



SCOTTISHPOWER

**Carbon Capture and Storage:
'The Challenges of Deployment'**

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Iberdrola Group and ScottishPower



ScottishPower is part of Iberdrola, a world leader in energy

Combined April 2007 to form one of the largest global energy companies

Operating in over 40 countries to serve 30 million customers

43GW of installed capacity and a world leading 10 GW of renewables

SP is one of the 'big six' energy suppliers in the UK

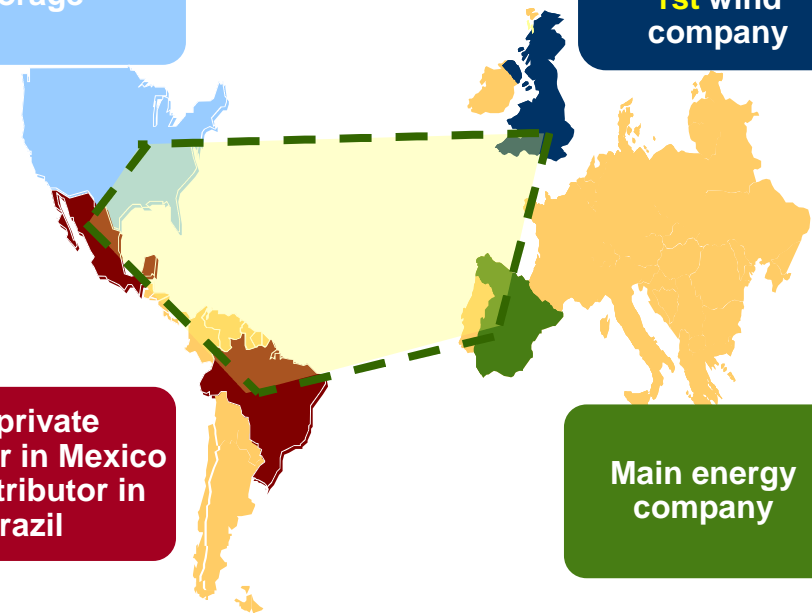
SP has 5.2 million customers and 6GW of generation capacity across the UK

2nd wind company
3rd player in gas storage

One of the **six** largest generator / retailers
1st wind company

1st private producer in Mexico
1st distributor in Brazil

Main energy company

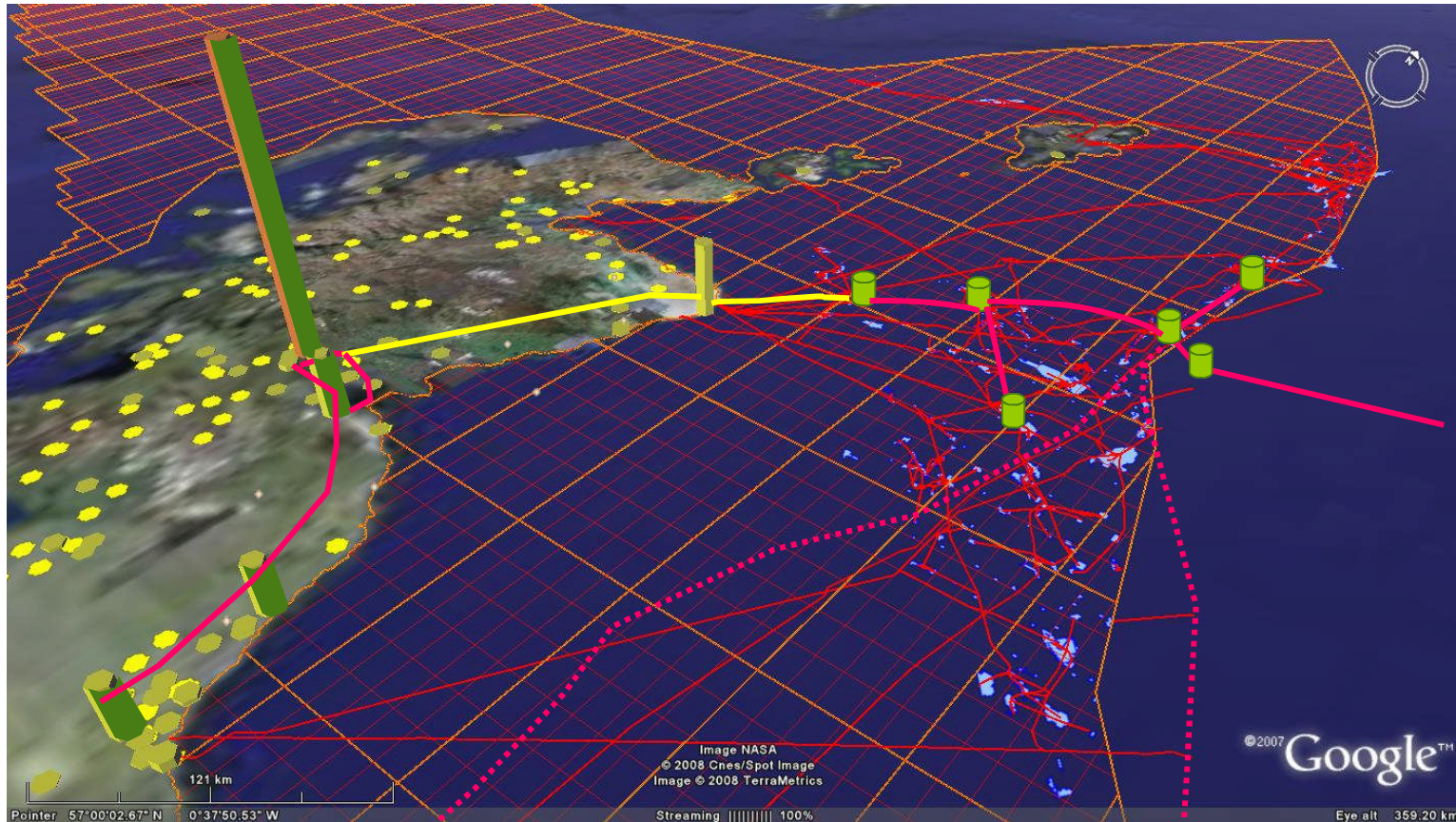


...with a clear focus on clean, sustainable energy provision

The Longannet Project



Substantial chain of CCS assets are already in place



A viable scheme capable of delivery by 2014

Challenges – Commercial & Regulation



Government commitment to CCS welcomed



Existing oil platform, North Sea

- ✓ Government commitment beyond FEED by way of CCS Levy
- ✓ Positive regulatory environment that encourages re-use of existing infrastructure required
- X Clear indication where commercial organisation's liability will end
- X Commitment from Government towards long-term stewardship
- X Rate of return that reflects risk taken by commercial organisation

Key commercial & regulatory issues to overcome

✓ Achieved

X Required



Challenges - Technical

Significant technical challenges for what could a world first



Mobile Test Unit,
Longannet Power
Station

Flexible capture plant required to connect to a commercial station

Reducing the energy requirement and driving down costs

Mobile Test Unit at Longannet to prove the capture process

Transporting the CO₂ – ensuring the pipeline is designed to handle CO₂

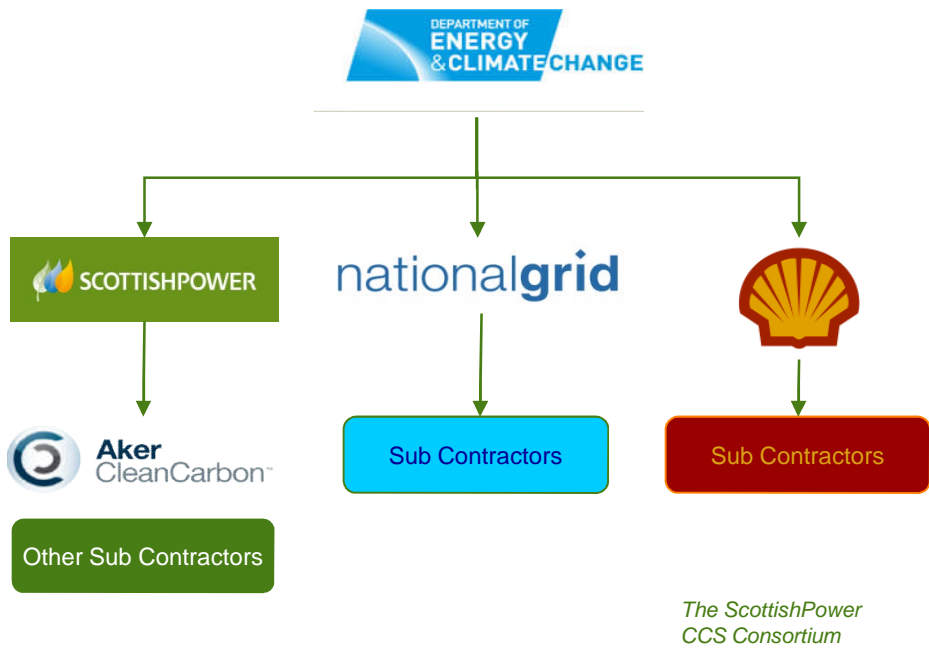
Offshore storage site with right geology characteristics

ScottishPower is taking the necessary steps to understand the process

Challenges – Organisational



Cross-industry, cross-culture working relationships



CCS chain consists of organisations with no previous working relationships

No established business model and relationships still developing

Significant resource commitment required

Key personnel could be deployed elsewhere

Rapid expansion across Consortium partner organisations in last 6 months

Significant time, skills and effort required

Challenges – Public Permission/Communications



Opposition to CCS projects seen worldwide

A community prays



CHRISTINA CHALMERS/ Advocate photo
A group of Darke County residents, including Greenville Mayor Mike Bowers, left center, and Ohio House Representatives Fred Strahorn, left, and Jim Zehringer, right, bow their heads during a moment of prayer. The scene took place at the Greenville High School stadium during the Citizens Against Carbon Sequestration's 'Faith Into Action' rally on Wednesday evening. More than 400 total were in attendance for the event. Read Friday's Daily Advocate for the full story. See the exclusive videos on www.advocate360.org.

Barendrecht CO₂ storage project is most high-profile example so far

Key concerns to Barendrecht were safety and loss in value to property

Other opposition groups have hindered projects in Europe and United States

Most common and significant concern was health and safety

Joined up thinking between industry, government, academia and regulators is required

Early, transparent engagement is key

Conclusion/summary



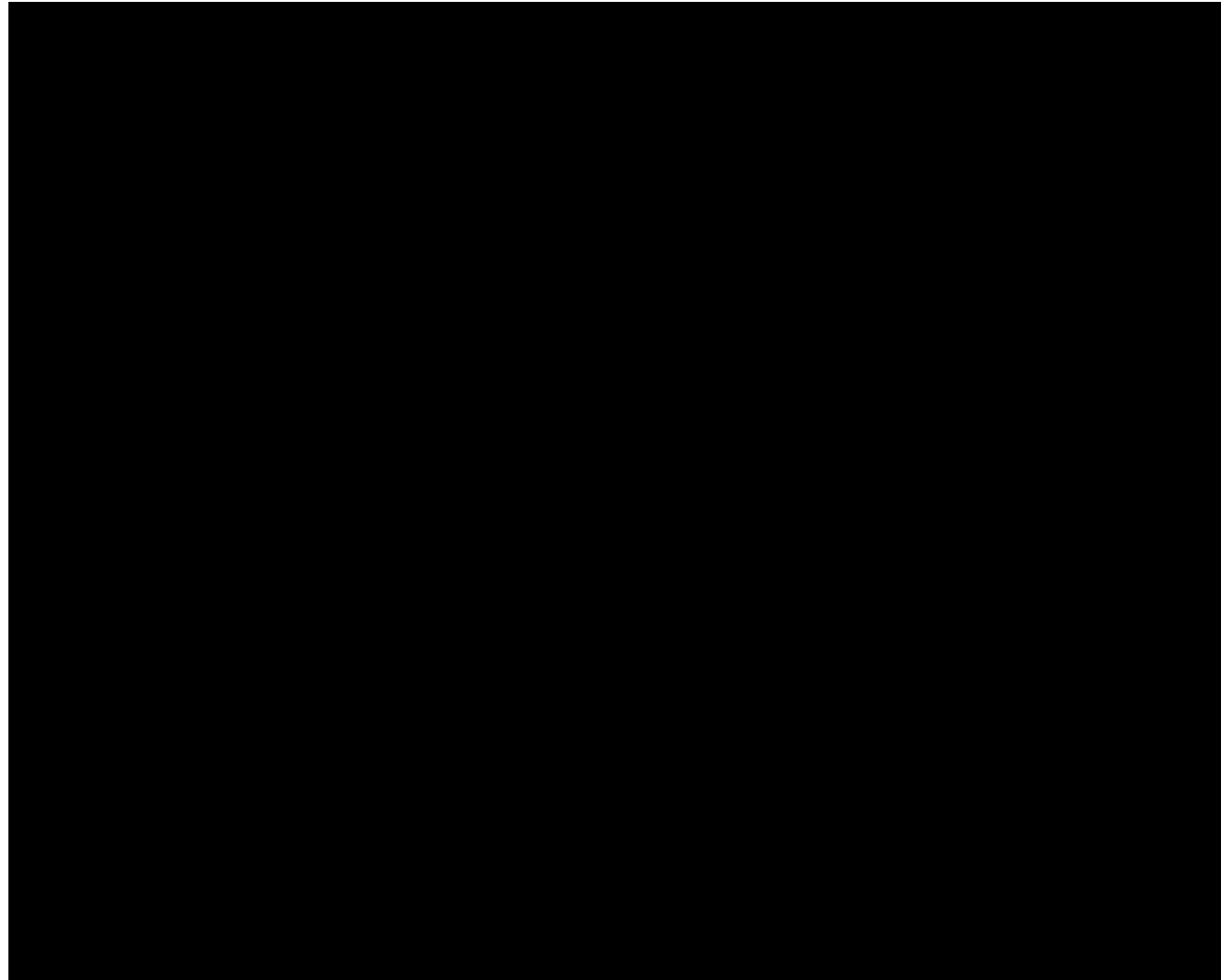
There are numerous, significant hurdles to overcome



Source, Getty Images

But we will continue to overcome these as they present themselves

Getting the Message Across



Building credibility with a wide range of key stakeholders