmap. The reason behind the choice of heatmap is that it can show the correlation values on the graph. The correation matrix is shown below:



From the feature correlation, it can be identified that the correlation value is highest for Switzerland and lowest for Italy. It can also be said that the correlation is not the same for all countruies and this is changing with the countries.

Time Series Analysis

The time series plot has been designed to visualize the overall CO2 emissions and the energy used by the countries from 1960 to 2022. The outcomes are shown below: