

PRESS RELEASE

East Irish Sea: Key to UK Climate Targets

Decades of industrial carbon emissions from the UK and Ireland could be stored in depleted gas fields deep beneath the East Irish Sea (EIS) according to a new study by Carbon Capture and Storage (CCS) experts Eunomia.

It is widely thought that the UK has Europe's most favourable offshore geology for CCS and with the infrastructure and skills base of the UK's oil and gas industry it can become a global leader in CCS. This new study shows that whilst the North Sea provides possible storage sites for the eastern seaboard, the EIS has the capacity to provide carbon dioxide storage sites to enable decarbonisation of the remaining fossil-fuel powered industry in the UK.

Director of Eunomia, Mike Brown, one of the authors of the EIS Cluster report says:

"The UK needs more clean and flexible, base-load energy and is seeking a balance of energy sources including coal. At the same time we are committed to decarbonising our industry. The ability to store vast tonnages of CO₂ is fundamental to achieving these goals. The study supports the Committee on Climate Changes recent advice that the radical decarbonisation of the electricity market will require investment in technologies such as CCS, so that the carbon intensity of the electricity we use can be reduced by 90% by 2030."

Sponsored by Hydrocarbon Resources Ltd and Peel Energy Ltd, the Eunomia report shows that unlike other CCS clusters being developed in the UK, focusing attention on offshore storage area opens up opportunities to emitters from multiple regions. This in turn allows the sharing of infrastructure costs across a wider industry base; essential given the multi-billion pound sums involved to build the infrastructure.

The report shows that the UK can continue to benefit from the EIS gas fields long after the gas has gone. Not only can the existing infrastructure be reused, but the skills base and service providers can also benefit, protecting jobs and the economy in the area.

Professor Stephenson, Head of Science (Energy) at the British Geological Survey says:

"The EIS hydrocarbon fields represent up to 1 billion tonnes of CO₂ storage capacity and we believe that it is important that these should be developed for CCS in the future. The study shows that there is a significant opportunity to develop CCS clusters on the West coast of the UK and the East coast of the Republic of Ireland and Northern Ireland".

The EIS is surrounded by a range of large-scale CO₂ emitters in North West England, North and South Wales, Northern Ireland, East Ireland and Western Scotland. The major of emitters

across these six regions emit around 50 million tonnes a year of CO₂. These six regions of emitters, or 'mini-clusters', could be linked to the EIS CO₂ storage sites which have sufficient capacity (over 1 Billion tonnes), assuming a phased roll-out of CCS, to store emissions until at least 2050.

The UK is committed to reducing greenhouse gas (GHG) emissions – of which CO₂ is the greatest contributor – to just 20% of 1990 levels by 2050. Around 40% of the UK's CO₂ comes from energy generation, and decarbonising power stations is seen as essential if these targets are to be met. Renewable Energy sources are expected to increase significantly although due to their intermittent nature and with EC regulations closing old coal plant, the need for 'base-load', flexible generation will continue. The Coalition government has confirmed the UK's commitment to new nuclear and continuation of coal-fired generation provided the CO₂ emissions are captured, transported and geologically stored offshore and underground.

The Eunomia report identifies the proposed coal-fired plant at Hunterston, North Ayrshire in Scotland, as the potential 'catalyst' plant for the EIS Cluster. This power station is the subject of a planning application to Scottish Government and its backers - infrastructure and property giant Peel Energy Ltd - have brought together a consortium to develop a full-chain demonstration CCS plant. With carbon capture specialists Doosan Power Systems, pipeline experts Fluor Ltd and offshore infrastructure and storage operators CO₂DeepeStore (part of Petrofac), Peel have recently submitted a bid to the European Commission for hundreds of millions of pounds of financial support via the recently launched New Entrant Reserve (NER) 300 Competition. In due course, an application will also be made to the next round of CCS Demonstration funding through UK Government.

Mike Brown continues:

“Because storage sites cannot be built – they can only be found - the only realistic prospect of decarbonising the main industrial areas on the west of mainland UK is therefore the development of the EIS storage sites at Liverpool and Morecambe Bay. A project like Hunterston, with its ability to attract over a billion pounds of EU and UK funding, is therefore key to unlocking the EIS Cluster for the NW of England, Western Scotland, Wales, and the East coast of Eire and Northern Ireland. We are very excited to have been able to develop the first conceptual design of the wider related infrastructure. There is a lot of work to be done before the EIS can play its part in decarbonising UK industry, but this report is the first crucial step.”

The study also includes commentary on technical issues relating to cluster development and considers the possible commercial structures required to deliver CCS. The report – which identifies the next steps required - can be found in summary form at www.eunomia.co.uk

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Notes to Editors:

- The East Irish Sea (EIS) Cluster proposed in the Eunomia report differs from other emerging UK CCS clusters, for example in Yorkshire and Humber, or Eastern Scotland, in that it is not formed around a sole pre-defined onshore region, rather it is an offshore 'storage resource' driven cluster which will potentially accept CO₂ from a range of areas, across the UK and Ireland.
- As the name suggests, Carbon Capture and Storage (CCS) is a three stage process which involves:
 - Capturing CO₂ emissions from the combustion of fossil fuels – for initial CCS projects this is likely to be from large-scale emitters such as power stations or large industrial plants;
 - Transporting the CO₂ by pipeline (or ship) to offshore storage sites; and
 - Storing the CO₂ securely, usually in depleted oil and gas fields, which have previously held hydrocarbons for several millions of years.
- The best potential EIS storage areas, judged on the key criteria of containment, capacity and injectivity, are the Liverpool Bay and Morecambe Bay depleted natural gas fields. Information relating to the key fields within these two areas are summarised below showing a total estimated potential CO₂ storage capacity of 1,148Mt.

Table 1: Summary of Key Fields within the EIS CO₂Storage Resource

Gas Field	Likely year of Depletion	Storage Capacity (MtCO ₂)
Hamilton	2014-2017	113
Hamilton North	2014-2017	38
Liverpool Bay Sub-total		151
South Morecambe	2023-2030	820
North Morecambe	2020-2023	177
Morecambe Bay Sub-total		997
TOTAL		1,148

The CO₂ Emissions in 2009 (of facilities emitting more than 50,000t CO₂pa) by mini-cluster are summarised in Table 2.

Table 2: Emissions from each related Mini-Cluster

Mini-cluster	Total CO ₂ Emissions (Mt)
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Eastern Ireland	6.2
North Wales	5.1
North West England	12.6
Northern Ireland	3.9
South Wales	18.9
Western Scotland	0.3
TOTAL	47.0