VISUALIZATION LINK:
https://informationisbeautiful.net/visualizations/mega-what-the-worlds-biggest-and-most-notable-power-plants/

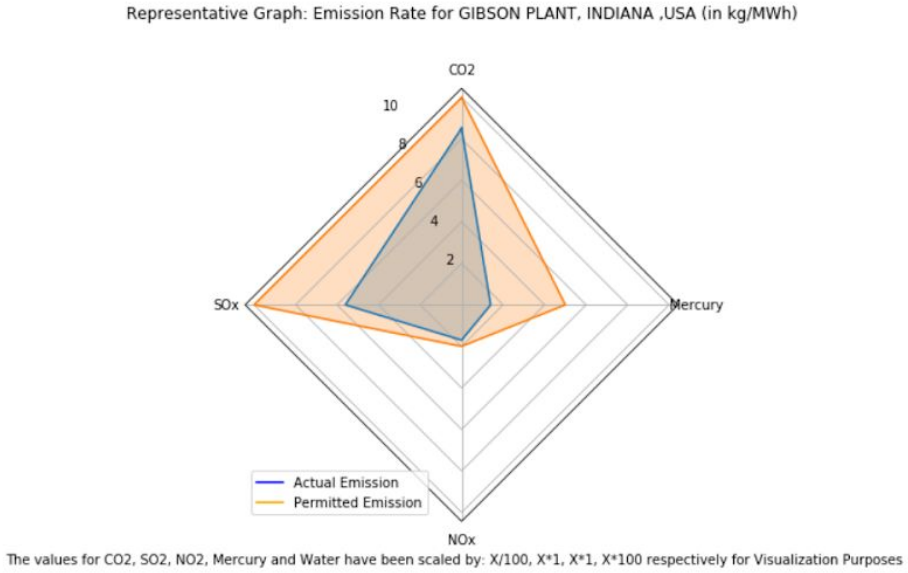
"If the emissions have to stop, then *we* must stop the emissions. To me, that's black or white." said Greta Thunberg in her 2018 Extinction rebellion rally in London. That set me thinking on how we can leverage technology to save our planet. Further, my course on Sustainable Development solidified my belief that it's not only carbon dioxide but a whole host of other emissions that we need to address to improve the quality of life. The UN's Sustainable Development Goal #7 of 'affordable and clean energy' and the COP21 commitments have led many countries to set deadlines for reaching net-zero emissions. Reduction of energy consumption and achieving higher conversion efficiency are as important as the setting-up of renewable projects. But how? By choosing cleaner power plants to reduce emissions.

While working on a Solar Radiation Prediction for my capstone project during a ML course at the London School of Economics, I saw the "InformationIsBeautiful" graphic. It was impressive, ranking a myriad of the world's largest power plants using the daily megawatt-hour (MWh) metric.

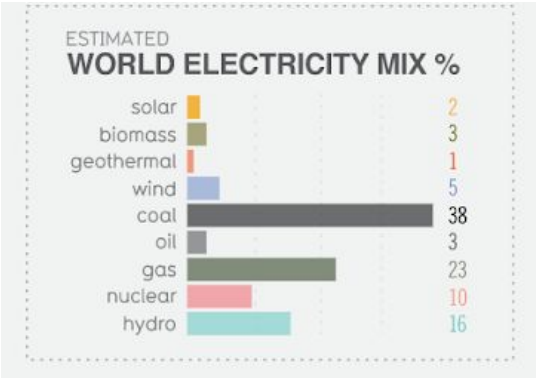
The feature that drew me to it was the **incredibly user-friendly representation** of individual power plants across all energy types, which aids comparison. This differentiates it from most alternatives, which show aggregate numbers by country and year, using line charts. This is useful not only for the general user but also for domain experts to get a bird's eye view of the proportion of energy output of renewables vs. fossil fuels. Another interesting feature is the **equivalence between 1 MWh and the average number of people** who can use it in major countries, showcasing the unequal energy distribution globally. The graphic also shows the capacity of defunct plants such as Fukushima and Chernobyl with an easy to identify color scheme, which is helpful to potential investors. Moreover, the inclusion of Bitcoin and Google into the mix brings perspective. Especially eye-opening is the fact that Bitcoin already utilizes energy equivalent to the biggest coal plant in India, Mundra, that serves 20 million people!

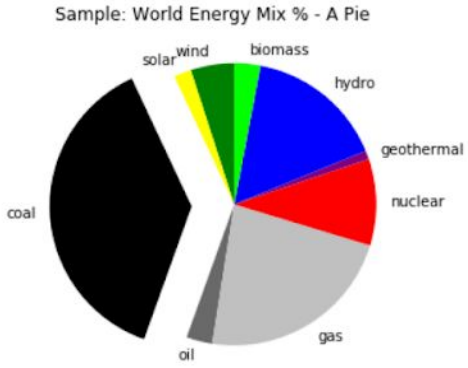
That said, the **visualization falls short of achieving its goal of spreading awareness** about various emissions to promote emission compliance. Addition of Environmental, Social, and Corporate Governance (ESG) information about power plants could help governments and environment-conscious companies in choosing energy suppliers. Incorporation of **Emission Statistics** (on clicking the respective plant bar) for CO2, SOX, NOX, Mercury, in a **Spider/Radar plot** could help to visualize multivariate data in

a 2D chart of these numerical variables. This would make even more sense as this data is readily available for all the power plants listed in this graphic, from the same provider, EIA. Additionally, this would make the graphic more interactive and informative.



Furthermore, the chart specifying the World Energy Mix could be improved by converting it into a pie chart instead of a bar chart, as the percentages add up to 100, and the visualization focuses on how each energy source contributes to overall energy produced.





Visualization Code: https://github.com/SwapnilDreams100/UW_Visualization_Essay