Integrating CCUS services into the UK economy: the challenge of persisting labour supply shortages and constraints

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Funded by UKCCSRC as part of the Flexible Funding Call
Project dates:1st November 2022 – 30th June 2023

Introduction

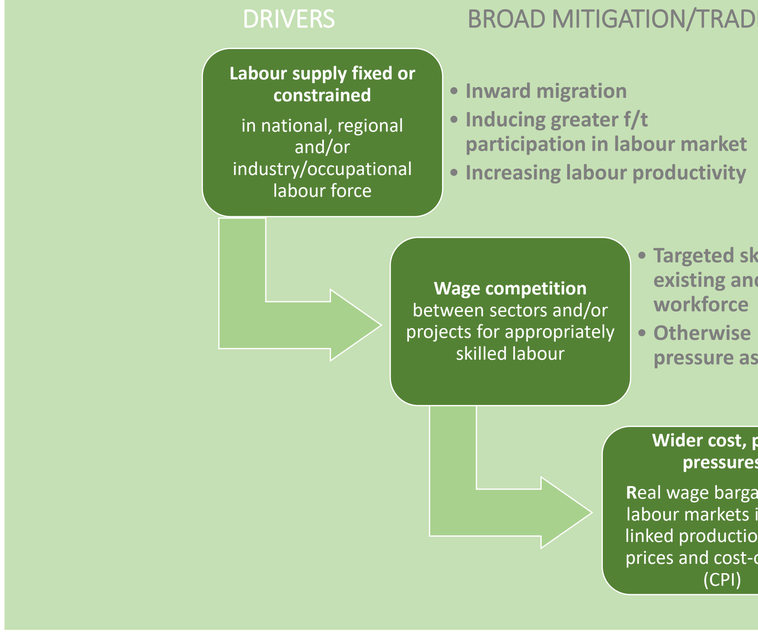
In line with the Ten Point Plan for Green Industrial Revolution, implementation of the UK Government's CCUS ambitions are progressing with Track 2 CCUS project decisions made in early 2023, underpinned by the evolution of the BEIS CCUS business models.

The 2018 CCUS Action Plan has set out UK Government focus on retaining direct and supply chain jobs supported by regionally clustered industries that can decarbonise by capturing CO2. Government analysis suggests that the wider set of activities associated with deploying and operating CCUS in the UK could potentially support around 50,000 jobs by 2030. However, the UK Government's Net Zero Strategy also recognises that efforts to decarbonise the UK will put new demands and require significant changes in the UK labour market, with one in five jobs likely to be affected.

Therefore, this research aim to understand how current and likely persisting labour market challenges may impact the deployment and operation of Carbon Capture, Utilisation and Storage (CCUS) projects across the UK's regional industry clusters.

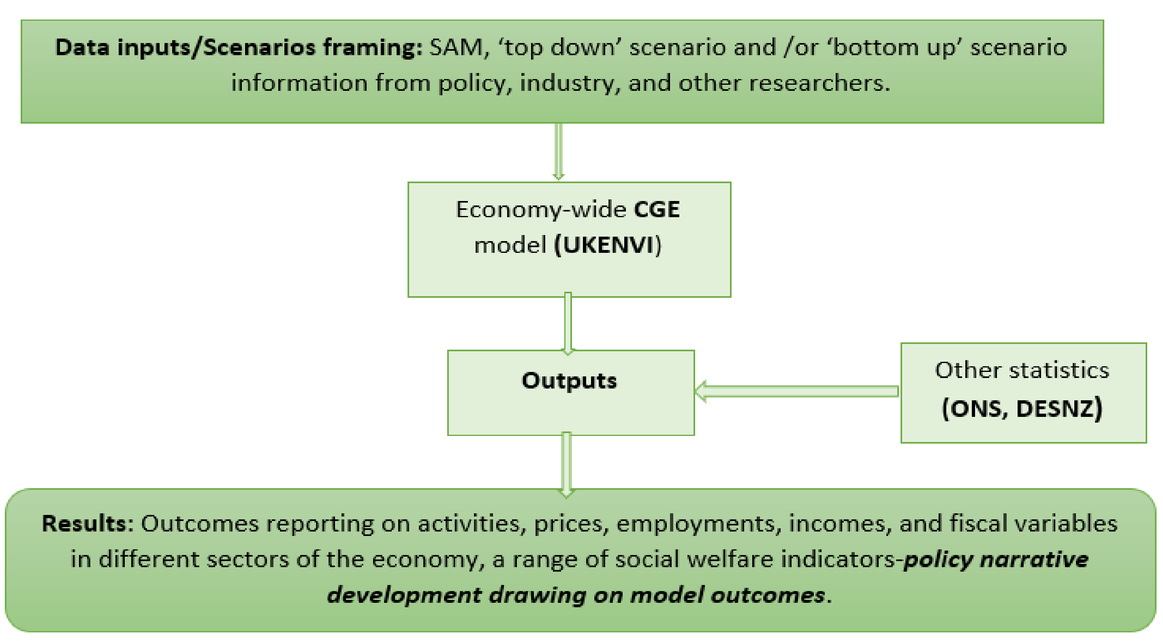
Labour challenges

Figure 1. Key drivers and mechanisms governing employment, wage and wider cost outcomes



Method

We have developed A computable general equilibrium (CGE) model of the UK economy (UKENVI) in ways that distinguish the different economic requirements and implications of carbon capture within clustered industries and new/transitioning activity (particularly through existing oil and gas supply chain and labour force capacity) in delivering transport & storage services.



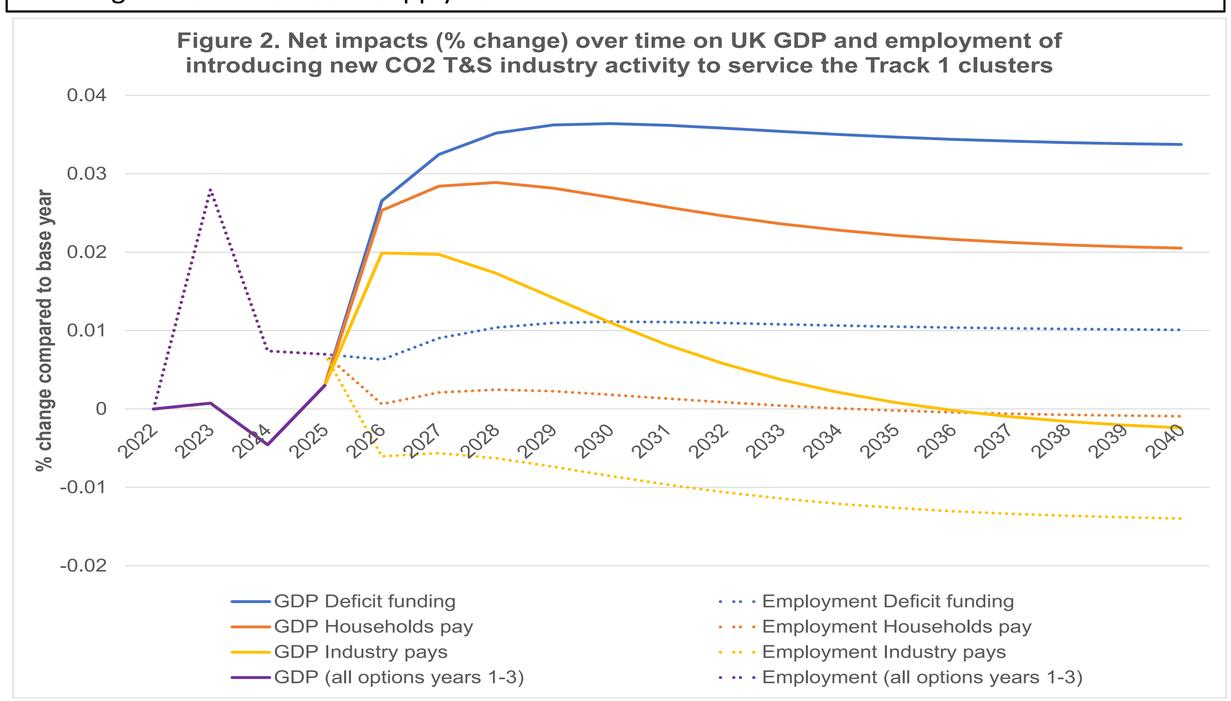
Scenarios

To illustrate the impact that the persisting UK labour supply constraint could have on the wider economy outcomes of investing and operating a new CO2 T&S industry in the three Track 1 clusters announced in 2022, we have run some initial scenario simulations using our economy-wide model of the UK. We precisely simulate the impact of an upfront investment of £2.208million spread over the 3-year period between 2023 and 2025 to build capacity that supports an output/demand level of £662million per annum from the CO2 T&S industry.

Results

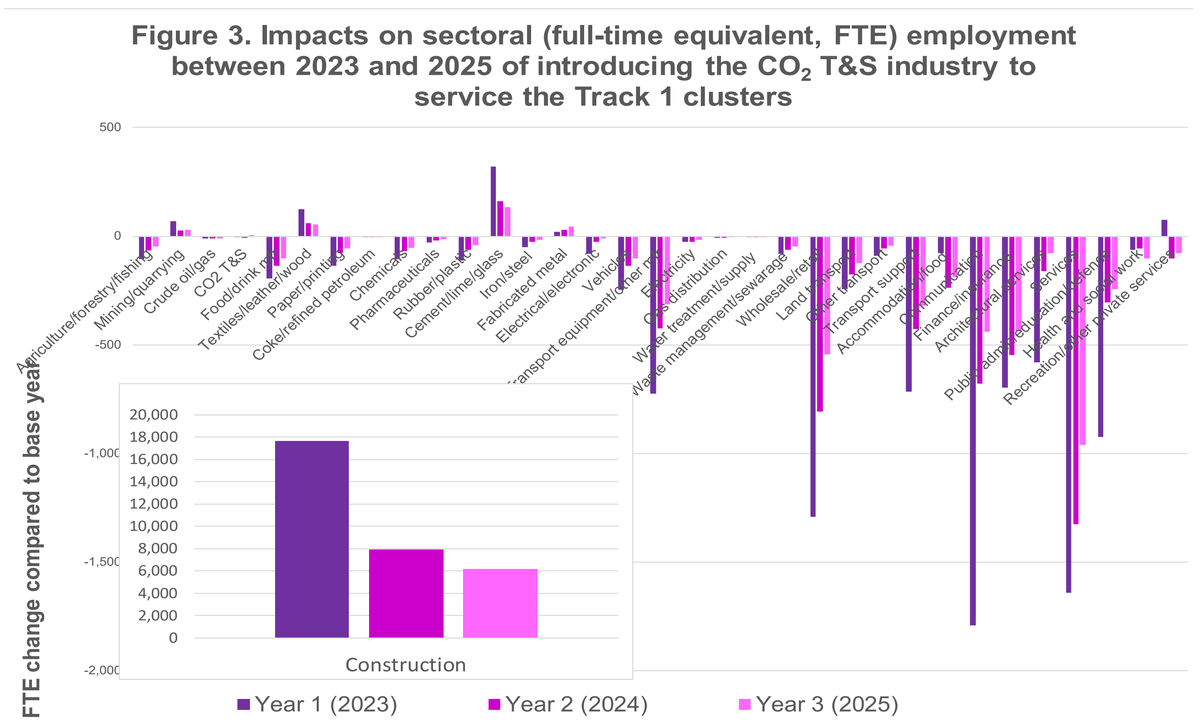
Our scenarios involve simulating the introduction of the new T&S industry activity (assumed to have a similar supply chain structure to the current UK Oil and Gas industry) with no other changes in the economy. This allows us to isolate the wider sectoral and macroeconomic impacts, including those of the labour supply constraint.

Figure 2. Net impacts (% change) over time on UK GDP and employment of introducing new CO2 T&S industry activity to service the Track 1 clusters



- Figure 2 shows the trajectory of UK GDP and total FTE employment in addition to what it would otherwise be under different broad funding models.
- However, the figure demonstrates that net GDP and employment gains could be eroded or entirely offset depending on how demand for the T&S capacity is funded/guaranteed.

Figure 3. Impacts on sectoral (full-time equivalent, FTE) employment between 2023 and 2025 of introducing the CO_2 T&S industry to service the Track 1 clusters



- Figure 3 shows that the employment required initially to deliver project by 2026, then to operate going forward and increased wage costs trigger displacement of employment across many sectors of the economy.
- It also shows how the displacement process evolves in the initial investment period between 2023 and 2025, where the main driver is investment spending directed to the UK construction industry.

Conclusion

This research shows that even in the presence of constrained labour market, wider economy expansion or limited 'green growth' could be realised through the deployment of a UK T&S industry. Much will depend on just how the industry is funded and sources of demand going forward (and our research in the coming year will focus on such issues). However, generally, while UK labour supply shortages will impact through wage pressures and displacement of employment across sectors, negative pressures are limited where CCUS activity does not manifest as a substantial 'shock' in a limited timeframe.

The main source of risk in this regard is relatively substantial near-term investment activity, where our analysis here abstracts from the additional pressure of other net zero and infrastructure projects planned during the remainder of the 2020s.

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