WP SCCS 2019-08

Strengthening the UK's Offshore Oil and Gas Decommissioning Industry

SCCS response to BEIS and HM Treasury call for evidence

May 2019

Scottish Carbon Capture & Storage

Scottish Carbon Capture & Storage
Edinburgh Centre for Carbon Innovation
High School Yards, Infirmary Street, Edinburgh, EH1 1LZ
Telephone +44 (0)131 651 4647 www.sccs.org.uk

Strengthening the UK's Offshore Oil and Gas Decommissioning Industry

1 Key messages

Decommissioning should not be considered the next step for the oil and gas industry without examining other possibilities: there are significant opportunities for repurposing of existing assets, and redirection of existing skills and knowledge in a new offshore carbon dioxide (CO_2) storage industry.

As the oil and gas industry winds down, the UK needs to set the groundwork for a CO_2 storage industry to replace it. After decades of producing a commodity that exacerbates climate change, the North Sea offshore industry has the chance to provide a service that hugely reduces the amount of CO_2 produced, and even removes CO_2 that is already in the atmosphere.[1]

Offshore geological CO_2 storage is a huge potential market for the UK. The UK has a theoretical potential CO_2 storage capacity of 78 gigatonnes – sufficient storage for hundreds of years of CO_2 emissions.[2] As well as allowing the UK to meet its greenhouse gas targets by preventing CO_2 emissions reaching the atmosphere, the UK's geology means it can provide a CO_2 storage service to other countries, enabling them to tackle hard-to-treat sectors (such as industry, heat and transport) and meet their own contribution to global greenhouse gas reduction targets.

The UK oil and gas industry is the reason we have so much knowledge of the offshore subsurface, and has enabled a thorough understanding both of CO_2 storage capacity and of the behaviour of CO_2 in the subsurface. This knowledge and expertise will be needed throughout the development and deployment of carbon capture and storage (CCS), enabling a just transition for workers in the offshore oil and gas industry.

Depleted oil and gas fields are a huge potential store for CO_2 – but decommissioning must be done in the right way to ensure they can be used to their full potential. This means that plugging and abandonment of wells must be done to a high enough standard to prevent CO_2 leakage at optimum injection pressure – this is a higher standard than is required to prevent the escape of residual hydrocarbons. Saline aquifers are also potential CO_2 stores – this means that even exploration wells where hydrocarbons were not discovered need to be plugged and abandoned to a standard to allow for CO_2 storage.

The Commons Public Affairs Select Committee found that there is significant uncertainty about the cost to the public purse of oil and gas decommissioning: HMRC estimate that it will cost the UK taxpayer £24 billion through tax reliefs, but this estimate is based on the Oil and Gas Authority's (OGA) central scenario of decommissioning costs, rather than the top of its range of estimate.[3] This money should be invested in repurposing existing infrastructure to enable the development of a CO_2 storage industry in the UK. We understand that the OGA has a remit to reduce the cost of

[1] For further information, please see our evidence to the Scottish Affairs Committee's inquiry on the future of the oil and gas industry: http://www.sccs.org.uk/images/expertise/reports/working-papers/WP_SCCS_2018_04_evidence_to_Scottish_Affairs_Committee_inquiry_on_future_of_oil_gas_industry.pdf
[2] Energy Technologies Institute (ETI), *Strategic UK CCS Storage Appraisal*, available at: https://www.eti.co.uk/programmes/carbon-capture-storage/strategic-uk-ccs-storage-appraisal
[3] Committee of Public Accounts (2019) *Public cost of decommissioning oil and gas infrastructure*. Available at: https://publications.parliament.uk/pa/cm201719/cmselect/cmpubacc/1742/1742.pdf

decommissioning, and would argue that this is too simplistic, and that a cost-benefit analysis, enabling the value or re-use to be taken into account, would be more appropriate.

We note that in some cases, where alternative decommissioning methods are being formally assessed under the Comparative Assessment system, the potential societal value of pipeline re-use for CO_2 transport, as part of a CCS system in order to mitigate climate change, has been included as a factor in the comparison. This has had the effect of increasing the benefit of a certain technical approach to decommissioning that leads to greater ability to re-use the pipeline. In one example this has led to a decision to seal ends of a decommissioned pipeline with flanges, with the pipeline containing preservative fluid, and bury the flanged ends for protection. This approach will increase the likelihood of a pipeline being re-used for CO_2 transport.

Further, we suggest that once such an approach has been approved in one decommissioning proposal, it should be seen to set a precedent and further pipeline decommissioning proposals should take a similar approach if there is any possibility of the pipeline being suitable for CO_2 re-use.

Offshore oil and gas infrastructure – particularly pipelines – can be re-used to transport CO_2 from onshore sources to offshore storage sites. Not all pipelines are suitable but, where they are, their retention can reduce costs of developing CO_2 storage by hundreds of millions of pounds: the ACT Acorn project found that repurposing the Miller, Goldeneye and Atlantic pipelines for CO_2 transport would save £548 million compared to building new pipelines.[4]

Repurposing offshore infrastructure for CO_2 transport and storage makes financial sense, and means the waste hierarchy – reuse before recycling – is applied to oil and gas assets. However, there are currently a number of barriers to this repurposing, including commercial issues around ownership of, and liabilities for, a pipeline that is out of use between cessation of production and the start of CO_2 injection. There are also issues around the application of a “clean seabed” policy to decommissioning, which could be an overly risk-averse approach to international obligations, and therefore preventing retention of assets for future re-use.

2 Consultation questions

What core strengths does the UK have in offshore decommissioning, where we might be able to build a competitive advantage?

The UK’s key strengths are its CO_2 storage capacity, and the knowledge and expertise that have been amassed over the life of its oil and gas industry. This is where the UK could build a competitive advantage, by developing the supply chain for CCS that could be exported across the world, along with the existing knowledge and expertise in the sector.

Are there any gaps or weaknesses in UK capability, and if so, is there a need to actively seek to address them?

The consideration given to the redeployment of offshore infrastructure needs to be more robust, with more weight given to re-use, and a system put in place to address the time lag between cessation of production and start of CO_2 storage.

Currently, the OGA is responsible for licensing subsurface CO_2 storage, but they have no remit to promote it. We recommend that the OGA, or another body, be given the remit to promote CCS, including the re-use of existing infrastructure. We are concerned that currently there is a gap between

[4] ACT Acorn factsheet, *Infrastructure Re-use and Decommissioning,* available at: https://www.actacorn.eu/sites/default/files/Infrastructure_Poster2.pdf

the remits of BEIS and the OGA, which means that neither body has the responsibility to make sure that assets are re-used for CCS, wherever possible.

We welcome BEIS's ongoing work to identify strategic oil and gas sector assets that could be used for CCS, and we are working through the Carbon Capture and Storage Association to support this.

Once an asset has been identified for re-use for CO_2 transport and storage, there is often a time lag of several years between cessation of production (at which point the producing company has no further use for the asset) and the beginning of CO_2 injection (at which point the CO_2 storage operator begins to have a use for the asset). This means that there is a period of time during which no operator would see a commercial advantage in bearing the ownership and liability of the asset. There is also the risk in retaining an asset that the CO_2 storage project does not materialise. There is a need for an "operator of last resort"[5], most likely a public body, to take on assets, liabilities and risks during this period.

What specific areas or capabilities of the decommissioning value chain have the greatest potential for export?

The UK's geology and capacity for CO_2 storage means that it can provide a CO_2 storage service to other countries. By taking a lead in developing CCS, the UK can establish domestic supply chains that can then export across the world; the existing expertise and knowledge will also be a valuable export.

We understand that BEIS and the Department for International Trade (DIT) are carrying out work on the economic opportunities of carbon capture, usage and storage (CCUS) that should provide further evidence for the size of the potential export market.

[5] ALIGN CCUS / University of Groningen presentation to stakeholder workshop on re-use of hydrocarbon infrastructure for CCS, 9 April 2019.