Consumer Data Research Centre

Masters Dissertation Scheme Project form

Company / Organisation Name:	GHD
Team / Department:	EMEA Advisory: SR&ESG
Address:	10th Floor 25 Farringdon Street, London, EC4A 4AB

Provisional title for project:

Location-based decarbonization strategies for UK industries

Short description of the problem that would be addressed by the project:

- Decarbonising industry is one of the major challenges of the energy transition.
- High polluting companies must develop decarbonisation strategies to reach net-zero. These strategies require identifying suitable low carbon energy sources and technologies (e.g., solar panels, hydrogen etc...).
- This research project aims to streamline the approach to identifying suitable decarbonisation options for different UK industries and manufacturers.
- Current decarbonisation work to date focuses primarily on the major industrial clusters. These clusters account for 53% of industry. The solution for dispersed emissions is not as clear.
- Choosing the right decarbonisation technologies can be slow, time consuming and complicated process. Industry is bombarded with too many technologies, including on-site solar, batteries, hydrogen biomass, and more As industry are not energy experts, they lack the knowledge of the best technology for their business in their region.

For this project we propose three complementary pieces of analysis.

1. Assessing the spatial characteristic of UK industries by:
    1. Using data on where jobs and companies are located (e.g. Labour Force Survey, Business Register and Employment Survey, Companies House registrations) and their associated emissions
    2. Specific focus on dispersed industry where infrastructure is not as accessible.
    3. Analysing the spatial characteristics around the locations of these industries (land availability, infrastructure etc.)
2. Assessing which locations are suitable for different decarbonisation technologies:
    1. Developing criteria that would make a decarbonisation technology viable (i.e. grid connection infrastructure
    2. Engaging with various decarbonisation technology experts across the GHD engineering business to understand any other key criteria that deem suitable technologies (regulatory. financial, etc.).
    3. Use data on infrastructure and the natural environment (weather, terrain available land) to identify which parts of the country are better suited to different decarbonisation strategies (e.g., installing solar panels or wind turbines, or hydrogen pipelines)
3. Combining insights regarding industry locations and suitable decarbonisation strategies to propose suitable strategies for industries at different locations.

Short description of the data sources that would be used in the project, and how they would be used

- Environmental resource data (e.g. wind and solar radiation)
- Infrastructure data (pipelines, electricity transmission and distribution grid)
- Industry data (Labour Force Survey, Business Register and Employment Survey, Companies House registrations)

Would any work by the student need to be carried out on site at the Company (with the exception of supervisory Meetings)?

No

Any issues of data confidentiality and IPR that would need to be resolved

tbc

Essential skills

Spatial Data Science

Desirable skills

Python/R

Preferred degree programmes (if any)

Geographic Data Science, Data Science, Renewable energy sciences / Engineering

Preferred selection method

Online Interview

Support and training offered by the company

Regular supervisory meeting with GHD advisor

Financial assistance offered by the company

The organisation will pay the honorarium (£500)

Any other comments

If there are any questions about the 2024 programme, please contact Richard Arnold at richard.arnold@ucl.ac.uk. The completed form should also be returned to this address.