WEEKLY STATUS REPORT

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| Name: | Julian Florez |
| Week Ending Date: | July 21st 2022 |
| Self-Assessment: | ~~Green~~, Yellow, ~~Red~~ |

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| ACTIVITIES COMPLETED THIS WEEK |
| The following activities were completed this week:   * Further research was done analyzing the cost and trade routes of Saudi Arabia to Germany, Japan, and South Korea. Collected data for model. * Further work was done on increasing visualizations of the trade route and testing edge cases (see image below for what graphic looks like). * Renewable generation sites were selected with high wind potential using the following tool [Global Wind Atlas](https://globalwindatlas.info/) * In accordance with last weeks mentioned structure the three sites are northwest, northeast, and central west (image below)   The three sites were then compared based on capacity factors (what percentage of the time is its energy being generated over maximum output).    Violin plot representing density of distribution for solar capacity factors. Blue line is mean and green line is median.  Radial heatmaps were created exploring the temporal aspect of the renewable generation. The radial heatmaps depict the capacity factor of the sites with darker colors representing higher capacity factors (greater wind or solar resource). \*The four white streaks are simply graphical issues and not in the data    Solar radial heatmap of capacity factor (what percent of generating capacity is used at each hour)    Enlarged for better visualization for just the north west    No units but the above image is the same radial heatmap on a but daily basis overlapping all days from 2017 to 2019 from the North West site. Greater brightness on the image represents greater number of days that followed that specific path.  As is evident from the final image above, the data source from [JRC Photovoltaic Geographical Information System (PVGIS) - European Commission (europa.eu)](https://re.jrc.ec.europa.eu/pvg_tools/en/#HR) is not entirely accurate due to the drops during the middle of the day.  Same analysis for wind generation    Wind generation is fairly similar with a preference for the central west and northwest.    Increased visualization of northwest site    As expected much more variation due to the diurnal behavior of wind generation with annual trends.    No units as well on above image but follows same visualization thought process as the red/orange solar overlap (darker colors in this case represent greater frequency of hourly wind generation). Wind generation is calculated by mapping the wind speeds at each selected height to the respective wind turbine power curve which is discrete (that is why we see at each hour the white separation as the wind speed is mapped to bins).  From the image there is a clear density at the lower capacity values but significant variation over time compared to solar generation due to diurnal nature.  Now working at gathering all the data and running first tests. |
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| ACTIVITIES IN PROCESS | NEXT ACTIONS | DUE DATE |
| 1. **Gathering real world cost data for transportation model for ammonia and hydrogen** 2. **Developed cracking cost analysis** 3. **Running initial scenarios** | * **Construct initial scenarios for demand consumption** * **Run realistic cost analysis simulations for first results** * **Run transportation model with updated cost analysis and compare values with past research** |  |

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| ACTIVITIES TO BE STARTED NEXT WEEK |
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| LONG TERM PROJECTS |
| * Analyzing optimal economic analysis of green ammonia from production to transportation * Increasing useability of model for non-developer use. |

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| ISSUES FOR IMMEDIATE ATTENTION |
| * N/A |

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| KEY TEAM INTER DEPENDENCIES |
| * N/A |