

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.

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