04_report

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#

Project Report

##

Part 4 - Data Sources

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0.0.1 GitHub Repository:

https://github.com/fheflo1/IND320

0.0.2 Streamlit App:

https://ind320-fheflo1.streamlit.app/

0.1 AI Usage and Reflections

For this assignment, I have used AI a little different. I have used AI to complete the tasks, such as completing the map page and so on. The way I did this was to ask AI for a template and the trying to customize it to fit my requirements. I also used AI to dubug logical error which I most of the times had to deal with since the AI don't work well with logical tasks. I also tried giving a issue to GitHub Copilot, were the task was to reconstruct data loading and session states. It worked really well, but when I tried with another issue which was customizing the navigasion, it kinda failed, destructing other parts.

0.2 Compulsory Work

Most tasks of the assignment went well. When creating the map, I struggled with Streamlit reloading and also map reloading, which is still not very good. I tried both Plotly map and Folium, and ended up using the Folium map. Since this assignment encouraged customizing the app with user-friendly navigation, plots, and general functionality, I put a lot of effort into this. I tried two different custom navigation approaches, but both felt less intuitive or less aesthetic than the Streamlit built-in page navigation. I tried using just the sidebar with simple page switching which lagged, and I didn't find a good solution for this. Then I also tried the streamlit_option_menu library which I felt had a lot of potential, but the sidebar ended up looking chunky and hiding other sidebar controls I wanted visible. Even though this separated the different categories in a great way which was super user-friendly, I thought the default navigation was better for this app. On

every page which only showed energy production, I added energy consumption. I tried changing the color of backgrounds and plots, going from darker blues to lighter greens for the background. I renamed pages to make more sense for the user. Since the same data is used throughout the app's different pages, I load states only in the first page which increases the speed and we don't need to load the data in each page separately.

In the bonus section, I added cache and spinners for most elements in the app. I also added weather features as exogenous variable for the forecast. I also have some error handeling, but not focused on this for the bonus section.

0.3 SWC Observation

Looking at the SWC for the energy group 'wind' and the meterological variable 'windspeed_10m', and for price area NO4 which is the North part of Norway; we see that the correlation is often at either 1 or -1. At strom spikes such as Ingunn in January February switch in 2024 also show high correlation with the energyproduction. In every year we get a high correlation.

I NO1 08.08.2023 it was high percipitation and with a little lag we can see high correlation around 0.9 close to 1.

A nice observation was the same percipitation mentioned above, had almost -1 correlation with solar energy production.