Hyperiondev

TASK

Exploratory Data Analysis on the Renewable Energy Dataset

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Introduction

Since the beginning of the Industrial Revolution, the energy sources used in most countries have become largely reliant on fossil fuels. This has led to an increase in CO2 emissions, which has significant impacts on the global climate.

In order to mitigate the negative effects of CO2 emissions and improve air quality, it is necessary to rapidly transition to cleaner sources of energy, such as nuclear and renewable technologies.

In this report, we examine the data on the use and production of renewable energy around the world. However, it is also important to consider the rate at which we are transitioning from fossil fuels to renewable energy and how far we still have to go in this process.

DATA CLEANING

For the purposes of this analysis, data from before 2000 was excluded and GDP data was also excluded as it will not be utilized. This allows us to focus on more recent trends and developments in renewable energy over the past two decades.

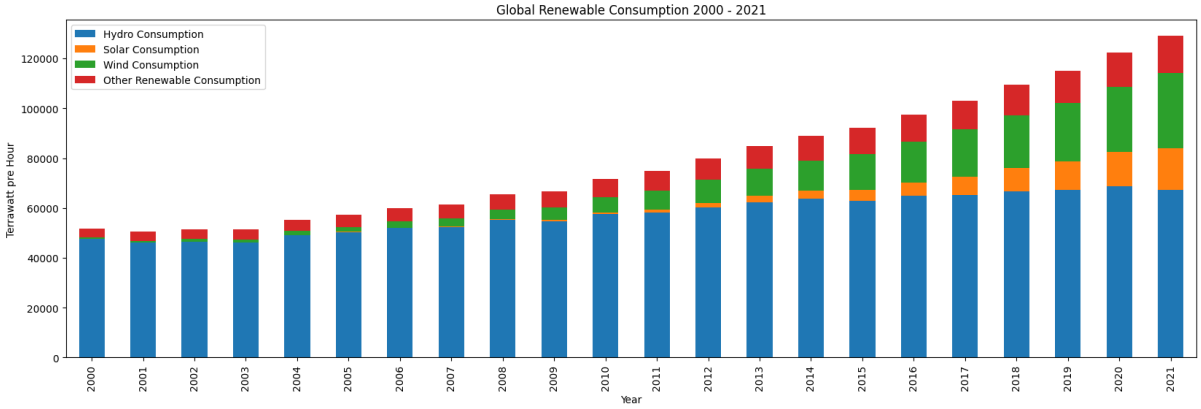
MISSING DATA

The dataset is comprehensive and includes complete data from the year 2000 onward. Any missing data is only from prior to 2000 and has been removed in order to focus on more recent trends.

RENEWABLE ENERGY USAGE

We often hear about the rapid growth of renewable energy usage, but how much renewable energy are we consuming compare to traditional energy.

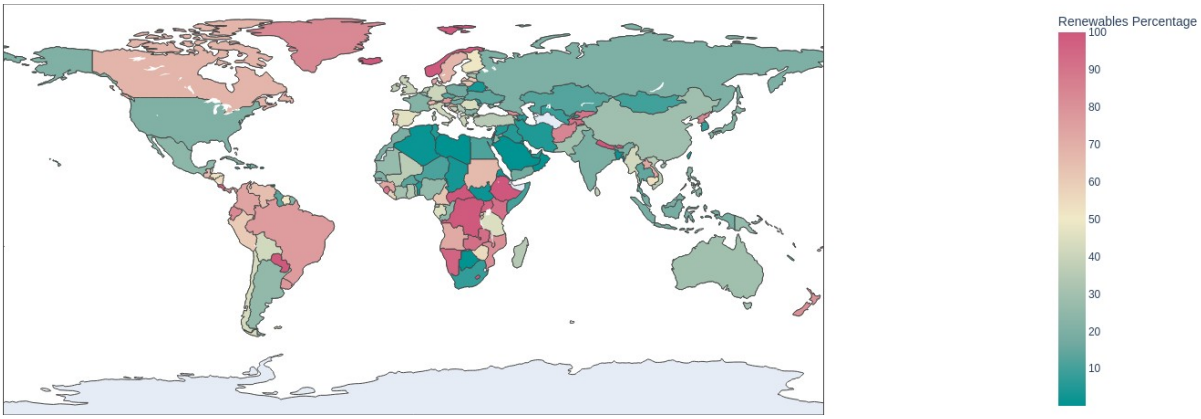
In the chart below we can see we are consuming much more renewable energy since 2000. And the growth mainly come from wind, solar, and other renewable.



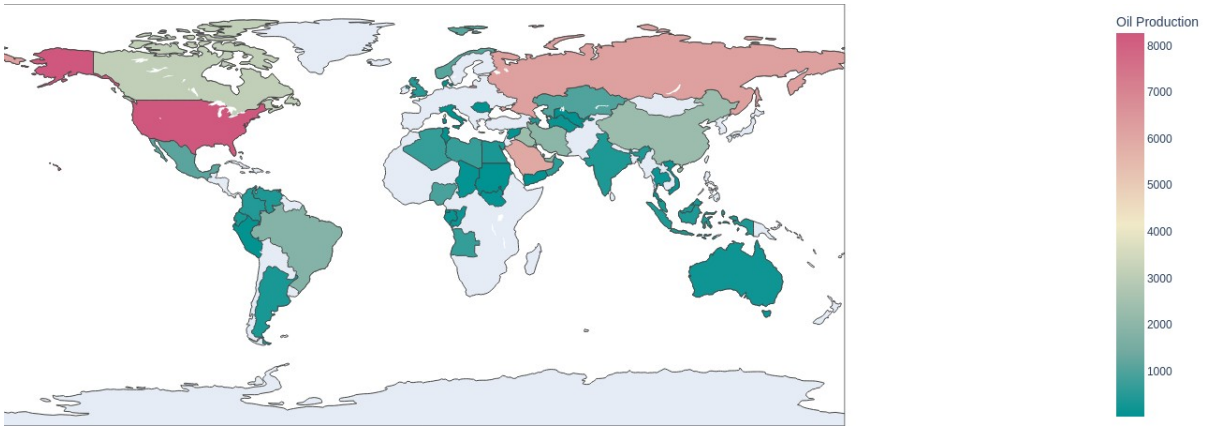
RENEWABLE IN ELECTRICITY

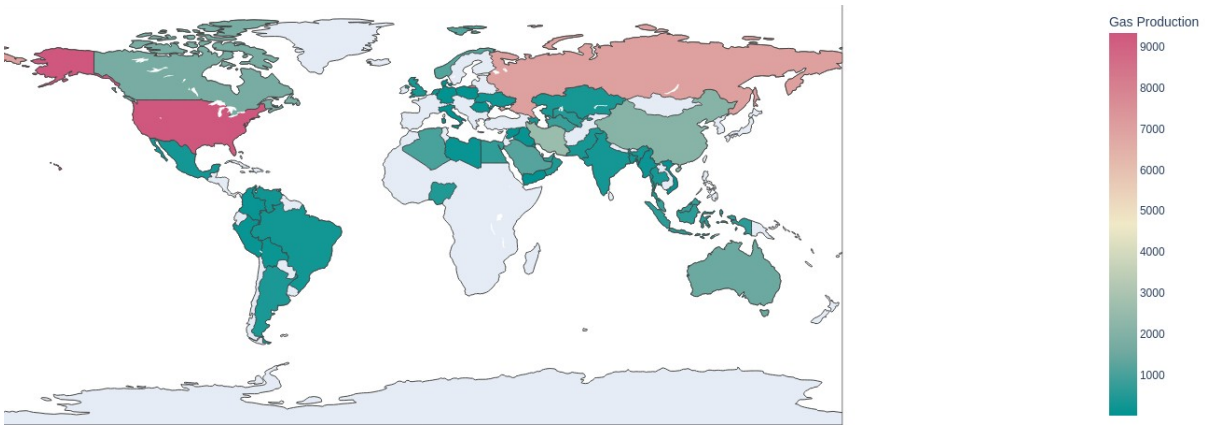
Renewable energy is primarily used to generate electricity, let's examine the percentage of electricity consumed in each country that comes from renewable sources.

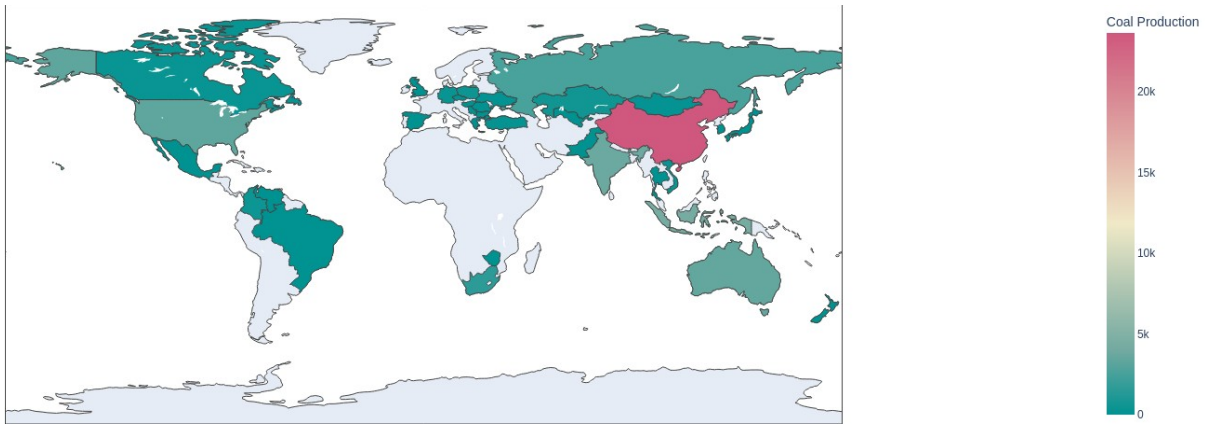
The chart shows that Iceland, the top country in terms of renewable energy use, generates almost all of its electricity (99.98%) from renewable sources.



Upon further analysis, it becomes clear that the oil, gas, and coal production country relies less on renewable energy for electricity generation.





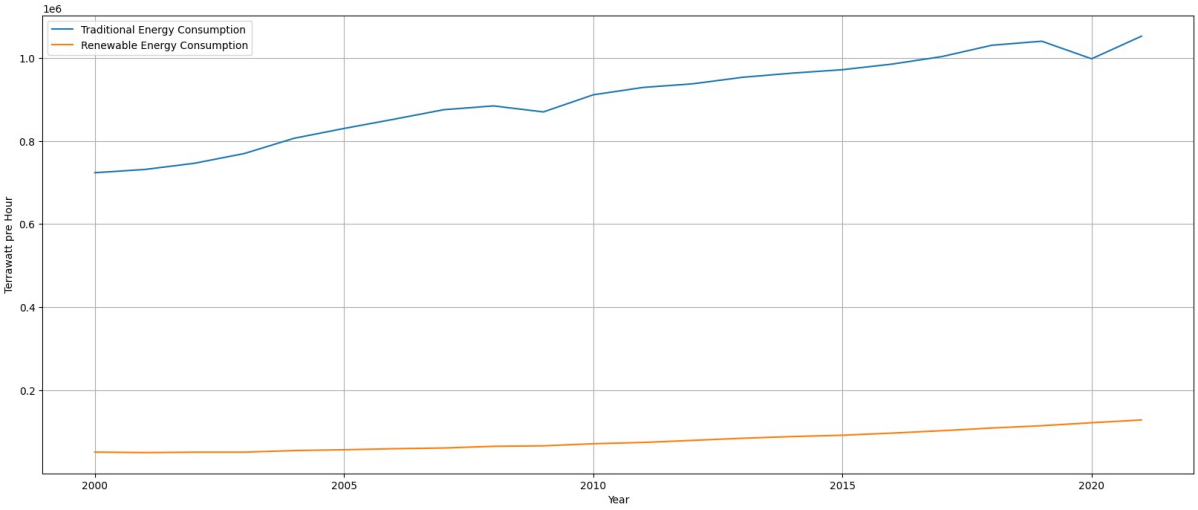


The United States, Russia, and China are the top producers of oil, gas, and coal. In terms of electricity generation, the United States generates 20.7% of its electricity from renewable sources, Russia generates 19.9% of its

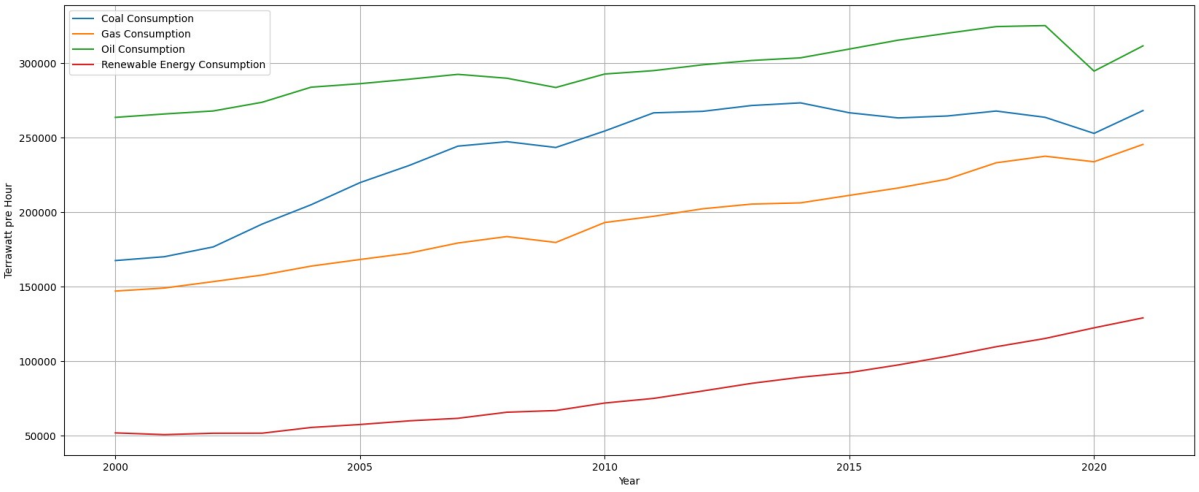
electricity from renewable sources, and China generates 28.9% of its electricity from renewable sources.

RENEWABLE vs TRADITIONAL ENERGY USAGE

To what extent are we using renewable energy compared to traditional energy? The chart shows that we are relying heavily on traditional energy compared to renewable energy.



Since renewable energy is primarily used for electricity generation, while oil is typically used for fuel, gas for heating, and coal for electricity generation. Let us further compare our consumption on oil, gas, and coal with renewable.



The chart indicates that we are far from replacing fossil fuels with renewable energy.

CONCLUSION

There has been a significant increase in renewable energy use over the past two decades, but we have a long way to go before we can fully transition from fossil fuels to renewable energy. Also fossil fuel production country relies less on renewable energy for electricity generation.

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