CCSA

UK CCUS Supply Chain – Initial Forecast 2024

Executive Summary

July 2024

Introduction

This 'Supply Chain – Initial Insight' report highlights key trends, gaps, and opportunities in the CCUS Supply Chain across six commitment areas.

This report captures **a snapshot of the CCUS Industry within the UK**, pre-Final Investment Decisions (FID) on the first four CCUS clusters (Track-1 and Track-2). It has been developed by gathering the views of CCUS project developers over the last six months. Track-1 projects are shortly expected to reach FID in September 2024, and a healthy pipeline of projects is anticipated to reach FID during subsequent negotiation rounds.

This work follows the publication of the **CCUS Supply Chain Good Practice Guidance report** in July 2023, and the work of the CCUS Council Supply Chain Working Group, chaired by Lord Hutton. Within this, a reporting framework was established against which industry could voluntarily report on their supply chain commitments. These commitment areas are shown in Figure 1.

As the UK strives towards its ambition of building a domestic CCUS supply chain, the industry must set, measure and benchmark against granular but achievable targets, designed to enhance the capacity and technological capability of the UK's industrial base.

The ambition of the CCUS sector is an overall UK content target meeting or exceeding 50 per cent by 2030, in line with existing targets set by the North Sea Transition Deal (NSTD). The industry has set this ambition on the assumption that the Government will provide:

i. A clear timetable for when and where government support will be allocated to capture projects to drive confidence and raise the profile of the sector.

ii. Flexibility in bilateral negotiations on cost and delivery dates where there is an opportunity to secure higher UK Content.

iii. Targeted financial support for building capacity and transitioning existing supply chain businesses to serve the CCUS programme.

This executive summary highlights five key findings (page 3) and six recommendations (page 6) to maximise the opportunities to UK supply chains from CCUS deployment.

Transparency of the Supply Chain Process

Approach to Investment in Skills and Training

Approach to the Number and Quality of Jobs Created and Protected

Approach to UK Content

Approach to Supporting UK Technology and Innovation

Wider Economic Benefits

Figure 1:
CCUS Supply Chain six commitment areas.

Report Findings

The report highlights five key themes and findings.

1. **A competitive and UK-based Supply Chain needs certainty of a future pipeline of projects.**
   Without prompt decisions and policies, it is difficult to signal a future pipeline of projects to the supply chain. This reduces project developers' ability to engage with the supply chain and obtain an accurate understanding of levels of commitment and delivery dates.

   Delays in the cluster sequencing process and Government policy on the next stages of the industry limit the foresight that project developers are able to give around their supply chain commitments.

2. **The CCUS industry has a strong commitment and aspiration to deploy CCUS in a manner which is beneficial to the UK.**
   Average scores for both independent and self-assessments were all GOOD and above, emphasising how even though there is a lot of work to do, the industry has a good starting point, even pre-FID.

3. **There are opportunities to drive greater benefits in UK Content, Skills and Jobs.**
   Growth benefits are clearly aligned to UK Plc with factors such as investment in skills, UK jobs, fabrication and operations procurement and wider economic benefits featuring highly in developer aspirations and commitments.

4. **Areas of existing good practice include Economic Benefits and Transparency, which score more highly.**
   Developers in the CCS industry exhibited high scores and strong commitment in the areas of Economic Benefits and Transparency, largely by leveraging existing company practices. Transparency in the CCS supply chain is already a standard practice for many developers regardless of the project stage, and many developers demonstrated engaging with local communities and cross-energy sector groups already.

5. **There is a need to move at pace to address areas of supply chain concern.**
   Whilst this is a snapshot of industry pre-FID, for some of the concerns and low-scoring areas such as UK Content, Skills, and Jobs, there is still time to address these gaps as many strategies and policies are yet to be finalised. This will avoid them turning into more significant inhibiting factors for the industry.
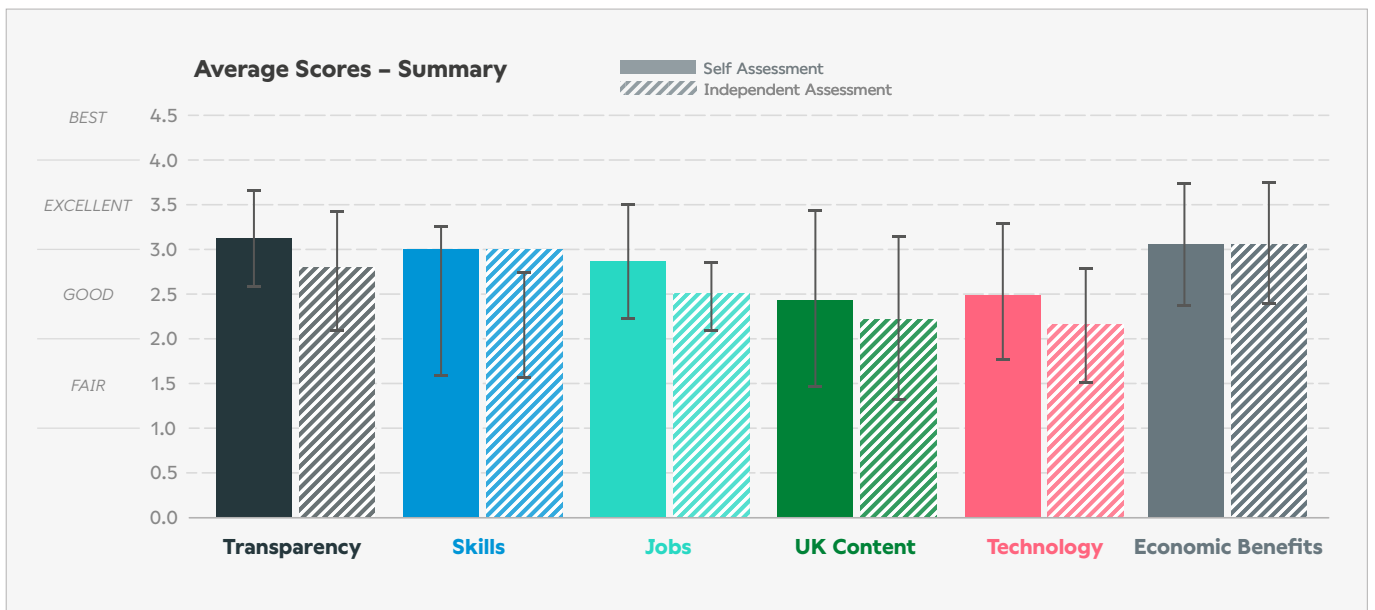

Figure 2:
Average scores for all commitment areas provided by respondents and independent assessments during the process.
Standard deviation of the results are shown by the black error bars.

Key findings across the six commitment areas

Transparency

- **Supply chain processes were often already key components of developers' standard practices.**
- New strategies or processes are not necessarily being adopted as developers move into the CCS industry.
- Inhibiting factors, such as time, resource, and confidentiality issues around sharing feedback, prevented developers from scoring higher.
- The importance of understanding the developers' role in relation to the wider supply chain was highlighted. Some developers referenced that many of these actions would be undertaken by their engineering procurement and construction (EPC) contractors.
- Future work must investigate how these obligations are being passed down the supply chain.

Skills

- **Many developers were yet to finalise strategies or were able to provide certainty around their commitments to address skills gaps.**
- However, all developers were aware of the challenges that were associated with addressing skills gaps within the industry and were committed to tackling this.
- There is still a large amount of work to be done in addition to the complementary work of Government, external stakeholders and training providers.
- Further work is needed to identify and clarify the role and responsibility of developers in skills investment, in comparison to the wider supply chain.

Jobs

- **Concerns around UK manufacturing capability/capacity were highlighted in this section, as well as in UK Content.**
- The majority of developers were intending to meet many of these commitments but unable to currently provide evidence or statistics to support these given the early stage of project deployment.

UK Content

- **Developers highlighted a lack of UK capability and capacity for manufacturing, especially for larger equipment pieces, such as compressors, or those focused on modular builds.**
- UK content for manufacturing at this time is expected to derive from capabilities around smaller items, such as line pipe.
- Whilst it is too early to give an overall UK Content figure, the majority of developers are not on track to report more than 20% of UK content for products, given the lack of existing UK capability/capacity.
- The industry was much more optimistic about UK services, which many developers associated with reaching 50% UK content.
- Strengths were observed in the UK market for construction and operations and maintenance (O&M).
- Further clarity and certainty on project progression, in addition to increased financial support for the supply chain, will be essential to ensure credible levels of UK Content for CCUS.
- Allocation of programmes such as the Green Industries Growth Accelerator (GIGA), should facilitate increased financial support to the supply chain.

Technology

- **Many developers were keen on investing in Research and Development (R&D) to address challenges faced by projects. Initiatives and investments involving collaboration with local universities and innovation centres were emphasised.**

- Mitigation of additional risk was stressed as a key priority. CCS projects already incur significant levels of risk due to their first-of-a-kind (FOAK) applications and scale.

- This means that some developers were reluctant to employ novel technologies over proven solutions or engage with new market entrants.

- Earlier-stage projects also stressed they were keen to utilise the learnings, knowledge, and experience gained from companies involved in the first wave of projects.
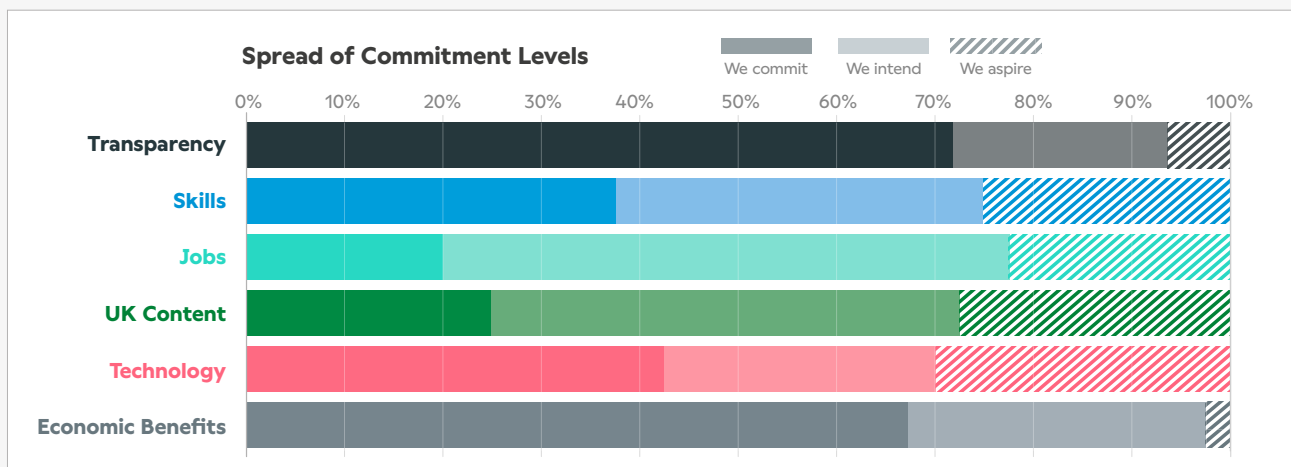
Economic Benefits

- **Project development and DCO process were highlighted as key drivers of local community engagement and industrial relations.**

- Answers for this section were high-scoring and analogous across developers. Many themes discussed were already part of companies' standard practices or were required in the project development process. These included engaging with their local communities or cross-energy sector groups.

Supply Chain Commitment Levels

This report was originally intended for developers to benchmark their aspirations in 2023. However, due to delays in the cluster sequencing process, no project in the UK is yet to reach FID. Developers were therefore able to choose from the options 'we commit', 'we intend', or 'we aspire'. This was to ensure that all projects, regardless of stage, could participate in the process.

- Areas which are more pertinent to latter stages of project deployment, such as UK Content, Skills and Jobs, showed lower levels of commitment.

- In these areas, developers often had high aspirations but had a lack of certainty to commit to statements.

- High scores and high commitment levels were seen across the Economic Benefits and Transparency areas, with many developers utilising existing company practices and applying these to CCS projects or project development processes.

Spread of Commitment Levels

We commit | We intend | We aspire

	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Transparency											
Skills											
Jobs											
UK Content											
Technology											
Economic Benefits											

Conclusions and Recommendations

Whilst supply chain procurement is led by developers and their subcontractors for individual projects, their success depends to a great extent on the wider market conditions in the UK.

Certainty of CCUS deployment trajectories and supporting industrial and skills strategies are key to ensure that developers commitments, intentions and aspirations can be realised.

The most critical recommendations shown below build on existing progress and set out next steps to focus supply chain strategies. They will require collective and collaborative work across the whole CCUS industry, trade associations, Government, and wider stakeholders to realise them, and should build upon existing progress made to date wherever possible.

The full list of recommendations can be found in the main report, alongside a detailed analysis of all of the report findings.

Recommendation	
1 **Deliver the first round of CCUS projects** and commit to future clusters and allocation rounds, to provide confidence to the CCUS sector, and so enable firmer project strategies to be developed, and progress towards best practice to be tracked and showcased.	Government and industry
2 **Award Green Industries Growth Accelerator (GIGA)** to provide support to the supply chain and maintain the focus on developing local content opportunities across design, manufacturing, fabrication, construction and operation to ensure the existing UK supply chain can be embedded in CCUS project strategies and developed further.	Government and industry
3 **Develop a set of Supply Chain Guiding Principles**, encompassing aspects of transparent and fair procurement, sector development initiatives and good industrial relations, among others, to further embed best practice early in the sector's development.	Industry
4 **Greater coordination of skills development is needed** across Government, industry, and skills providers. National strategic direction, to deliver targeted resources and funding, and the formation of local partnerships to get sufficient levels of skilled individuals in the right places at the right time, are critical to address current and future skills gaps.	Government, industry and skills providers
5 **Increase supply chain engagement opportunities** through events, CCUS specific supply chain directories and adjoining programmes such as Fit4CCUS, to ensure the wide variety of opportunities on offer are clearly communicated and only good suppliers are showcased.	Government, industry and wider stakeholders
6 **Expand reporting process to companies that will deliver CCUS projects** (including EPCs and Tier-1 contractors) and the wider CCUS supply chain and iterate deliverable commitments for these sectors.	Industry

Process

The commitments from the CCSA's Supply Chain Good Practice Guidance Document were designed and chosen so that developers have maximum flexibility to demonstrate the ways in which they support and collaborate with their supply chains and industry stakeholders.

The open nature of the Good Practice reporting format allows all activity, whether planned/unplanned, successful/unsuccessful, large/small or completed/yet to be commenced, to be included when reporting against achievement of the Good Practice criteria. This guidance also brings CCUS into greater alignment with the North Sea Transition Deal (NSTD) and Offshore Wind Sectors.

The Energy Industries Council (EIC) was appointed as the independent assessor by the CCSA to collect and collate all results and report all findings. In addition, all results and collected data have been anonymised and are not associated with any individual projects or developers.

Responses were collected from nine developers across the CCUS industry. These developers are collectively involved in 11 CCUS projects. These cover both onshore and offshore projects across four clusters around the UK. All data was collected between November 2023 and April 2024, and qualitative analysis is based on interviews conducted with nine developers. However, scoring data only includes data from eight developers. In addition, some developers declined to participate as they did not feel ready to be involved in the process, given the stages of the cluster sequencing process. Future reporting rounds, the details of which will be announced in due course, should ensure that more developers are able to participate. These rounds will likely occur once some projects have reached FID, and the sector as a whole has more clarity and firmer strategies in place. The CCSA will take forward a number of suggested refinements to streamline the process prior to the initiation of the next reporting round.

This report was originally intended for developers to benchmark their aspirations in 2023. However, due to delays in the cluster sequencing process, no project in the UK is yet to reach FID. Therefore, this report is acting as a pre-FID benchmark and an early insights perspective. Due to this, commitment levels were included with all questions and it is not possible to produce an overall UK Content figure at this stage. Developers were able to choose from the options 'we commit', 'we intend', or 'we aspire'. This was to ensure that all projects, regardless of stage, could participate in the process.

All questions required developers to provide a self-assessment alongside the independent assessment. Assessments included a grading (from FAIR to BEST) alongside any supporting comments or evidence, such that the project's current ambitions could be marked against best practices. The rubric for scoring was published in the CCSA's Supply Chain Strategy (2023). Each grading was associated with a numeric score to facilitate data collection, as seen below:

FAIR = 1	GOOD = 2	EXCELLENT = 3	BEST = 4

These results are to be shared with the government and wider industry to inform the next steps and the scope for targeted interventions.

Acknowledgements

The Carbon Capture and Storage Association (CCSA) is the trade association focused on accelerating the commercial deployment of carbon capture, utilisation and storage (CCUS).

We work with our members, governments and other organisations to ensure CCUS is developed and deployed at the pace and scale necessary to meet net zero goals and deliver sustainable growth across regions and nations.

The CCSA has over 100 member companies who are active in exploring and developing different applications of carbon capture, CO_2 transportation by pipeline, ship and rail, utilisation, geological storage, and other permanent storage solutions, both end-users of the technology and those in the supply chain, as well as members from management, legal and financial consulting sectors.

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