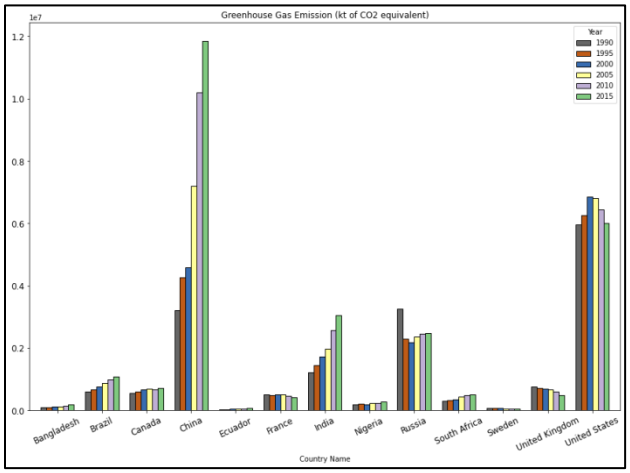
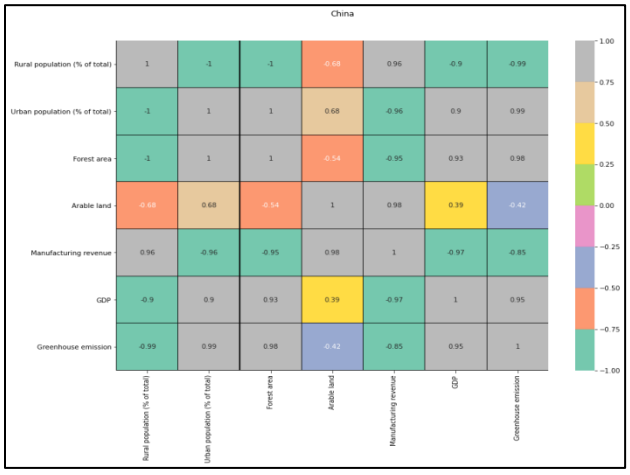
Climate change data analysis based on World Bank data

For this analysis 13 countries from different continents were selected and the interrelations of the following factors on climate change were investigated: total greenhouse gas emission, Rural and Urban population (% of total), Forest area, Arable land, Manufacturing revenue and GDP.

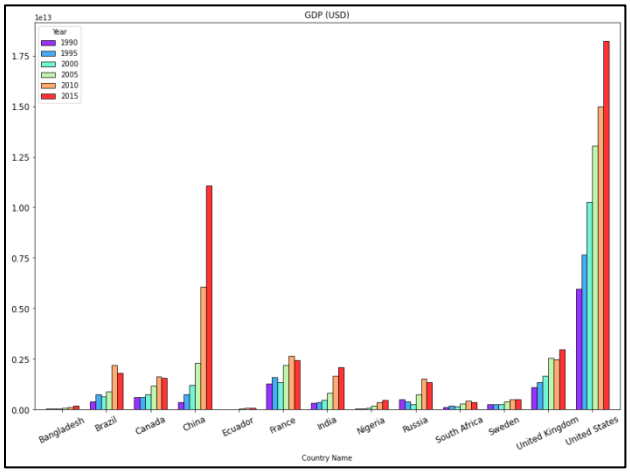
The analysis found some correlations between the factors and causes behind them were investigated.



The bar graph above on greenhouse gas emissions by the countries was constructed with available data from the year 1990 to 2015 in five years increments. China is the biggest producer of gases and showing an upward trend with accelerated rates from the onset of the millennium which is reflected in their GDP as seen on the GDP plot on the top right. The gas emission is related to an increase in the urban population.



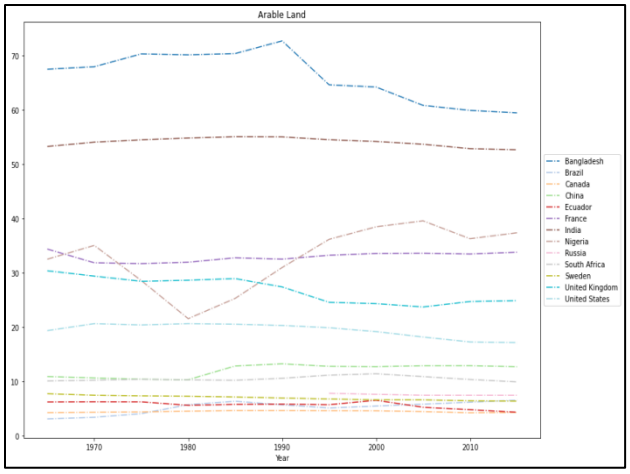
From the correlation heatmap for China above, it can be deduced that the growth in the urban population contributed to the growth of the economy and the modern lifestyle led to higher greenhouse gas emissions.



The "Greenhouse Gas Emission" and "GDP" charts also show that Brazil and India have similar upward trends which is significant at the world level.

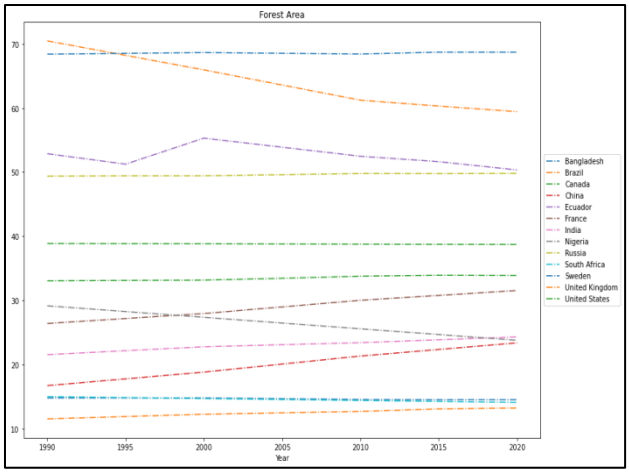
The following table shows the growth in urban population (as a percentage of the total population of the respective country) between 1960 and 2020. It is evident that the urban population has increased enormously.

Country	1960	2015	2020
Bangladesh	5.135	34.308	38.177
Brazil	46.139	85.77	87.073
Canada	69.061	81.259	81.562
China	16.203	55.5	61.428
Ecuador	33.878	63.398	64.166
France	61.88	79.655	80.975
India	17.924	32.777	34.926
Nigeria	15.41	47.838	51.958
Russia	53.731	74.05	74.754
South Africa	46.619	64.828	67.354
Sweden	72.49	86.553	87.977
United Kingdom	78.444	82.626	83.903
United States	69.996	81.671	82.664



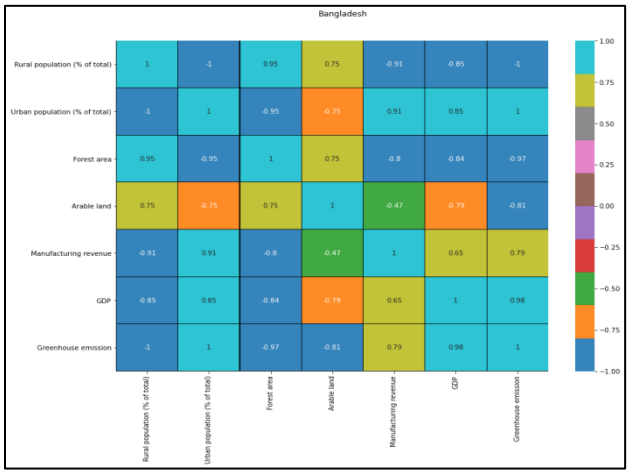
Bangladesh has seen an overwhelming increase in its urban population growth from 5.1% to 38.1% in 60 years which has impacted the arable land in the country negatively.

Compared to that the forest area didn't have any noticeable change as visible from the Forest Area plot on the right shows the percentage of the forest area to the total land area of the countries.

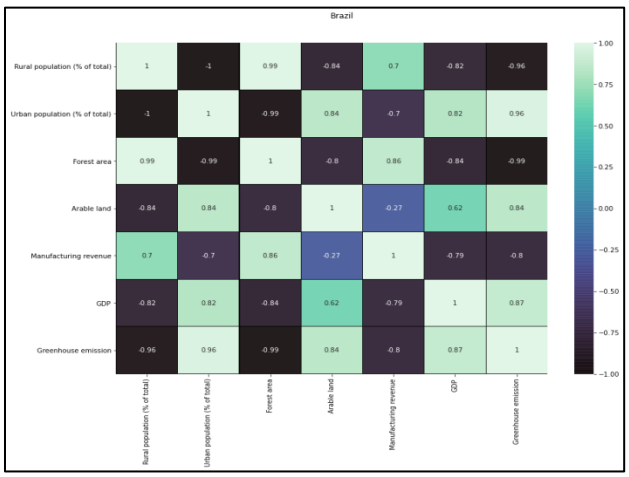


Sweden tops (68.7% of total land) the list of countries with the most forest area and Brazil has seen a steady decline.

Brazil's decrease in forest area has been a serious concern for the environment as there has been massive deforestation of the Amazon rainforest.



The heatmap on Bangladesh data shows no definite correlation between arable lands and any other factors. However, the CO_2 emission is positively correlated with the GDP and urban population in the country.



The emission from Brazil is closely related to the GDP and urban population growth. Also, the strong negative correlation between greenhouse gas emission and the forest area means that as the deforestation increases the emission increases as the extra CO_2 isn't neutralized because of the lack of trees. Cutting down trees for making more arable areas and ranches is helping the country's GDP at the expense of the environment and the climate as a whole.

https://data.worldbank.org/topic/climate-change