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Policy Brief

The evolution and wider economy outcomes of a UK CO_2 transport and storage industry: the importance of labour requirements, electricity demand and transportation options

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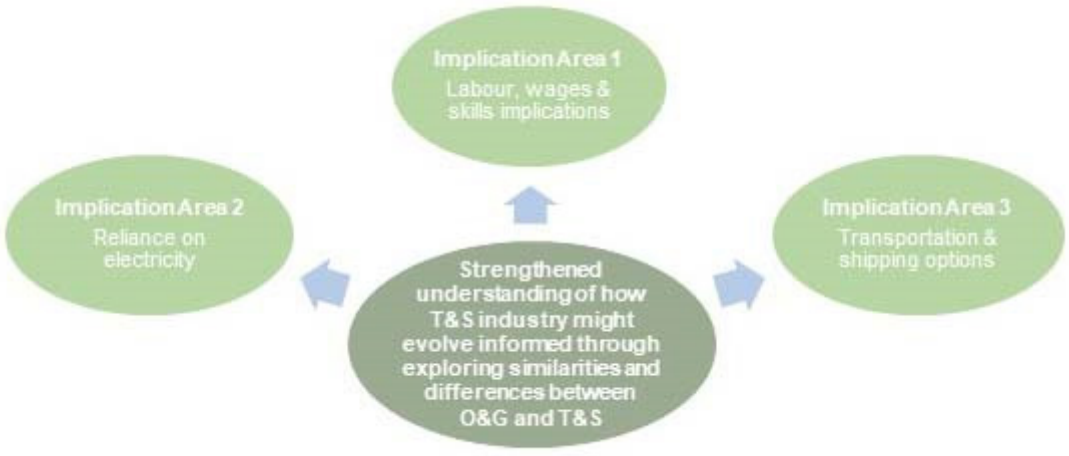
Developing understanding around how a UK carbon capture, utilisation and storage (CCUS) system, and the role of an emerging CO_2 Transport and Storage (T&S) industry therein, will evolve is critical. In particular, knowledge and intelligence of wider public policy and economy implications and impacts, including a range of socioeconomic outcomes, needs to be strengthened. This is necessary to fully comprehend the role CCUS has to play in achieving mid-century Net Zero targets, strengthening long-term energy security and contributing to sustained (and sustainable) economic growth.

One aspect of our research is exploring the similarities and differences between a prospective T&S industry and the existing Oil and Gas (O&G) from which much T&S activity and/or capacity may be expected to emerge. In discussing the respective development, operation, maintenance and investment profiles of T&S and O&G with a number of expert stakeholders, three crucial policy implication areas emerge. These are (1) workers, wages and skills requirements (2) electricity demand and how it is supplied and (3) transportation needs and the role/provision of shipping services. See Figure 1. Each of these factors require consideration by decision-makers if the deployment of CCUS is to effectively contribute to the wider set of economic, energy and climate policy objectives

Figure 1: Policy implications areas emerging from exploring similarities and differences between O&G and T&s.



Policy Implication Area #1: Labour and skills requirement and wage

While the roll-out of a new UK T&S industry could provide opportunities to transition current O&G jobs and the workers holding them, a range of challenges arise. These are in terms of retraining requirements, combined with potential changes in employment status, wage rates and the working locations of employees. This is all set in the context of persistent UK labour market supply constraints, where multiple Net Zero and other projects must compete for resources, not least in delivering on 'domestic capacity' criteria on supply chain evolution. The compensation of those

currently employed by O&G working offshore on extraction and drilling platforms often involves some form of actual or effective wage premium, particularly in the context of a quite unique and industry-specific international labour market. The T&S industry, on the other hand, may be expected to involve more employment activity onshore, with important implications on the industry wage rates as well as spill over impacts involving wage pressures in the wider UK labour market. Thus, UK national, regional and occupational labour market and potential wage implications must be studied in more depth to establish an accurate picture of job creation and transition issues, including potential additionality of new vs. displacement of existing jobs and sources of wage income generation.

Previous CEP research on the deployment of a new T&S industry highlights a range of issues around exacerbating labour shortages and increased wage rates and costs in the labour market. Wage pressure is ultimately the source of potential displacement of jobs across a wide range of (particularly labour-intensive) sectors (e.g., retail/distribution) that do not have a direct link to the roll-out of T&S and/or transition from current O&G activity, but with important wider economy consequences including cost-of-living (CPI) pressure.

Policy Implication Area #2: Reliance on electricity

Currently, O&G offshore platforms use electricity produced on-site, whereas the T&S industry is expected to rely on the UK electricity industry to power transportation and storage facilities. This could trigger a range of positive 'multiplier' effects on employment and GDP due to the UK Electricity Industry having a strong domestic supply chain. However, new T&S requirements may add to other electrification needs (e.g., private and much commercial transportation, and residential heating) to the extent that costly electricity network upgrades requirements must be undertaken to ensure that the network can cope with the additional demand. Depending on how the upgrade costs are covered, this could contribute to increased energy bills of all electricity users, further adding to fuel poverty pressures, and more generally to the wider costs of living and doing business in the UK.

On the other hand, if the deployment of UK CCUS enables (even transitory) reduced electrification demands in decarbonising UK industry, overall upgrade requirements and costs may be limited, at least in the near- to mid-term. Thus, understanding industry and wider economy electrification requirements associated with T&S activity is critical.

Policy Implication Area #3: CO_2 transportation and the potential role of shipping

The current UK O&G industry uses a combination of pipelines and tanker ships to transport extracted crude oil and natural gas. For T&S, the expectation is that captured CO_2 will be transported mainly through purpose built or repurposed pipelines. Shipping services will be used over long distances or where pipelines cannot reach storage sites and would be provided by the existing (international) marine transportation sector. This sector is owned and operated internationally which means some of the economic value will be offshored to wherever the shipping vessels are registered, affecting the extent to which a new T&S sector's will contribute to UK GDP. However, if T&S uses a similar mix of pipelines and shipping to the O&G sector, there will be minimal differences in the capital requirements and returns of the T&S relative to O&G.

Conclusions and way forward

In summary, three key issues emerge from our research and stakeholder engagement work:

1. Understanding the wage cost and constrained labour supply implications of an emerging T&S industry is crucial to achieving a 'just transition' for O&G workers that does not involve excess job displacement and cost-of-living pressures across the wider economy.
2. The reliance of T&S on the UK electricity network could drive economy-wide multiplier gains via domestic chain linkages, but may add to network upgrade costs. On the other hand, overall network requirements could be limited if CCUS enables competitive industry decarbonisation with limited electrification demands.
3. If shipping plays a substantial role over pipelines in transporting captured CO_2, the wider economic and employment gains within the UK could be limited.

Generally, the deployment of UK CCUS, and emergence of new T&S industry activity therein, should be expected to trigger a range of complex interactions and impacts across UK economy. Focussed research and policy analyses is essential to better understand the nature, magnitude and links between such impacts, and should constitute a core foundation of CCUS, Net Zero, infrastructure and economic planning going forward.

Further reading

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