WEEKLY STATUS REPORT

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| Name: | Julian Florez |
| Week Ending Date: | July 7th 2022 |
| Self-Assessment: | Green, ~~Yellow~~, ~~Red~~ |

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| ACTIVITIES COMPLETED THIS WEEK |
| The following activities were completed this week:   * After our meeting with Mani, I created the hydrogen production model visualized below. The code and model formulation can be found at [KAUST/model.py at main · julflore000/KAUST · GitHub](https://github.com/julflore000/KAUST/blob/main/productionHydrogenOptModel/src/model.py) and [KAUST/greenHydrogenFormulation.pdf at main · julflore000/KAUST · GitHub](https://github.com/julflore000/KAUST/blob/main/productionHydrogenOptModel/formulation/greenHydrogenFormulation.pdf) respectively      * After runtime issues (network model would not run to completion), I decided to shift the microscopic model (figuring out hourly shipment flows) to a mesoscopic model (where flows on a monthly basis are decided but not the specific scheduling of shipments on daily or hourly basis). The simpler transportation model can be found at [KAUST/model.py at main · julflore000/KAUST · GitHub](https://github.com/julflore000/KAUST/blob/main/simpleTransportationOptModel/src/model.py) and formulation at [KAUST/simplifiedDownstream.pdf at main · julflore000/KAUST · GitHub](https://github.com/julflore000/KAUST/blob/main/simpleTransportationOptModel/formulation/simplifiedDownstream.pdf) (video in PowerPoint slides goes into greater detail on example data run). * \*The model is designed to be flexible enough to be interchangeable with hydrogen or ammonia fuel transportation. See README for the list of inputs: [KAUST/transportationREADME.md at main · julflore000/KAUST · GitHub](https://github.com/julflore000/KAUST/blob/main/simpleTransportationOptModel/transportationREADME.md) * \*\* The mescopic model idea was inspired from the paper: “A feasibility study on the supply chain of CO2-free ammonia with CCS and EOR." by Kawakami, Y., S. Endo, and H. Hirai (2019) * Three sites were selected in Saudi Arabia for the case study of hydrogen and ammonia production and transportation costs (shown below) due to a confluence of three factors. 1. Strong wind resources. 2. Strong solar resources. 3. Port infrastructure presence. As shown by the three images below.   Port locations are marked in orange and blue dots in above image.    Solar resources in Saudi Wind resources in Saudi (lighter color = greater power) |
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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. **Gathering real world renewable energy data profiles from three selected sites** 3. **Developing cracking cost analysis** | * **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 |