

ANALYZING ENERGY PATTERNS AND ENVIRONMENTAL IMPACTS FOR POWER PLANTS

BY: LUCA CARUCCIO

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SUMMARY

BUSINESS PROBLEM

THE DATA PROCESS

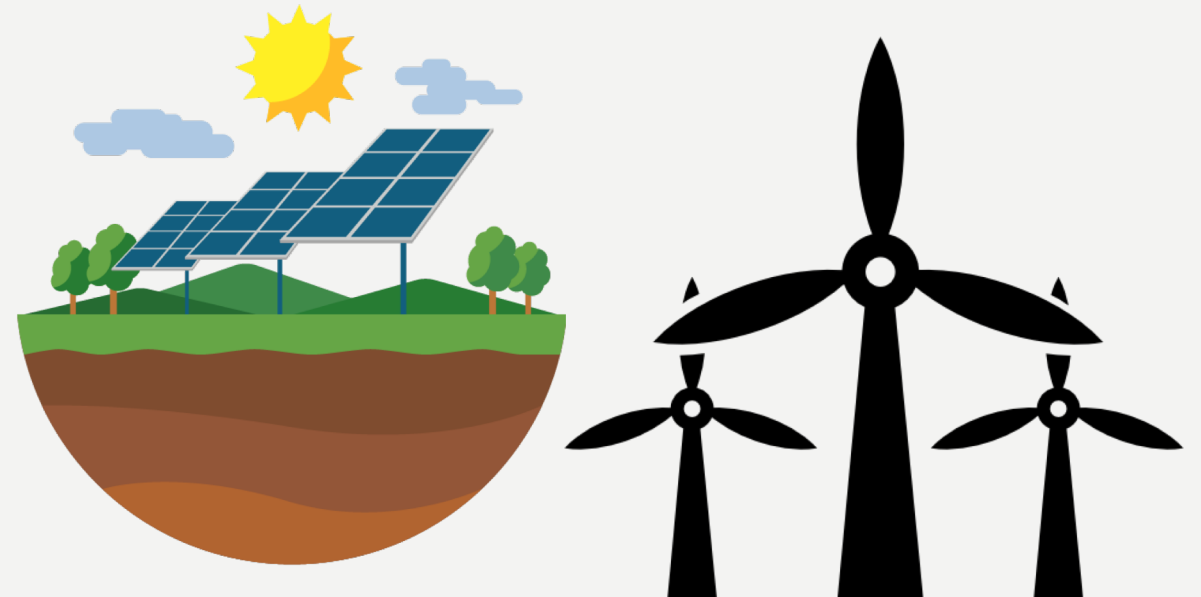
**WHAT DID WE DO, WHAT DID WE USE,
AND WHY IS IT RELEVANT?**

**WHAT DO WE DO WITH THIS
INFORMATION?**

WHAT IS LEFT TO LEARN?

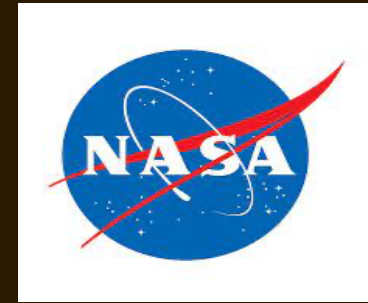
BUSINESS PROBLEM

- Your company wishes to expand operations responsibly
- Sustainable Energy has Seasonal Limitations
- Predict power generation to properly allocate resources
- Rising CO2 levels due to higher production



The Data Process

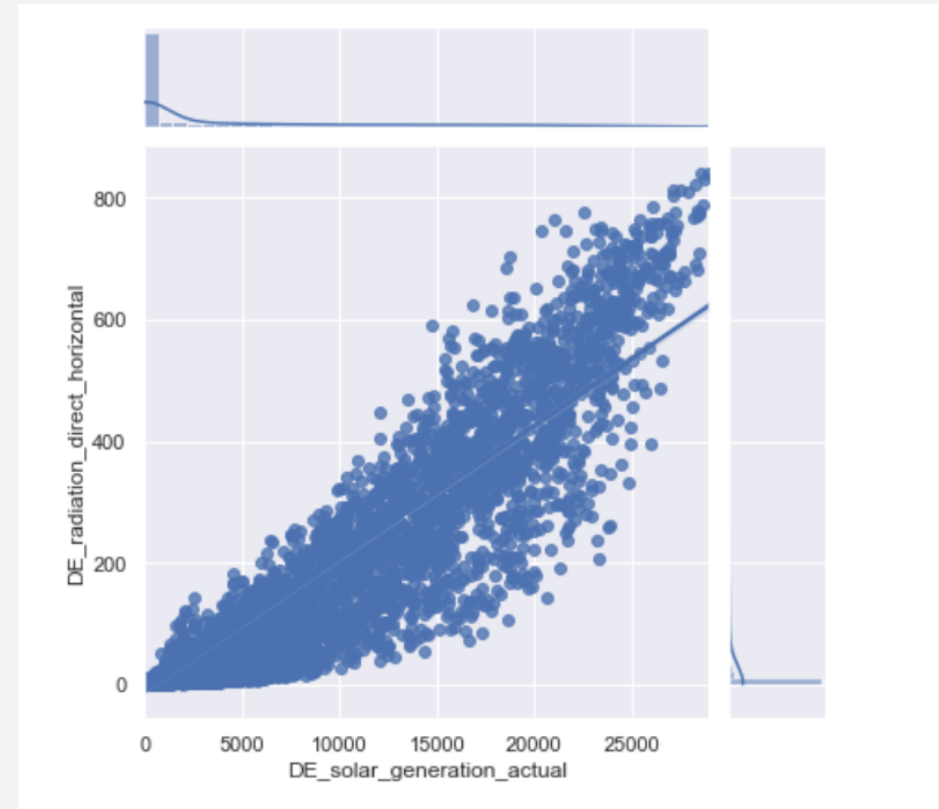
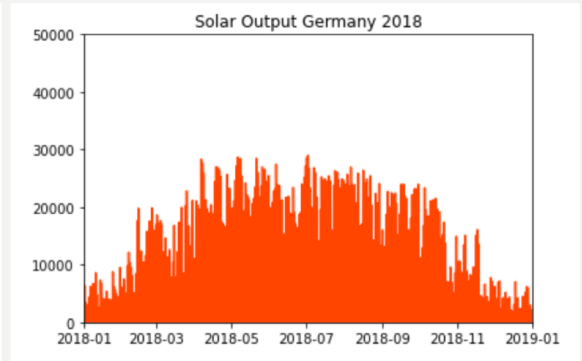
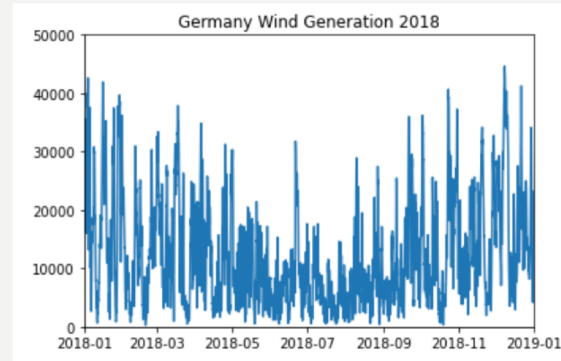
- Data courtesy of open power systems data
- Weather Data collected by NASA
- Compared Energy production across Different countries, and the reasons behind specific amounts or patterns
- United States CO2 and Energy data from the EIA



FINDINGS

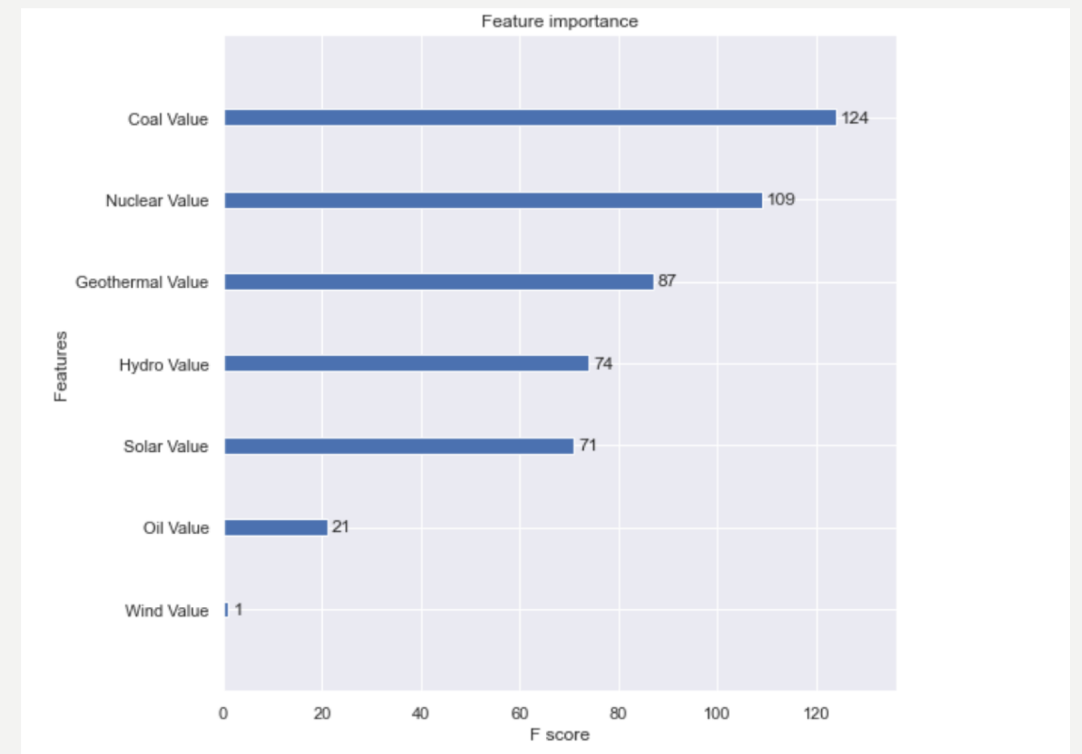
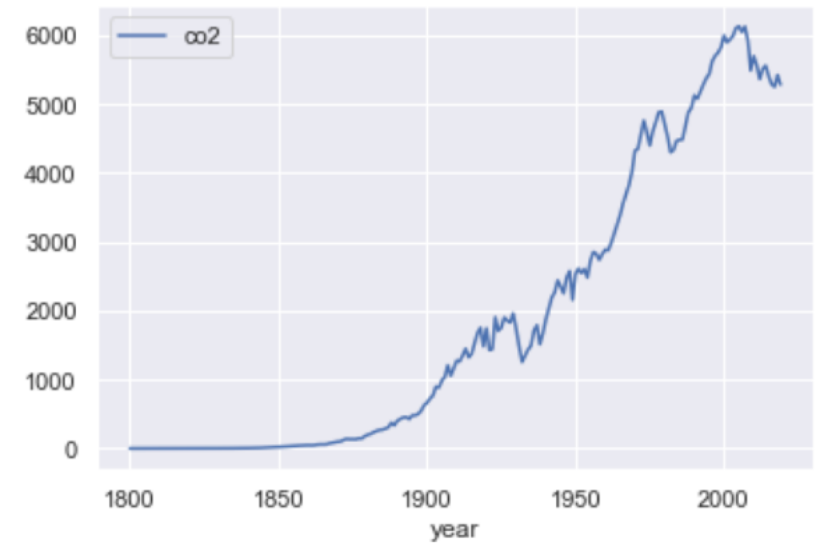


- Wind and Solar are inversely Seasonal
- Correlation between shortwave radiation and solar energy production
- Can predict Solar Energy production in Germany, Italy, and France with scores of:
 - 93.4%
 - 91.8%
 - 94.2%



FINDINGS CONTINUED

- Analysis of United States Energy Types
- Analyzed 21st century CO2 production across 9 energy types
- 90% accuracy in predicting CO2
- Coal and Nuclear power were found to have the highest correlation, with wind being the lowest



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RECOMMENDATIONS AND FUTURE WORKS

RECOMMENDATIONS

- USE PREDICTIONS TO ALLOCATE RESOURCES FOR UPKEEP AS NEEDED
- ITALY HAS HIGH RELIABILITY IN SEASONALITY FOR RENEWABLE ENERGIES
- EARLY DETECTION SYSTEMS FOR RADIATION TO INCREASE YIELDS

FUTURE WORK

- OTHER RENEWABLE ENERGY PREDICTORS
- MAXIMIZING ENERGY RETURNS GEOGRAPHICALLY
- HOW TO EFFECTIVELY BEGIN PHASING OUT OF FOSSIL FUELS AND HIGH CARBON ENERGY SOURCES



THANK YOU!



LinkedIn
Luca Caruccio



Twitter
@lfcaruccio



Email
lfcaruccio@gmail.com



Github
luca-caruccio