Sustain and Company

Project Details

Duration: 2 months
Project Name: Data driven insights for solar/wind power plants
Mode: Hybrid

Objective of the project

Unlike conventional models like PVSyst which focus narrowly on techno-economics, **your work will make climate variability, synergy, and risk a core part of site selection**. Your outputs will directly inform our data analytics dashboard used by energy developers, investors, and climate strategists.

Scope of work

1. **Climate Data Aggregation & Cleaning**
    - Source and format climate data (solar irradiance, wind speed, temp, humidity, air pressure, etc.)
        i. Land use
        ii. Humidity
        iii. Temperature
    - Ensure temporal resolution (hourly, daily, monthly) and spatial resolution (<10km grids) where possible
        i. 0.5 degree latitude-longitude
    - Align historical data with geospatial coordinates for India

    i. 1980 to present

2. **Synergy & Variability Analysis**

    - Model seasonal/diurnal alignment to reduce intermittency risk
    - Create heatmaps and rank sites

3. **Extreme Weather and Climate Risk Integration**

    - Map extremities across the datasets and flag them across India

4. **Benchmarking Against PVSyst**

    - Identify what climate/environmental inputs PVSyst uses
      Attempt to recreate and then enhance those parameters using richer datasets
    - Highlight where our tool offers deeper insights or broader coverage

Tools and Skills You'll Use or Learn

- Python (Pandas, GeoPandas, NumPy, Matplotlib)
- GIS (QGIS, Earth Engine, Folium, Plotly)
- Data cleaning (ERA5, NASA POWER, IMD datasets)
- Comparative modeling with PVSyst (reference-based)
- Basic dashboard interfacing (data handoff in JSON/GeoJSON)

Deliverables

- Climate intelligence datasets (cleaned and visualized)
- Wind Power generation
- Prototype LCOE modeling
- Site scoring layer across India
- Extreme weather/climate risk overlays
- Comparative report: *PVSyst vs. Sustain and Company*
- Final intern reflection: key learnings, recommended improvements

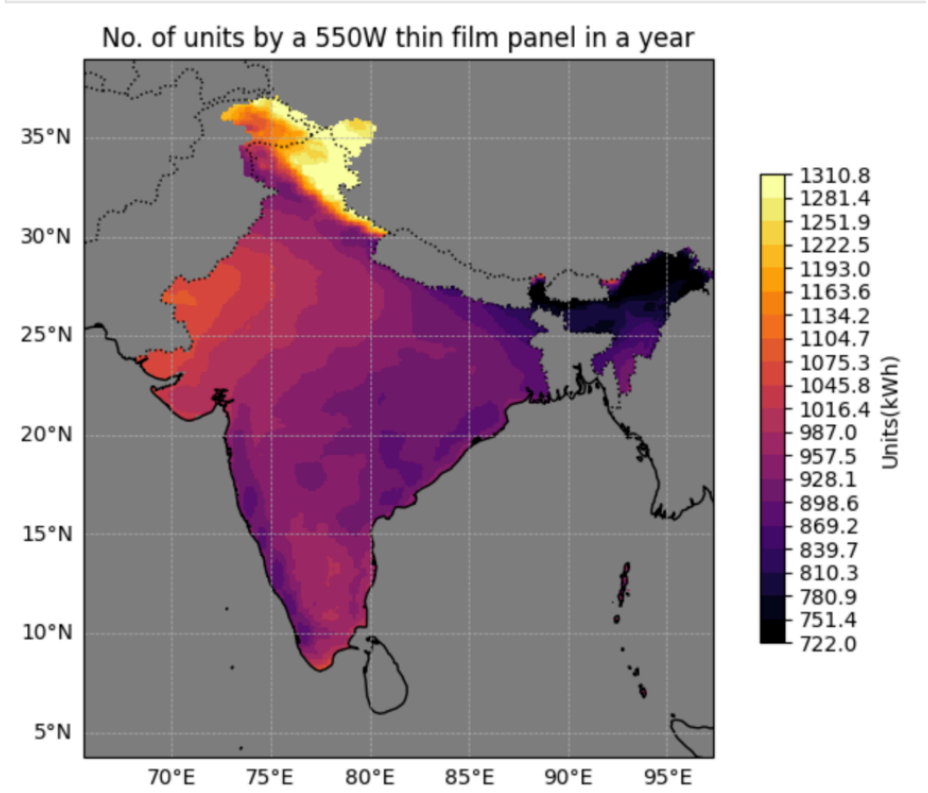
Support Structure

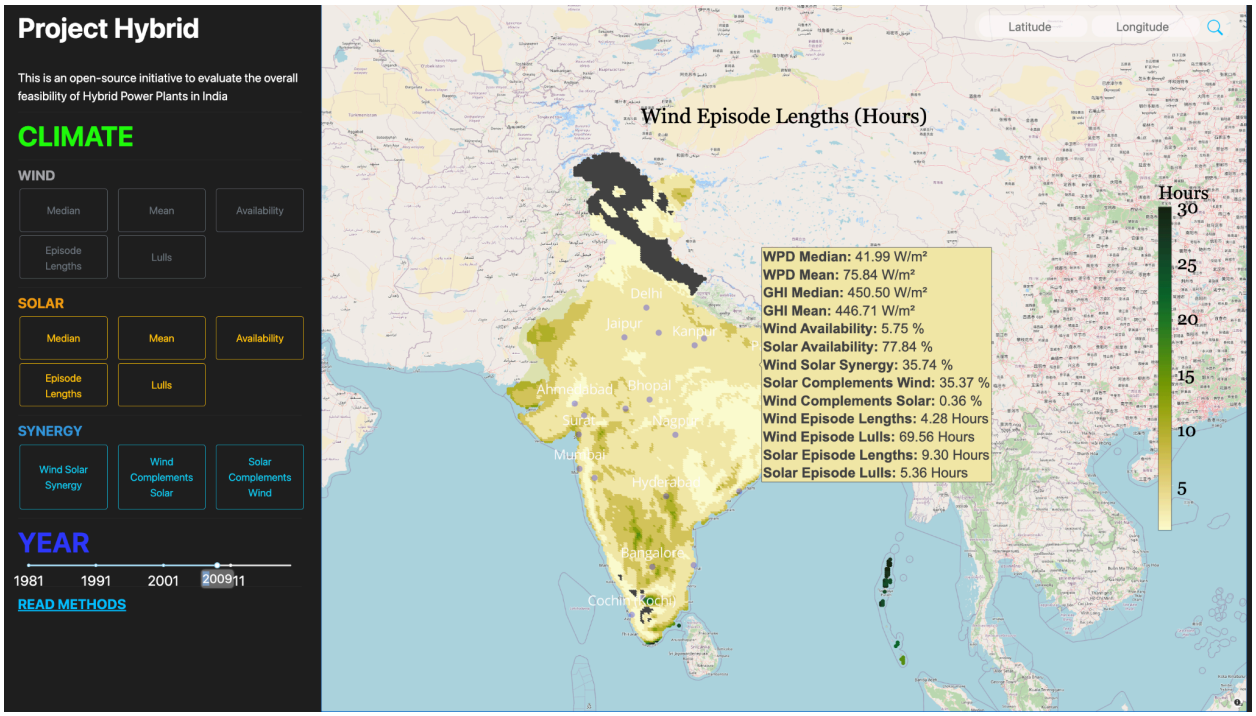
- Bi-weekly check-ins (e.g., Monday + Friday)
- WhatsApp for daily updates/ queries
- Drive workspace for files
- Weekly feedback loops and guidance on insights

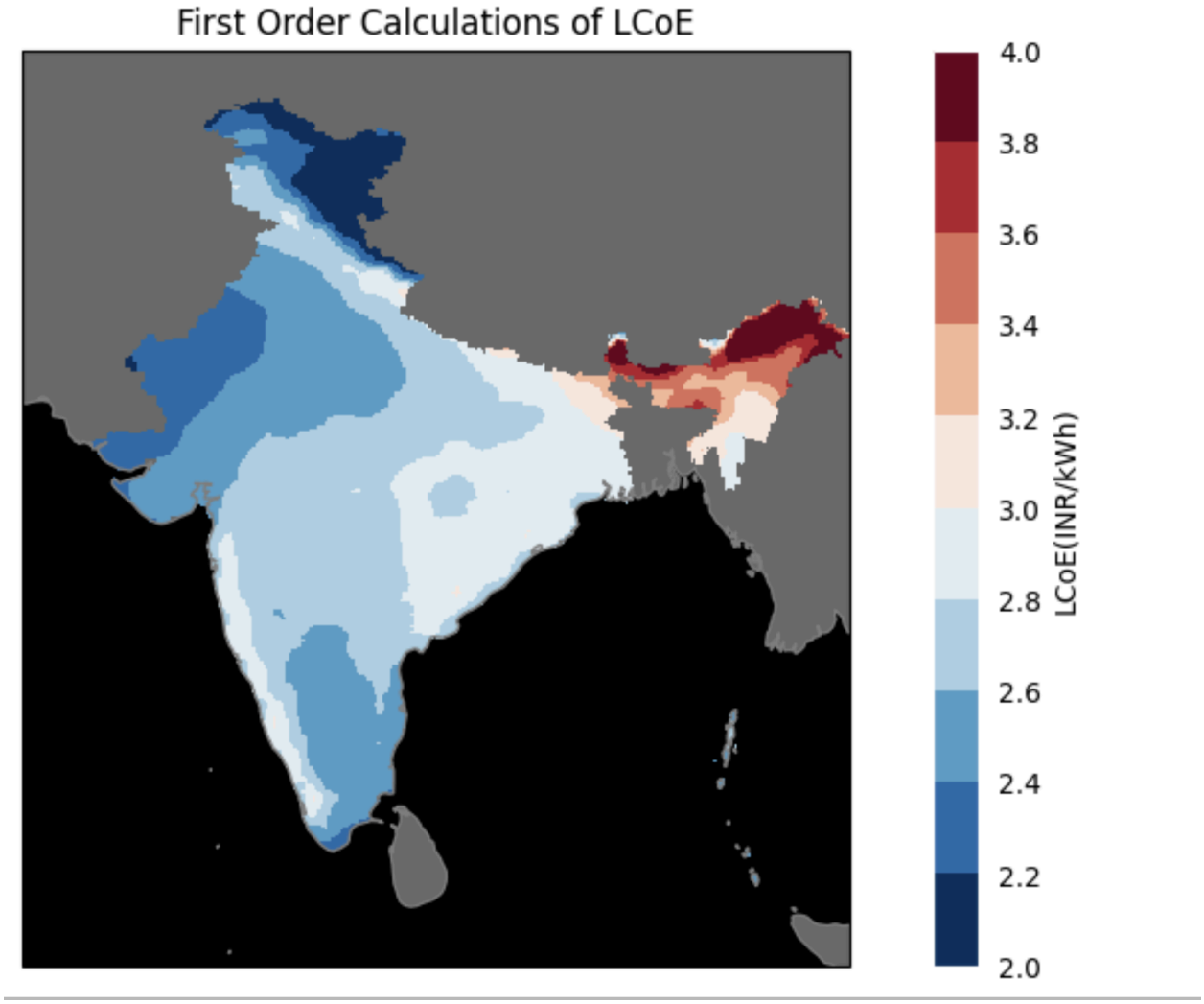
Important Notes

- This is a **high-impact project**; your work will directly go into a product being used by companies like Suzlon and potential investors.
- We expect **independent thinking**. Ask questions, raise doubts, but try things on your own first.
- We value speed **and** thoughtfulness — done is better than perfect, but lazy work won't be accepted.

Some Examples






First Order Calculations of LCoE
4.0
3.8
3.6
3.4
3.2
3.0
2.8
2.6
2.4
2.2
2.0
LCoE(INR/kWh)