**Capstone Project**

**Carbon Emissions Forecasting**

**Context**

Global warming is one of the foremost problems that humanity needs to solve to ensure our survival for the future. There is enough scientific evidence to suggest that there could be catastrophic effects if we don’t start controlling the amount of damage we do to our environment and ecosystem.

One of the primary contributors to global warming is the accumulation of greenhouse gases in our atmosphere. These greenhouse gases are generated as a result of various industrial and economic activities that we conduct in our day-to-day lives and CO2 is one of the biggest contributors to this greenhouse effect. The need of the hour is to be able to identify the sources of CO2 and see how to assess the impact and potential ways to control the emission.

A lot of electricity in the US is still generated by various sources of energy that are burned to run turbines to generate electricity, and the burning of these fuels is the primary source of CO2 emissions. Different approaches and technological advancements are being used to minimize the emission of carbon & trade-off between carbon emission and affordable electricity production for mankind. Forecasting CO2 emissions can make an impact on decision-making in terms of emission reduction & choosing better methods of electricity production.

CO2

CO2

**Objective**

Forecast the carbon emissions value for **natural gas (NNEIEUS)** fuel type for the next 12 months and propose certain measures that can be adopted as policies to reduce these emissions.

**Data Dictionary**

This is the past monthly data of carbon dioxide emissions from electricity generation, from the US Energy Information Administration - categorized by fuel types such as Coal and Natural gas. The dataset contains the following attributes:

* **MSN:** Reference to Mnemonic Series Names (U.S. Energy Information Administration Nomenclature)
* **YYYYMM:** The month of the year on which these emissions were observed
* **Value:** Amount of CO2 Emissions in Million Metric Tons of Carbon Dioxide
* **Description:** Different categories of electricity production through which carbon dioxide is emitted
* For Sure DO NOT use Coal and Petroleum Coke fuel source in the Tier 1 and Tier 2 cohort seasonality months to augment the energy needs that are needed to meet the extra energy demands.
* To balance the reduction of carbon emission and affordable electricity production we suggest using less CO2 emitting fuel sources such as wind, solar, etc. in Tier 1 and Tier 2 seasonality cohort months.
* - Price as for each energy source and connect to the CO2 emissions is needed to be explored as tire 1 priority, and the consumer's monthly spend and monthly usage of the past, fuel source availability and profit margins are needed to be explored. We can also do analysis on the other primary sources such as the Coal and Petroleum to find the data patterns to understand the pattern how they affect total CO2 emissions.