ANALYSIS OF FACTORS AFFECTING CLIMATE CHANGE

ABSTRACT:

The paper contains a thorough analysis of the variables influencing climate change, such as access to power, energy use, CO2 and greenhouse gas emissions, and how these variables change over time depending on the population.

The study is based on various Python visualisation plots, including heatmaps, bar and line plots, which are used to show the relationship between different factors. The World Bank provided the data for the entire study with the theme of climate change. Six countries are chosen for the graphs, and the factors are examined using those data.

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LINKS:

GitHub - https://github.com/krishnajakk/climate_change_assignment

FIG: 1

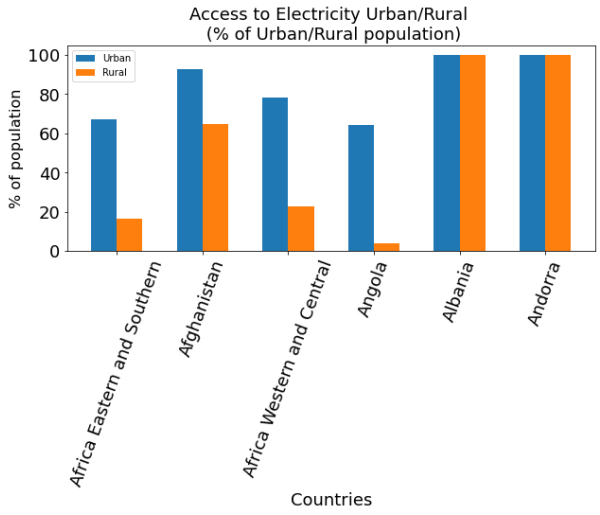


FIG: 2

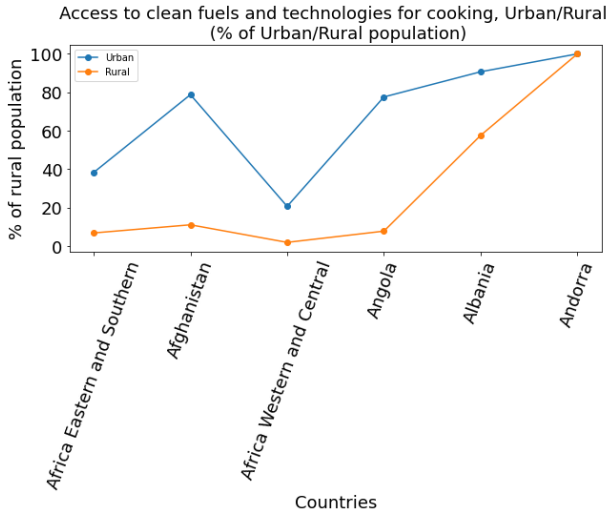
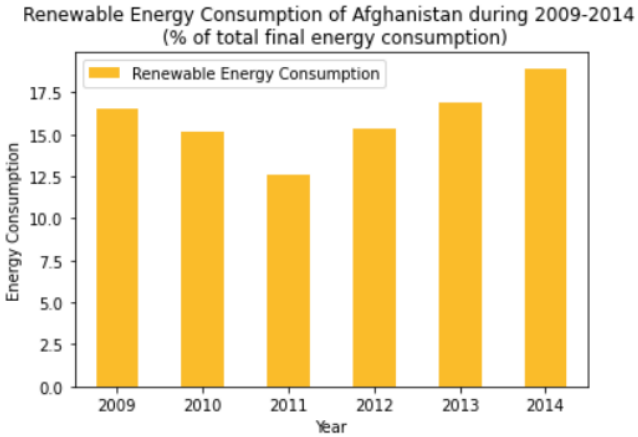


FIG: 3



Figures 1 and 2 show the availability of power and clean fuels and technology for urban and rural populations in six nations in 2015. The plot makes it clear that urban populations have greater access to both indicators than rural ones. It can be due to rural areas' lower population density.

Measuring the share of people with electricity and clean fuels access is a crucial factor as an indicator to show the socio – economic growth, improved living standards etc. High-income countries or developed countries is said to have 100% electrification when they entered that category.

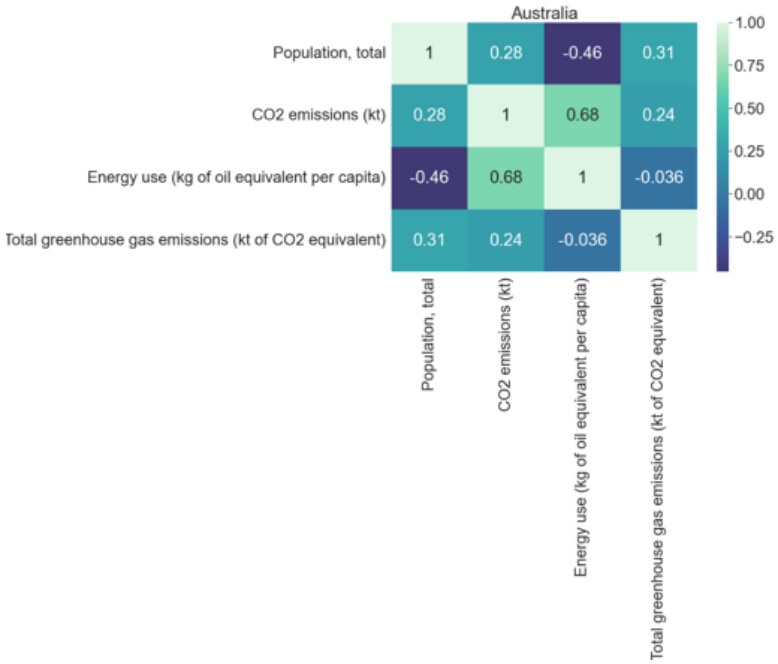
Given that Andorra is the most developed of the six countries considered, it is evident from the above plots that it has complete access to both power and clean fuels, raising their standard of living.

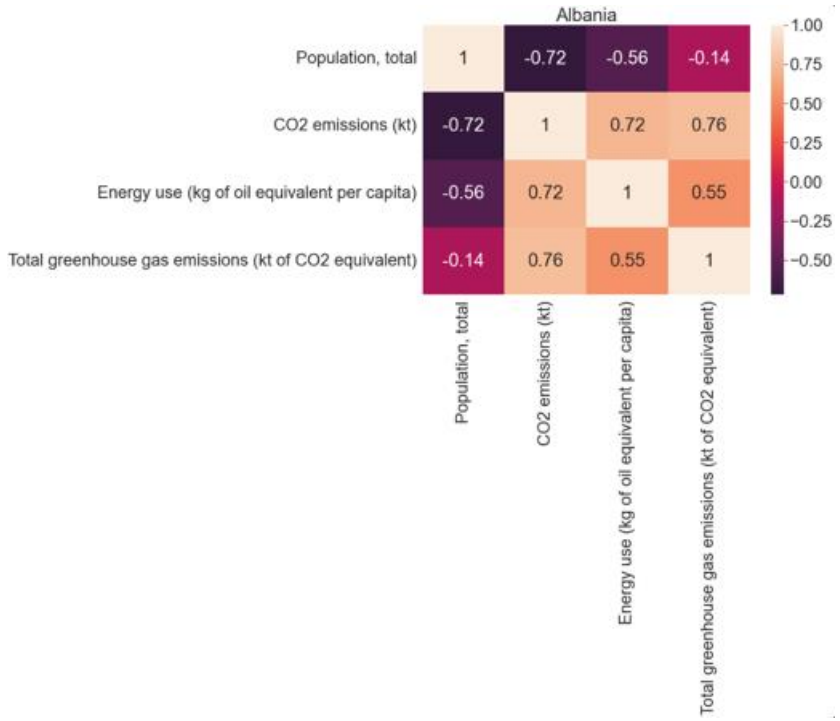
On a global note, the percentage of people with access to both is being steadily increased over the last few decades. In 1990, around 71% of the world's population had access; this has increased to 87% in 2016 which is a positive indication that in the coming years a large share of people will have 100% access to both. In today's world 1.4 billion people lack access to electricity, while 85% of them live in rural areas.

The above graph illustrates Afghanistan's consumption of renewable energy over a five-year period, from 2009 to 2014. It is evident that there was a progressive fall from 2009 to 2011, and then a gradual increase from 2012 to 2014. The worldwide financial and economic crises of those years, as well as other factors like the state of the stock market, climatic change, the availability of raw materials for renewable energy sources, etc., may be to blame for the fall.

According to Fig. 1, Afghanistan has the second-highest rate of power availability, behind Andorra and Albania, indicating that consumption may have increased as well. The primary obstacles to using renewable energy sources are their high cost and complex infrastructure requirements. The primary opportunity to reduce greenhouse gas emissions from fossil fuel-based power generation and

combat climate change is through the adoption of renewable energy sources.





The elements influencing climate change are displayed for a 10-year period in the correlation heatmap above. We have considered two nations for that: Albania and Australia. It is clear that the population has a positive association with CO2 emissions and total greenhouse gas emissions for Australia, but a negative correlation with these emissions for Albania. This occurs as a result of Australia being a more developed and populated nation than Albania, which results in more emissions.

According to data on CO2 emissions, Australia is ranked 14th, and Albania is ranked 130th, or just 0.01% of the global total. Energy use is negatively correlated with population in each of these countries, which is a positive impact. This can be due to the increased use of renewable sources and also by switching to energy efficient methods.

High standards of living will result in high carbon footprints, however there may be significant regional variations in per capita emissions.

Energy consumption is also a major factor in contributing to the co2 and GHG emissions which in turn have a major share in global warming. From the heatmap above its significant that as energy use increases co2 emission also increases i.e., energy use and co2 emission is positively correlated.