

CARBON CAPTURE TARGETS & TRANSPORT CASE STUDY

Understanding the Carbon Capture Challenge



PROJECT PARTNERS



Department for
Energy Security
& Net Zero



Carbon Capture and Storage (CCS) is considered a critical technology for reducing CO₂ emissions and combating climate change. The Crown Estate commissioned Olsights to undertake a project to delve into the complexities of CCS and related technologies, aiming to:



Analyse the geographical distribution of CO₂ emissions.



Examine logistics for transporting CO₂ from capture sites to offshore storage.



Explore the relationships between hydrogen developments, CCS, and offshore wind energy.



Align CCS technologies with current and future policies.



Olsights have proved themselves not once but twice in providing fast insights into large datasets. At the Crown Estate, I wanted to dig deeper into the mass of public domain data to understand where the UK's carbon emissions really come from and how they would reach potential carbon stores. Olsights asked the right questions to address our needs and delivered quickly as they promised. Great experience.

Adian Topham

Senior Development Manager CCUS,
The Crown Estate

Traditional methods fell short due to the rapid evolution and high costs of CCS infrastructure. A more interactive and digestible approach was necessary for understanding and visualising the data.

PROJECT GOALS

The objective of the project was to enhance understanding and logistical planning for Carbon Capture & Storage (CCS) technologies, focusing on CO₂ emission clustering, transport logistics, policy alignment, and integration with hydrogen developments and offshore wind energy with the following key goals.

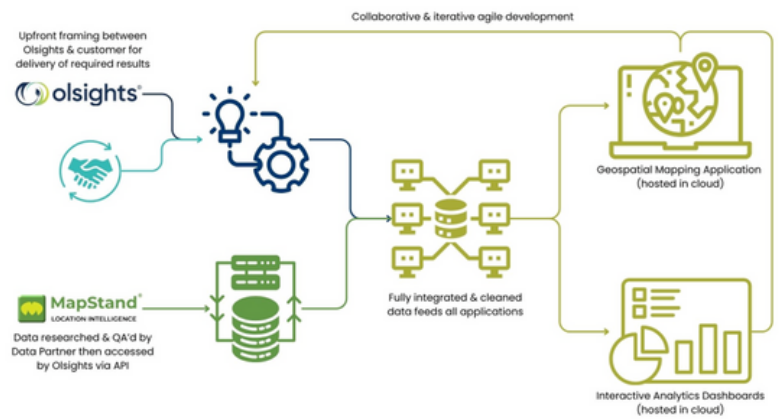
- **Enable Self-Serve Insights:** Develop tools for insights beyond existing data sources.
- **Address Evolving Requirements:** Meet the changing needs of stakeholders.
- **Adopt a Rapid and Agile Approach:** Deliver solutions quickly, bypassing lengthy processes.
- **Facilitate Discussions:** Accelerate internal and external stakeholder discussions.



THE APPROACH

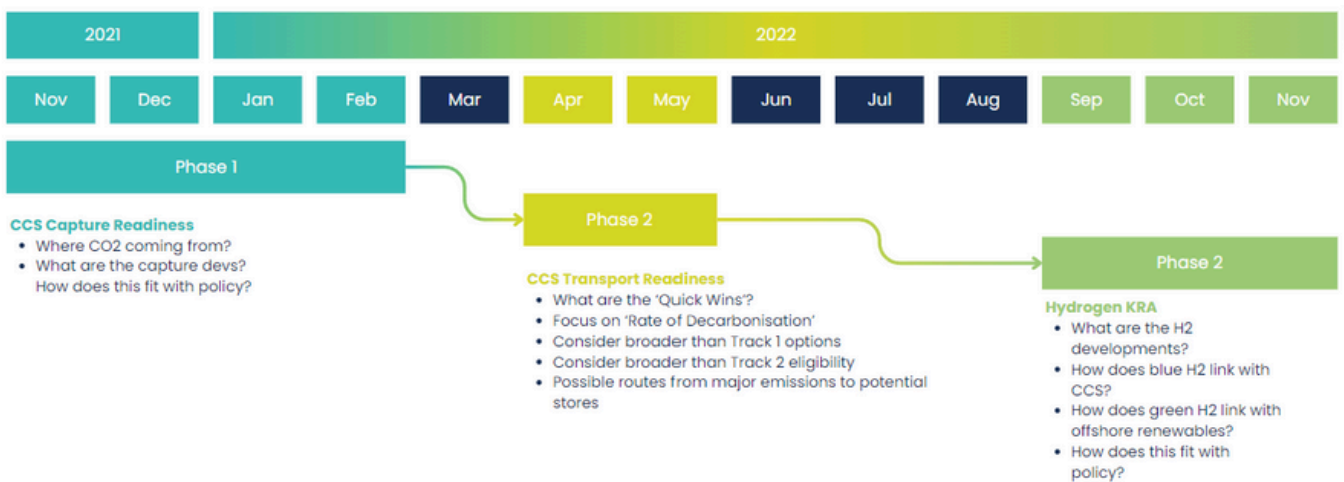
Olsights led the project with an innovative approach:

- Upfront Framing and Iterative Build:** Initial problem framing followed by continuous development to meet user expectations.
- Data Sourcing and Integration:** Comprehensive data provided by MapStand, accessed via API.
- Collaborative Agile Development:** Iterative process incorporating feedback at each stage.



The project was executed in three phases:

- Phase 1 (Nov 21 - Feb 22):** Focused on identifying CO2 sources, capture development capacities, and policy alignment.
- Phase 2 (Apr 22 - May 22):** Identification of potential transport routes from capture locations to exit terminals
- Phase 3 (Sept 22 - Nov 22):** Investigated hydrogen developments and their integration with CCS and offshore renewables.



THE SOLUTION

Olsights delivered custom self-serve digital tools in two formats:

Interactive Geospatial Mapping Application: Visualising carbon emissions clusters, potential storage locations, power network infrastructure, gas pipelines, and hydrogen developments.



- Heat map of CO2 industrial cluster emissions
- Identification of potential CO2 storage sites
- Selection sliders and filters including a time series

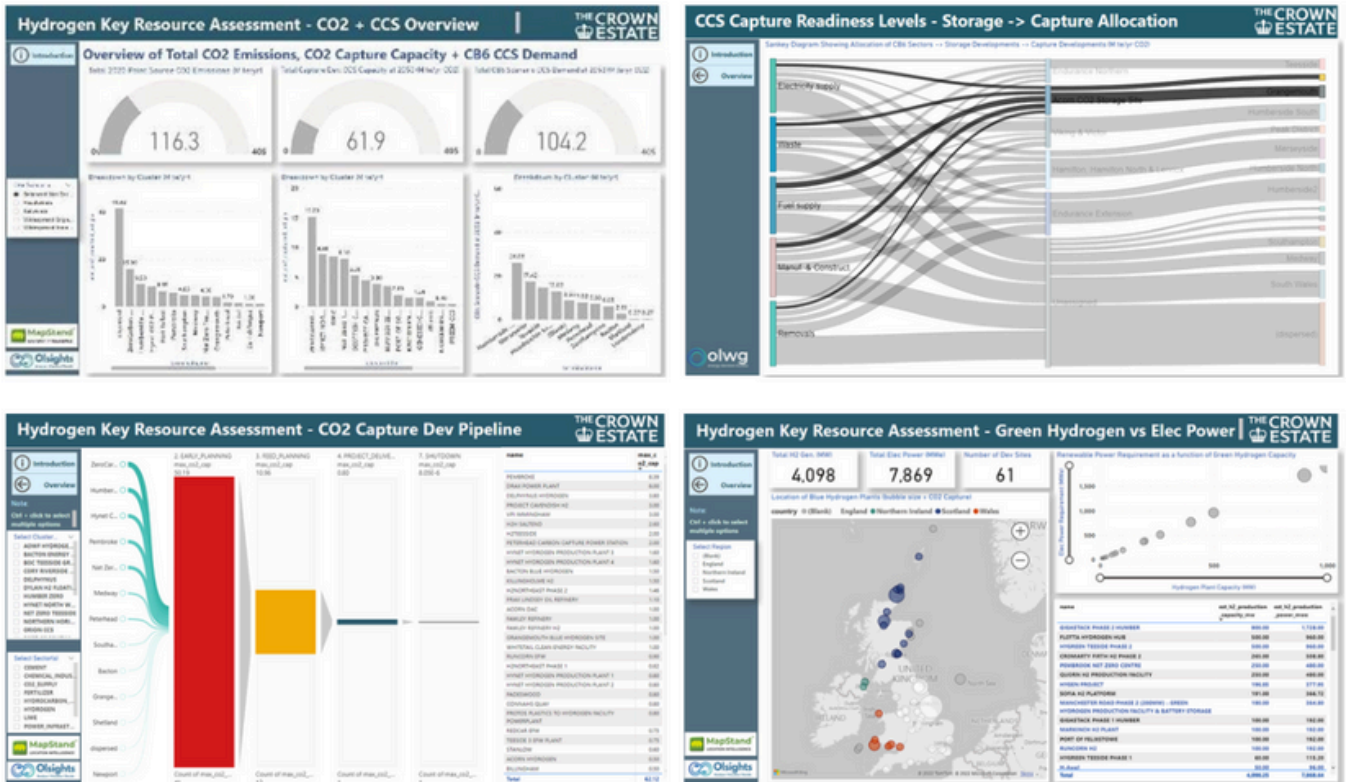
Features Include:

- Heat maps of CO2 clusters.
- Custom filters and sliders.
- 3D topography and transmission infrastructure

- As phase 1 plus:
- Aerial imagery
 - Existing gas transmission infrastructure
 - 3D topography, route elevations & slopes

- As phase 2 plus:
- Improved styling
 - Measuring tools, lengths & areas
 - Heat maps & clustering for supply & demand
 - Planned & operational blue hydrogen production
 - Planned & operational green hydrogen
 - Planned & operational offshore wind farm locations
 - Onshore renewable energy production locations

Analytic Dashboards: Using the same data as used in the Mapping application to allow for more detailed insights and analysis. Dashboards included filterable summary charts, metrics, and insights into relationships between variables.



THE IMPACT

The project achieved significant outcomes:

- **Quick Mobilisation and Agile Build:** Rapid development and deployment of digital tools.
- **Enhanced Organisational Insight:** Improved internal understanding and decision-making.
- **Exposure of Complex Sites:** Made the realities of dispersed CCS sites transparent.
- **Uncovering New Opportunities:** Identified new CO2 capture and storage opportunities.
- **Accelerated Stakeholder Agreement:** Facilitated quicker consensus among stakeholders.
- **Long-Term Subscription:** Led to continued use and updates of the tools.

SUMMARY

The project was completed on time and budget, without the need for a competitive tender. The cloud-based web tools provided a flexible and accessible solution, creating the first prototype for the Olsights Eye expanding the datasets into other regions and technologies. The agile approach ensured highly tailored deliverables, meeting the needs and expectations of The Crown Estate.



Olsights is a clean energy data visualisation and application developer creating tools to equip energy decision makers with essential insights to understand and assess the impact of decarbonisation projects.

Contact us for a demo of our flagship product the Olsights Eye or to discuss how we could help you with your next clean energy project.

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Visualising the world of clean energy.

